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COMPUTER GAMING WORLD

January 1999

The #1 PC Game Magazine

CGW's Mega-Guide to PC Conquest

STRATEGY SPECTACULAR

29 Scorching New Strategy Games!

- TOTAL ANNIHILATION: KINGDOMS
- HOMEWORLD
- AGE OF EMPIRES II
- BRAVEHEART
- CLOSE COMBAT III
- SHOGUN
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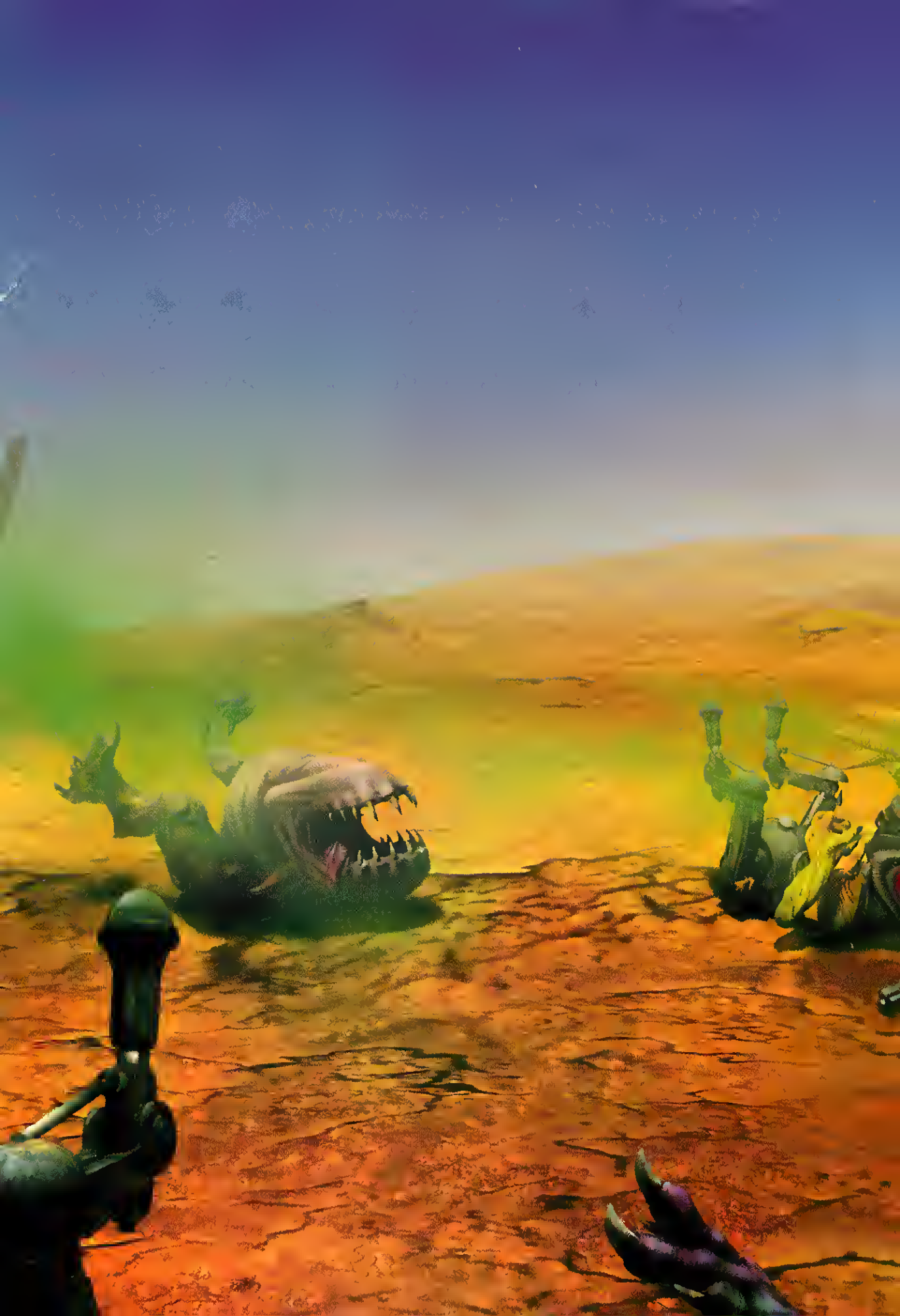

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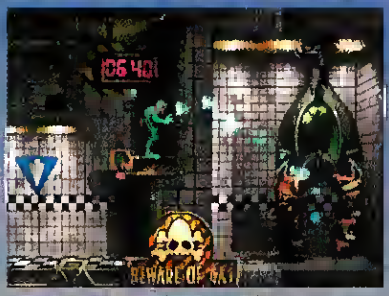

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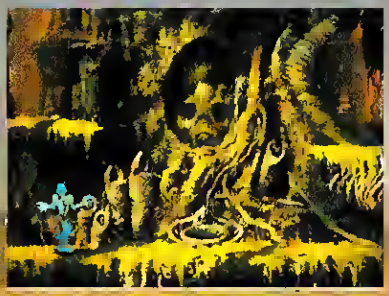

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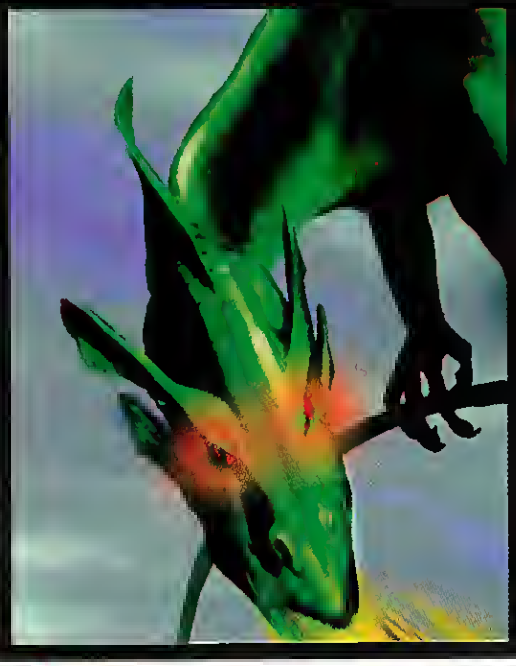

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Think you're the greatest strategist since Rommel and Napoleon? Well, you'll soon be able to test your mettle in the lastest batch of strategy games, including the highly anticipated TOTAL ANNIHILATION: KINGDOMS. We've got the scoop on 29 hot new games in this giant feature!

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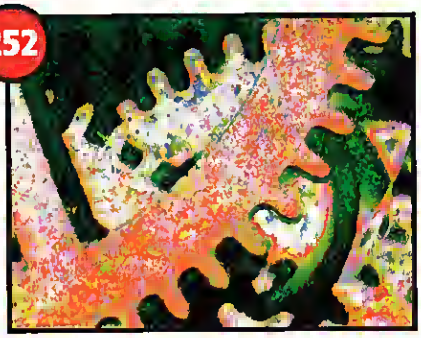
It takes much more than just thinking up an idea and programming a few lines of code to make a great game. To make matters even more complicated, each game genre imposes a different set of concerns to consider. Our editors take a close, inside look at game design in five genres. Plus, we give you legal advice about starting your own development company.

Ultimate Game Machine



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This year's crop of UGMs is cheaper and better than ever before. Our tech experts, Dave Salvator and Loyd Case, give you the lowdown on getting a great rig that will make your games shine—without breaking your wallet in the process.

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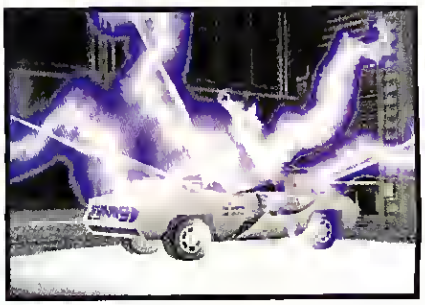

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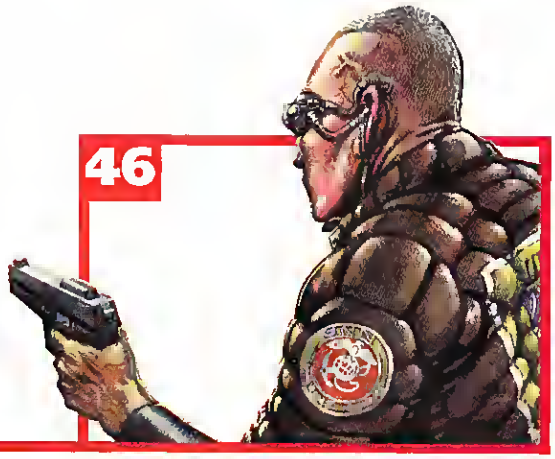

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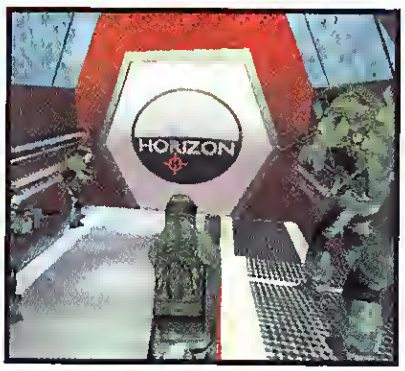

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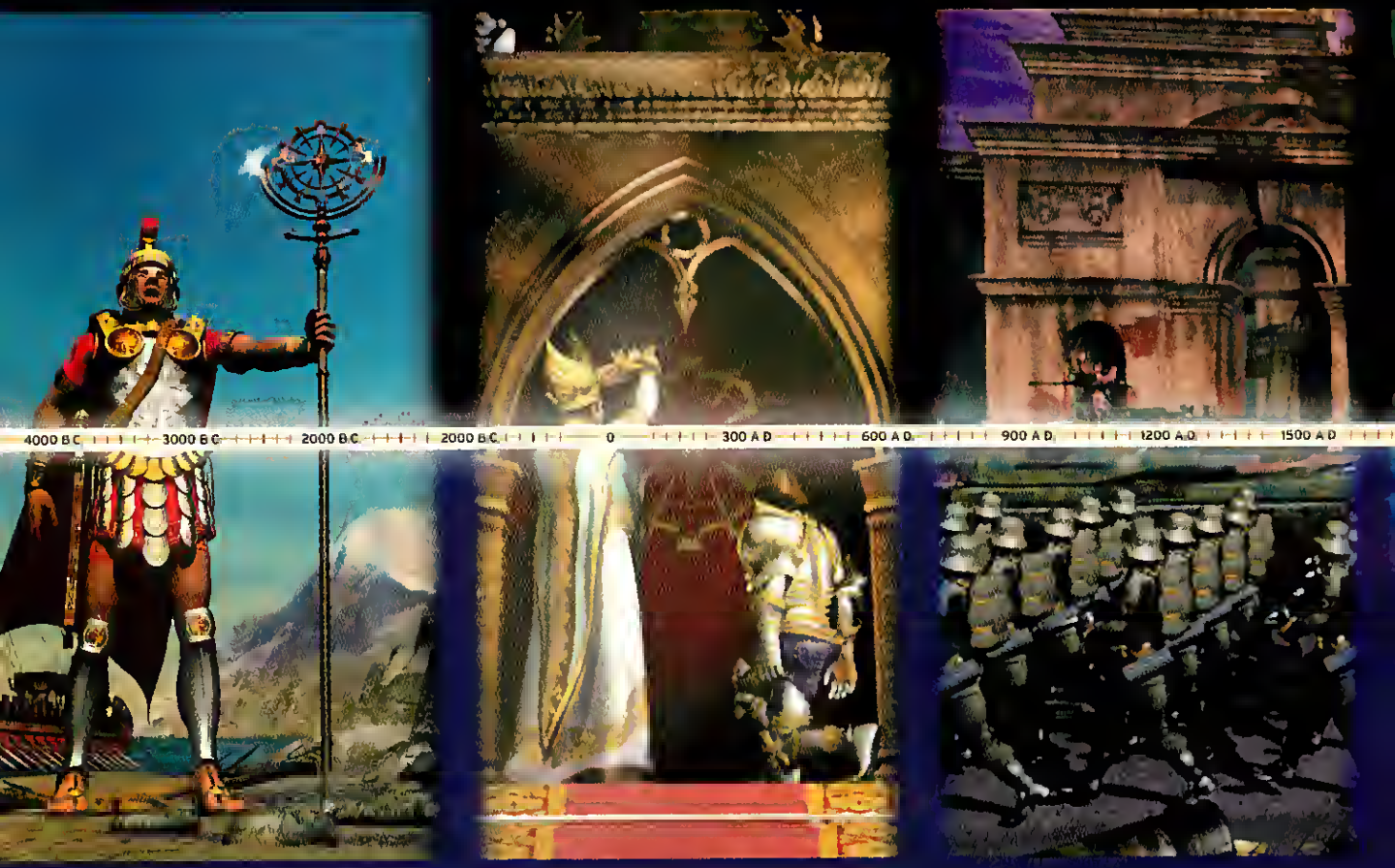

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"...performance so extraordinary it will change the next generation of games."

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—Computer Gaming World, September 1998

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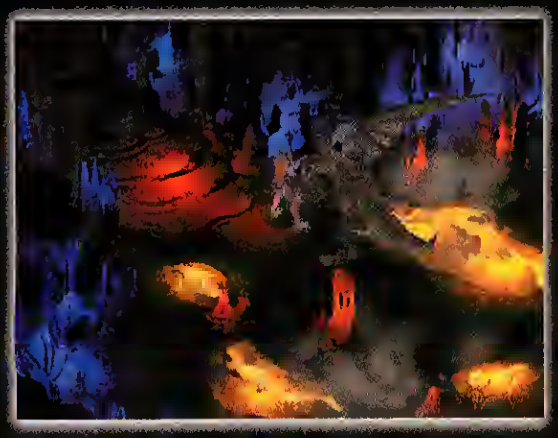

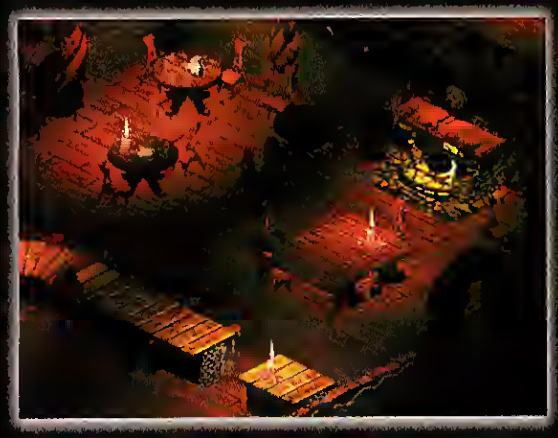

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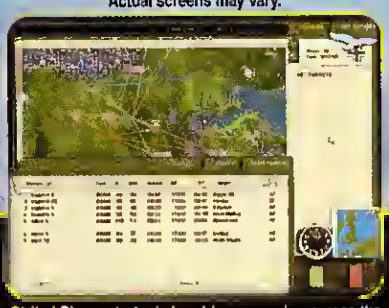

Strike! Plan a strategic bombing campaign across the English Channel.

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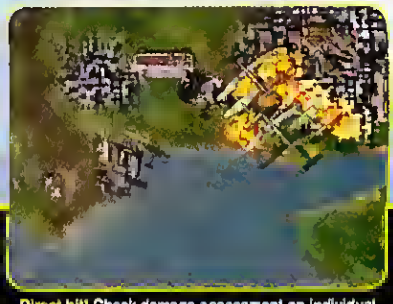

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JOHNNY WILSON

Bad Moon Rising

A Primer on PC Game Industry Myopia

The year was 1985. The Atari 2600 generation was dead, its only eulogy an incredible urban legend of *E.T.* cartridges buried in an Arizona landfill. PC game publishers were scrambling for money to put out a few meager titles, and CEOs from game publishers laughed loudly at the new 8-bit game machine from a playing card company in Japan. "Don't they know that the home game-machine market is dead?" smirked one such CEO (no longer in our business) at a Consumer Electronics Show when Nintendo unveiled its first entertainment system.

But the last laugh was on the PC game industry, as well as on the retailers that laughed at Nintendo's initial contacts. Before the 8-bit days were over, Nintendo of America sold 30 million NES systems, making it the most popular video game system ever. Nintendo won the battle for youngster's hearts with a combination punch that included: a) ease of use, b) quality control standards, c) market inventory control, d) controlled price devaluation, and e) aggressive marketing.

The PC game industry has grown (in terms of revenue earned, titles offered, and units sold) over the years, but has never had the phenomenal success experienced by Nintendo in the 8-bit market, Sega in the 16-bit market, and Sony in the 32-bit market. It seems like each time around, the merry marketing minions in the console world have to learn the old lessons anew. Lessons that the PC game market has never learned.

There have been enough lamentations in this column about the lack of a stable platform and the implications of that lack upon ease-of-use, so I'll avoid that rant.

However, the second point is somewhat related to that issue. It's difficult to have bug-free software without a standard machine to run that software on. That standard machine does not exist in the PC world, no matter what Mr. Gates' hucksters try to sell us. Yet we could and should learn a lesson from the console world's quality assurance efforts. Too often, our development teams in the PC world work past the time when a program was scheduled to be mastered, and the product testing is conducted in a frenzied rush because the producer wants to get the product "out of here!" Console makers build in a definite QA time and actually have gamers play the games in order to get an idea of play balance. How long has it been since you felt that a game had been "play balanced" prior to shipping?

The most important secret to Nintendo's (and later, Sega's, and later, Sony's) success was inventory control. There was a time when I, as a free-market advocate, sneered at the monopolistic control of the market by the console manufacturers as repressive. Yet I know this much: They would never have placed 3,700+ titles on the market (as PC game publishers did in 1998, see the article on holiday glut in last month's Read.Me). In fact, you could always tell when a console machine was reaching its last legs because the manufacturers would increase the allotment of titles allowed to each licensee.

> **Broad** is the way that leadeth unto **destruction.**" —*Gaming Messiah*

In the PC world, we claim that we can regulate ourselves, and every year we promise that we'll do *fewer* and *better* titles. And every year, the number of titles offered goes *up*. This means, inevitably, less retail shelf space as titles push and shove for attention; less marketing/advertising money per title as they attempt to get your attention; and (the spirit of a previous point) less time for shaking down and fine-tuning individual products. If I had a dollar for every time I've heard someone say, "We're going to make fewer, but higher quality products," I'd be able to upgrade my computer annually without working.

In the console world, manufacturers knew they could continually drop the retail price of the machine as long as they could produce it more cheaply. This would allow more machines to penetrate the mass market as the prices (as well as costs) dropped. In the PC game world, we keep seeing development budgets rise and retail costs *drop*. As it is, retailers are selling at near-zero profit and making their money from cooperative advertising and gimmicks. Where is the incentive for quality if the retailers make their money with or without a sale? The ex-preacher in me wants to say, "Broad is the way that leadeth unto destruction" when I see the pathetic situation at retail.

Nintendo used aggressive marketing. It understood that its brand was a powerful weapon in fighting the shelf wars and it made certain that the products it released wouldn't ding the brand. In the PC world, we simply attempt to create branding on the fly. Put out a few clunkers? Change the name of the publisher. Botch the first release? Put up a patch or promise to get it right in the sequel/gold/special edition. The Big N guys understood that lousy products meant a lousy reputation. The PC game guys tend to think their customers suffer from amnesia.

From the vantage point of a long-time (some say too-long) editor in this business, I think the PC game market is the closest to the Atari experience of 1984 that we've ever been. We're over-leveraged, understimulated, and oversated. If we don't start learning the lessons of sales curve past, 1999 is (in the ill-fated vernacular of Yogi Berra) going to look like déjà vu all over again. CGW

December Game Sales

Source: PC Data

Year	PC Game Titles	Units Sold in Dec.	Dec. Revenue	Total Annual Revenue
Dec '92	1,139	3,623,552	$117,110,351	$375,660,339
Dec '93	1,315	4,384,174	$144,544,479	$636,667,875
Dec '94	1,835	4,694,400	$190,054,285	$808,011,857
Dec '95	2,266	7,018,760	$235,217,720	$914,741,525
Dec '96	2,420	8,958,603	$279,883,330	$1,072,306,763
Dec '97	3,150	11,751,269	$313,031,040	$1,293,621,614
Dec '98 (Est.)	3,780	14,101,522	$344,334,144	$1,409,918,197

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Environmental Audio™ by CREATIVE
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-PC Gamer

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-Computer Gaming World

"Tour de Force...a symphonic blend of action, drama, adventure and story."

-Unified Gamers Online

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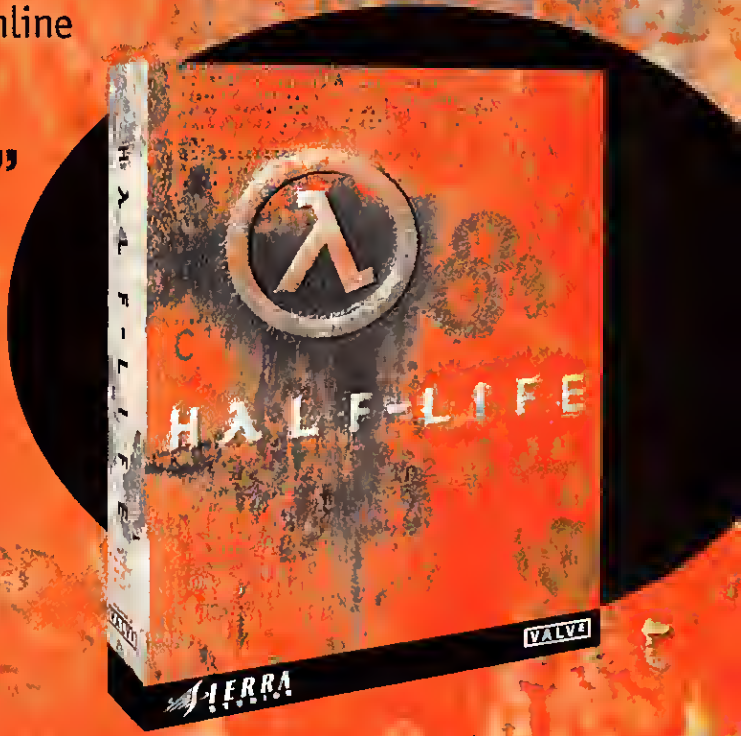

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DENNY ATKIN

What Rocks, What Bites

A Look at the Good and Bad in Gaming: 1998 Edition

This time last year I gave awards in this column celebrating the best and worst of the year's gaming trends. Since the column was focused on sims (I've since been unleashed on the entire industry by the powers that be at *CGW*), the awards were named after the superb F-15 Eagle and the anemic Brewster Buffalo. Those aren't really appropriate for more general lauds and criticisms, though, and I resisted Thierry "Scooter" Nguyen's suggestion to label trends as "Da Bomb" and "Hella Gimpy." So without further ado, let's look at 1998's utilitarianly named Gaming Ups and Gaming Downs.

Gaming Ups

One trend that hasn't gotten much attention but which deserves appreciation is the upsurge in mission editors being included with games. Special kudos to Activision for including the actual mission development tools for games like BATTLEZONE on game CDs. Even if you don't want to create your own missions, these editors mean you'll find a wealth of extended gameplay opportunities on the Net.

Similarly, applause to Microsoft and Activision/Parsoft for making the formats for their planes available. We're looking forward to a wealth of cool add-on planes for COMBAT FLIGHT SIMULATOR and FIGHTER SQUADRON.

Wonderful gaming experiences—and huge crowds—were found on Microsoft's Internet Gaming Zone, Jane's Combat.Net, and Blizzard's battle.net. We're happy to see services like Gamestorm adopt more realistic pricing models ($9.99/month is a killer deal for what it offers), but the mass-market future is with the companies who offer free play and make their money off selling boxed games or online advertising.

Kudos to AMD for the K6-2 processor with 3DNow! technology, which offers Pentium II-level performance for Socket 7 computers. I wouldn't actually choose the processor myself (I put in my decade as an Amiga user—I'm allowed to be mainstream now), but you can be sure that the great prices on Pentium II and Celeron systems are more due to the competition from the likes of AMD than to any generosity on Intel's part.

The drop in system prices is a mixed "Up." It's great that we can buy top-of-the-line gaming

PCs for under $2,000 now, and that the surge in power will make for even more impressive games. But that has to be frustrating to folks who've found their Pentium 233MMX systems to be already on the anemic side.

A surprising Up was Windows 98. Sure, the upgrade was unnecessary for most Win 95 users. But after spending a few months with the operating system, I've been very impressed with its stability and ease of (re)installation.

Finally, cheers to the developers of HALF-LIFE and RAINBOW SIX, who showed us that 3D shooters can be about more than fast reflexes and cool lighting effects

Gaming Downs

The biggest bummers of 1998 were when great games *didn't* sell in a market in which some utter crap has posted huge numbers. BATTLEZONE and F22 ADF are prime examples. BATTLEZONE—which got a five-star *CGW* review—sold about one-tenth the number of copies that DEER HUNTER sold. C'mon, there's 300,000 of you reading this. Let's all go buy copies of BATTLEZONE right now. Put down the mag and make a statement about good games. (And no, I'm not on Activision's payroll. You're thinking of Jeff Green.)

Another downer was the licensing frenzy around ancient arcade titles. BATTLEZONE might have sold better if it hadn't been saddled with the moniker of a dusty old arcade game that most of us grew bored with after about five quarters.

Jeers to Intel for doing its best to defeat overclocking by power-users in its latest Celeron and Pentium II revisions. While we're happy that unknowing consumers won't be as easily taken by dealer-remarked processors, we're sad to see savvy users prevented from getting extra game performance out of their systems. If this really is to protect consumers and not just a marketing decision, how come almost *every* user who tried to overclock a Celeron 266MHz to run at 400MHz (or even at 448MHz) was successful? The conspiratorially inclined might suspect that processors are being *under*clocked by Intel for marketing purposes.

Another downer was the 3D API confusion. The heated exchanges between the OpenGL and DirectX camps have petered out, but the fact remains that novice gamers are still faced with games supporting various combos of Direct3D, OpenGL, and 3Dfx Glide. Hey Microsoft—why not add a "plug-in" architecture to DirectX6 that would allow companies like 3Dfx to add new 3D features without waiting for a major DirectX revision? Then we could put proprietary APIs to bed once and for all.

Four million bucks spent on DOMINION: STORM OVER GIFT 3—our industry's equivalent to the $40 million poured into Ken Starr's foray into erotica writing. Just think—Ion Storm could have spent that money sprucing up their facilities (maybe they could use *another* row of $4,000 seats for their THX-equipped in-office theater).

The obligatory flame goes out to every company that released a game that needed patches to be good. How many gamers will never know that RAINBOW SIX, iF/A-18, and M1 TANK PLATOON II ended up being good gaming experiences? Finish the games, *then* ship them. This trend could kill our industry.

Finish the games, **then** ship them. This trend could **kill** our industry.

Raspberries to the developers of every DOS game released in 1998. DOS is dead, Jim. Move on.

The biggest downer of the year was Dani Bunten Berry passing on. She was a talent who ranked right up with Sid Meier. Her M.U.L.E. and SEVEN CITIES OF GOLD helped keep me sane in college. She practically invented multiplayer gaming. And she was a funny, gracious, and definitely interesting individual. The industry will miss her, and the loss of her talents is one that all gamers share. CGW

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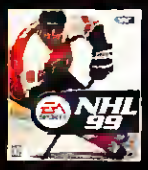
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TERRY COLEMAN

Played a Good Book Lately?

BLACKSTONE CHRONICLES Is a PC Page-turner

There are few things in life more satisfying than curling up next to a fireplace with a cat in your lap, a bowl of fresh Cheez-Its at your side, and a really good book. If you spend as much time on planes and trains as I do, you find other ways to enjoy your favorite authors. Listening to William Gibson read *Neuromancer* on tape once helped me through a particularly turbulent East Coast flight And the late Roger Zelazny's recital of *A Night in the Lonesome October* is as close to the consummate Halloween entertainment as you're likely to find this side of Bela Lugosi's ghost.

But one way I've rarely been able to enjoy my favorite books is when they've been translated into games. Part of this is a lack of vision on the part of game producers: The same sort of get-the-license-first thinking that gives us bad *Batman* movies also gives us bad *Spider-Man* games. Because the people in charge think the audience for these products must be the juvenile market, the products themselves suffer from being dumbed down.

One would think, however, that mysteries and thrillers wouldn't have this problem since the audiences for these stories range from young adult and upward. However, the only game of significance based on a literary work in the past few years was I HAVE NO MOUTH AND I MUST SCREAM.

While that game garnered critical acclaim—it was *CGW's* adventure game of the year in 1996—I HAVE NO MOUTH bombed at the box office.

Legend in the Making

Help is finally on the way. Legend Entertainment has teamed with horror novelist John Saul to do a game based on the author's best-selling *The Blackstone Chronicles*, which should be available about the time you read this. One of the reasons that THE BLACKSTONE CHRONICLES fares better than attempts by other high-powered authors (such as Michael Crichton's somnambulistic AMAZON) is that the game was developed essentially as an additional novel in the series—much like Raymond Feist's BETRAYAL AT KRONDOR (Dynamix, 1993).

needless abstractions of games like THE 11TH HOUR.

As you journey through your father's asylum—now converted to a museum—you're confronted by the horrors perpetrated by your father in the name of psychological research. The more facts you discover, the more you must deal with his legacy as well as your own unsavory past. Moreover, you can never be really sure exactly how much is real and how much is your imagination: Can this really be your father's ghost speaking to you? Is your son actually in danger? Did you somehow help put him there?

Aside from the whodunit aspects of the game, BLACKSTONE is particularly powerful in its depiction of psychological treatments. For example, it's one thing to read about some random individual undergoing electroshock therapy.

> BLACKSTONE's puzzles derive **naturally** from the plot line, a refreshing **change** from games like THE 11TH HOUR.

WELCOME HOME, SANITARIUM BLACKSTONE CHRONICLES is every bit as beautiful as MYST, and it's worlds beyond it in gameplay.

The RIVEN crowd will swoon over BLACKSTONE's sumptuous graphics, courtesy of Presto Studios (THE JOURNEYMAN PROJECT series), and game-starved fans of traditional adventures will enjoy the tightly woven and atmospheric story, which at times struck me as even more enjoyable than the books. What impresses me most is that the puzzles—the heart of any adventure game—derive naturally from the plot line, a refreshing change from the It's quite another to have your character strapped into a chair during the game, trying to find a way out as the clock ticks down to the initiation of flowing current.

It's the pacing of the game—sometimes thoughtful then switching to stark immediacy—that makes BLACKSTONE work as a PC thriller. As adventure games try to reinvent themselves in the post-MYST era, this is one game that can really appeal to both mainstream and core audiences. My hat's off to Legend and to Mindscape for publishing this one. Maybe one of these days we'll be able to argue whether A TALE OF TWO CITIES for Windows 2001 is better than Super-DVD FAHRENHEIT 451. We can only hope. CGW

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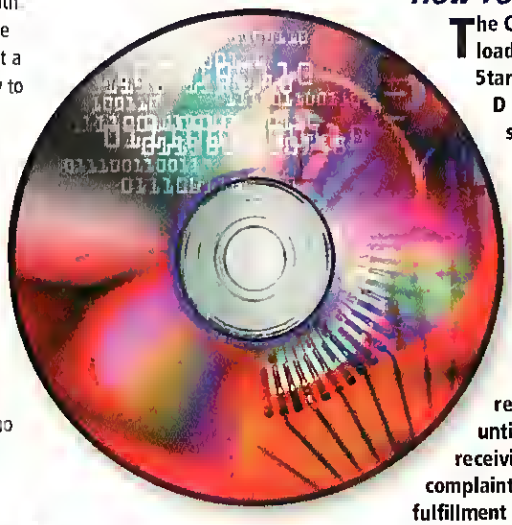
Climb In, Take Off and Blow Stuff Up on the CD-ROM

Fighter jocks are in for a treat this month. We bring you an exclusive demo of the CG-Choice winning TOTAL AIR WAR. Get a taste of a real dynamic campaign as you try to secure the Sudanese border in less than 12 hours. If your tastes run more toward classical planes, then fire up the JANE'S WORLD WAR II FIGHTERS demo. You'll get alternating missions as either American pilots attacking a town, or a *Luftwaffe* ace trying to intercept said Americans. WWII FIGHTERS will be the game to show your friends how powerful your new computer is, thanks to the beautiful 3D engine. If you're more of a driver than a flyer, take a spin in Ubi Soft's MONACO GRAND PRIX RACING SIMULATION; you get to race two tracks in this demo from the people who brought you F1 RACING SIMULATION.

Fans of Sid Meier's classic RAILROAD TYCOON will want to see if Phil Steinmeyer (designer of the first two HEROES OF MIGHT & MAGIC games) can recreate that old Sid magic with the demo of RAILROAD TYCOON II. You can either try to become a multimillionaire from the period between 1870 to 1905, or you could try to make a railroad that connects Cape Town and Cairo. Once you've mastered those two scenarios, you can fiddle with the map editor and lay out your own scenarios; you can't save in the demo, but at least you can brush up on the skills necessary for map-making.

Action gamers, be sure to load up VIGILANCE, the GOLDEN EYE-style shooter where you play one of three agents sent out to assassinate a base commander. Once you've exhausted the single-player in the demo, you can hook up for a multiplayer deathmatch via H.E.A.T. Finally, if you own a copy of WARLORDS III: DARK LORDS RISING (a CG-Choice winner from last issue), you can install the three new Red Orb-created scenarios.



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Monaco Grand Prix Racing	W95	monaco	mgprs_d6.exe
Railroad Tycoon II	W95	RR tycoon	setupex.exe
TEN	W95	TEN	setup.exe
Total Air War	W95	TAWdemo	setup.exe
Vigilance	W95	vigilance	setup.exe
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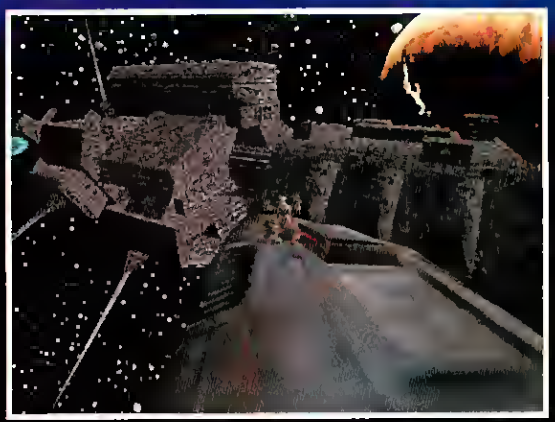

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Designer Diaries

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Hot Previews

For the latest previews, turn your browser to *GameSpot*, where we've got extended previews of the industry's hottest upcoming games. We also keep our eye out for those sleeper games that sneak under the radar or just won't fit in the pages of *Computer Gaming World*. Here is a sample of some of the previews you can expect at *GameSpot*.

Heroes of Might and Magic III

Now that you've no doubt read *CGW*'s early preview of HEROES OF MIGHT AND MAGIC III (in the December "Holiday Hot 100" issue), go to *GameSpot*, where you'll find a longer preview with even more detailed information on the game's campaigns, each of the 16 new hero types, the 8 castle types, and descriptions of the more than five dozen new monsters and spells.

Sid Meier's Alpha Centauri

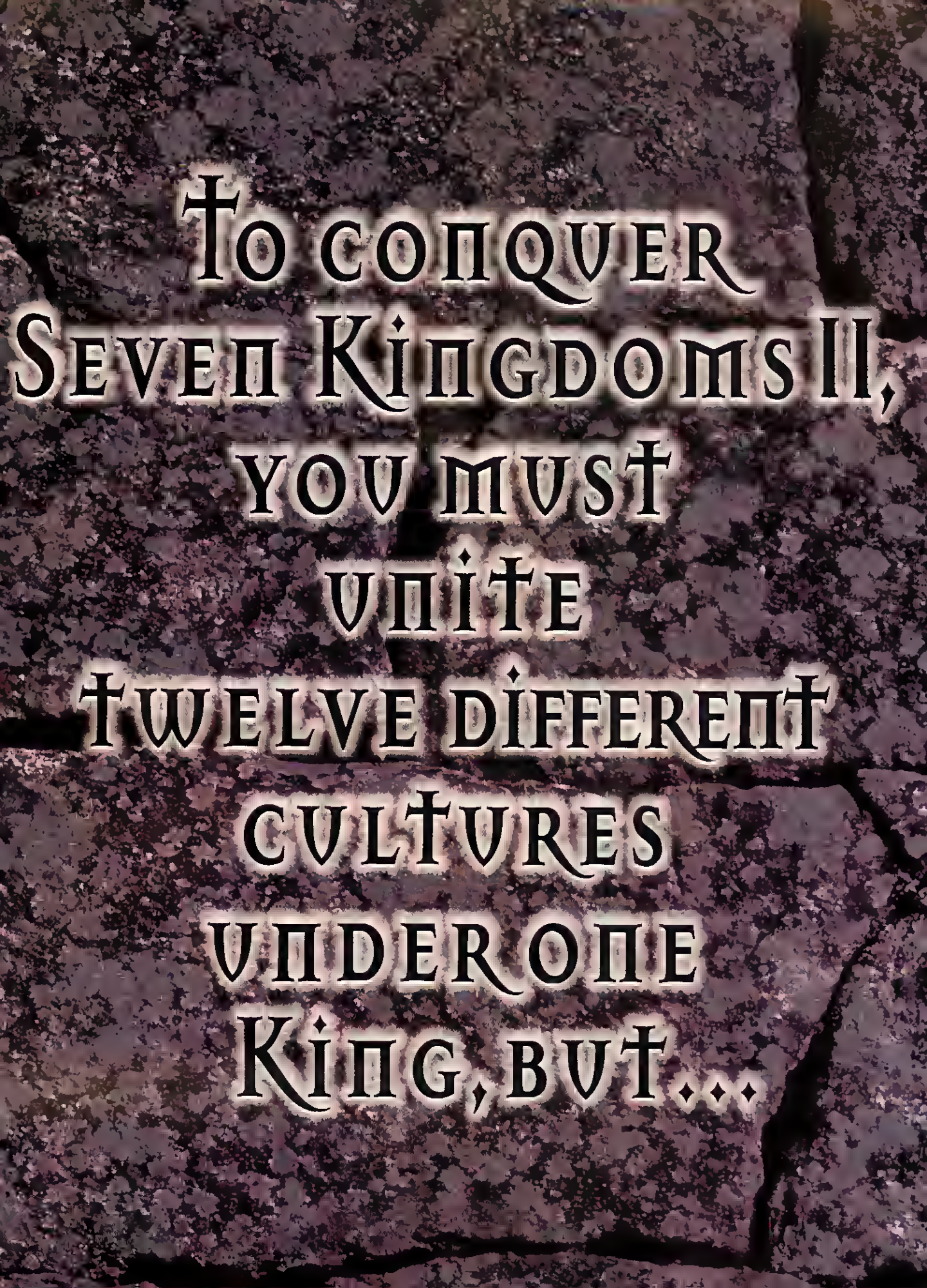
GameSpot has an online exclusive with Firaxis Games to be the first one to play the full-featured beta of SID MEIER'S ALPHA CENTAURI. We go into detail about the gameplay, technology, units, and diplomacy, and even score an interview with the game's designer, Brian Reynolds.

Black and White

Peter Molyneux's newest game is BLACK AND WHITE, and *GameSpot* executive editor Ron Dulin has the full scoop. We bring you a multipage preview and never-before-seen screenshots. As one of the first games in recent years to benefit from Molyneux's full attention, this will be a game to watch.

GameSpot Columns

GameSpot is just crammed with gaming goodness, not the least of which are our very own columns. Our editors sound off on every conceivable subject, including the state of game music, ULTIMA IX's growing pains, how *Saving Private Ryan* changed one editor's wargaming experience, and whether genre classifications are really useful anymore. CGW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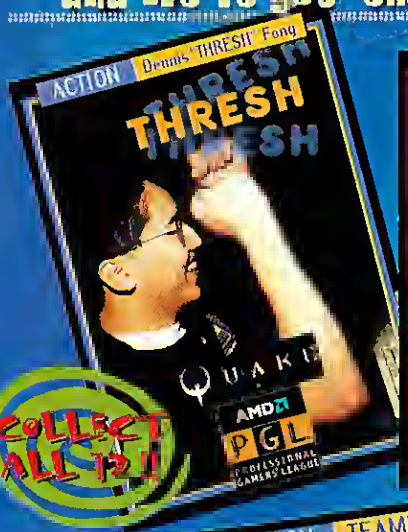

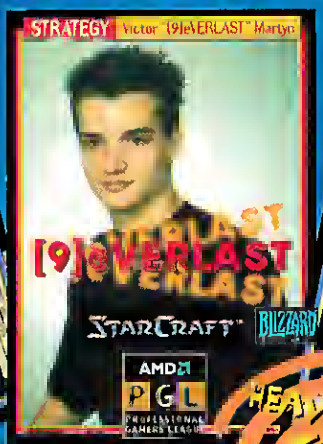

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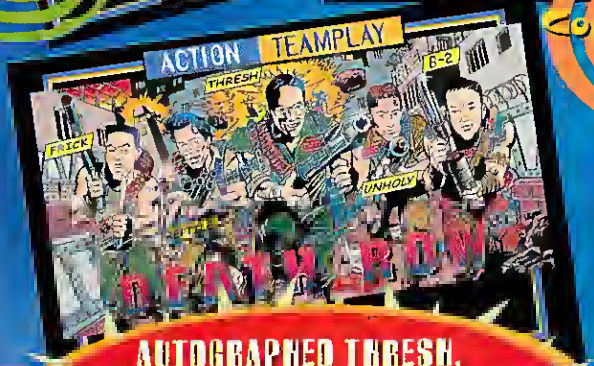

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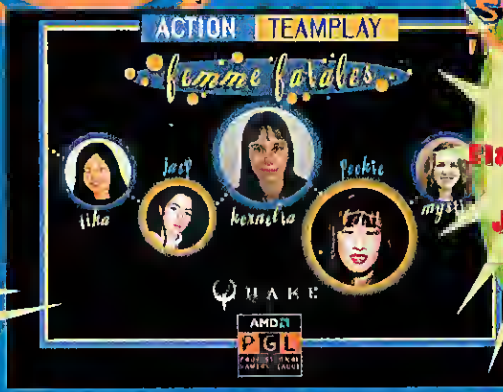

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LETTERS

Sadistic Pleasures

Can you stop ads that show games that are "coming" but we have to wait for a year for them? Or do you guys print them to satisfy some sadistic pleasure? It's inhuman to have to wait for so long for a game you like! Do the same for those stupid ads that say, "What if you found out that..." or "Get ready for an adventure that will..." and really unoriginal, lame, movie poster-like advertisements.

Rick T
Singapore
Via the Internet

We enjoy cruelty as much as the next crowd of stunted adolescents, but there are better ways to do it than with ads. Besides, our deal with the suits is we don't tell them who can't advertise, and they don't tell us what we can't cover. Works out pretty well. If you feel tormented by it, though, so much the better.

Like Fine Whiners

You guys get better and better. I just read through the December issue's Hot Holiday 100, which took me forever because I kept going to the sites to check them out fully. Don't get me wrong—the article was superb. It's just that you guys wrote it so well that it left me hungry for more. I've just gotta pick up, oh, say, half the titles now! Keep up the fantastic work.

—E Helton
Via the Internet

Thanks. Working on that issue was like birthing a sperm whale.

The 101st Speaks!

A letter writer in your December issue asked why Empire dropped the screaming eagle from its ads for the 101st AIRBORNE IN NORMANDY. My father hosted the 101st Airborne Division Reunion in Omaha, Nebraska, this year. I attended the reunion where I met did Tim Brooks, ISI, and Carrie Cowan, Empire. We discussed the legalities of using the 101st patch with representatives of the 101st Airborne Division Association. It was pointed out that the patch is owned by the Department of Defense. It would have taken forever to receive approval/disapproval from the government on use of the patch. Nobody that I spoke with there had a problem with the use of the patch. My father and I both love the game and in no way believe this does any injustice to the 101st or its outstanding military history.

Tim brought a demo to the reunion that was well received. I spoke with some of the Normandy Vets who were amazed at the detail and accuracy of the weapons, terrain, etc.

—Terry R. Zahn, Jr.
Airborne/Air Assault
Via the Internet

Thanks for clearing up the mystery, Terry. Of course, there are always dissenting opinions....

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When I want him to come to dinner, I just yell "SAM launch!"

The 101st Sucks!

I recently purchased a copy of 101st Airborne in Normandy from Empire Interactive without waiting for a proper review from your magazine, and I paid the price. Simply put, I expect better game play from a shareware program! The designers must not have bothered to check out classic turn-based tactical games like the ones in the X-COM series, Jagged Alliance or even Wages of War. They have to go and re-invent the wheel and did a lousy job at that!

The equipment and weapon allocation was horrible, the interface was not well thought out, and that's even before I got into the plane and started the game! From the sound effects of soldiers walking or running, I felt like my whole unit was comprised of one-legged pirates. Enemy AI is one of the dumbest I have encountered and overall, there are no infantry tactics to speak of, either from the computer or the way I could deploy my men. This is ridiculous.

Just once, I thought I could get away without waiting for the magazine review and take a chance on the latest turn-based wargame, since they are so few and far between. I was wrong.

Reynold Wong
Via the Internet

Our review of the title will appear next month. CGW

DEP'T. OF CORRECTIONS

We regret to inform of a couple of, um, "factual irregularities" in the December issue. In the 3D card roundup, we listed Guillemot's Maxigamer Phoenix as being an AGP part when, in fact, it was the PCI version, which still performed just fine.

The second glitch was not so much an error, but an undiscovered work-around for getting Logitech's WingMan Force joystick to work with rudders. We've learned from our readers it will work with rudders, but you have to unload the Logitech control applet. Of course, you're then limited to the default button assignments. But you can probably set up the sim to recognize them.

Other than that, we hardly screwed up anything last month. That is, if you don't consider that reference to Jimmy Stuart as a young Scottish Grand Prix driver (pg 184). And we thought Jackie Stewart delivered such a wonderful performance in *It's a Wonderful Life*....

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FIRST LOOK!

Space Case

SYSTEM SHOCK 2 Pushes The Boundaries Again

Now that we have computers fast enough to play the 1994 classic, SYSTEM SHOCK, some of the original developers are creating a sequel that will throw down the gauntlet again. For those who didn't play it, the action/adventure hybrid brought loads of innovations, including a true 3D engine, sophisticated physics, and the ability to lean, crouch, climb walls, crawl through shafts, and look up and down. Looking Glass Studios combined these features with an elaborately detailed space station populated with mutants, cyborgs and a malevolent central computer. Our December, 1994, review awarded the game four and one-half stars, calling it "one hell of an immersive experience in a fully realized 3D environment."

The sequel will retain much of the flavor of its ground-breaking predecessor, says the game's lead designer Ken Levine. You'll explore a cyberpunk-style space ship with an inventory, weapons and special skills including psionics and data hacking. You'll be able to lean and pull yourself up onto ledges, and there will be more to interact with, he says. The game is broken into levels by ship decks, but the world is persistent, so you can leave an ammo clip on one deck, and come back later to retrieve it.

The queen of malevolent mainframes, SHODAN, is back, but in a very different role (with even more "air" time than before). It's your job to kick the crap out of her robotic minions and shut her down. Expect plenty of resistance from motion-captured mutants and cyborgs

One of the main criticisms about SYSTEM SHOCK was that it lacked a sense of character development The designers are working to improve this with role-playing-style character depth. It begins with an innovative in-engine character-generation system. You visit a recruiting office on Earth to choose one of three basic character types: Navy, Marines, or Secret Ops. After choosing your character type, you'll head to the starbase of that service. You develop your character there by choosing from missions during your period in the service (similar to the old paper RPG *Traveller*).

The game is being developed in a partnership between Looking Glass Studios and Irrational Games. They're using a modified version of Looking Glass' Dark Engine, which is being used for THIEF: THE DARK PROJECT. The engine supports 16 bit color; dynamic, colored lighting; a particle effects system; and objects with multiple translucency. Irrational is also building multiplayer support into the game. They haven't released hardware requirements yet, but we do know the game will require a 3D card.

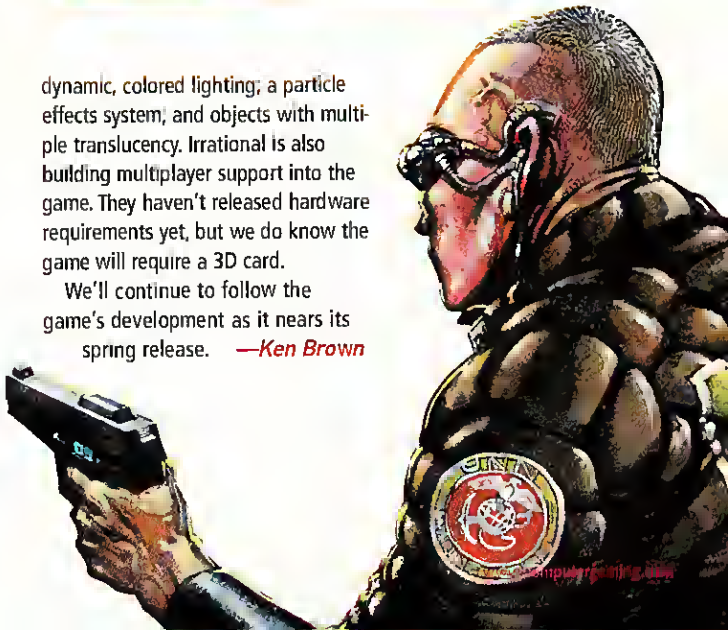
We'll continue to follow the game's development as it nears its spring release. —*Ken Brown*

The lounge on the MedSci deck has seen better days. Note the X-COM–like inventory on the bottom and the stats screen to the right.

You'll find plenty of corpses on the ship. Note the Psionics multi-function display to the right.

A glimpse at the Engineering deck. This is the full-screen mode, accessible with a click of the mouse.

CONCEPT ART BY GARETH HINDS



Warthog on the Loose

Our spies recently infiltrated the Austin, Texas-based Skunkworks of Jane's Combat Simulations. We were expecting to find the team diligently working on LONGBOW III—the version rumored to be so detailed it would not only feature trees, but anacondas hanging from their branches. Rather than hearing rotor blades, the staccato "brraaack" of an Avenger cannon rattled the room, as an A-10 spewed depleted-uranium shells into the carcass of a Soviet-built tank. Instead of seeing a Longbow, we found a Warthog.

JANE'S A-10 will let you fly the ugly but deadly ground attack jet flying a variety of missions, including strike, close air support, search and destroy, and escort tasks. Perhaps most interesting is the inclusion of a Forward Air Controller mission which will let you fly your Warthog into the war zone, identify targets, call in air strikes, and watch the deadly results.

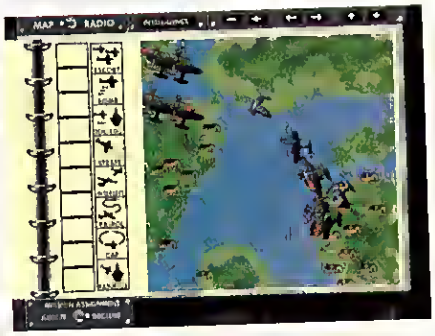
We uncovered a few more details during our recon, such as force-feedback support that will let you *feel* the A-10's Avenger cannon, and support for cooperative multiplayer missions over Jane's Combatnet. We even overheard optimistic murmers of a February ship date.

We're assembling our team now for a deep cover recon mission, and expect to have full details on the sim in next month's issue.

—Denny Atkin

Re-Confirmed Kill

CONFIRMED KILL, the World War II massively multiplayer flight sim which graced *CGW*'s cover way over three years ago, is finally nearing takeoff. I recently put in some stick time in the beta version at Eidos' offices in San Francisco, and I'm pleased to report that this is coming together as one of the most innovative online sim designs in recent years. And best of all, a variety of adjustable mission settings make the design accessible to new pilots (a necessity for a successful online sim) while still maintaining the depth and accuracy demanded by experienced hard-core sim fans.



Rather than the persistent online contests found in most other online sims, CONFIRMED KILL will let gamers recreate historical missions and campaigns, such as island-hopping in the Pacific, the Battle of Midway, and the potential German invasion of the UK. Human pilots will team with AI fliers to create realistic force balances. Most intriguing, though, is an adaptation of the FLYING NIGHTMARES 2 Commandant map which will let squadron commanders view recon of enemy territories and direct pilots to take out specific targets. An honor-point system will encourage realistic and sportsmanlike gameplay, and as pilots gain points they'll be eligible for promotions and medals.

CONFIRMED KILL is scheduled to be playable as a free open beta on TEN at **www.ten.net** by the time you read this.

—Denny Atkin

Ambitious Anachronox

Tom Hall's Homage to SquareSoft Is Progressing Nicely

WRETCHED HIVE OF SCUM AND VILLAINY You'll get hired in this seedy bar in ANACHRONOX for what appears to be a simple detective assignment.

Fans of console-RPGs such as FINAL FANTASY VII should keep an eye out for ANACHRONOX when it hits the shelves in late 1999. We got to see ION Storm's premier RPG, and it's looking pretty good.

While the game utilizes the QUAKE II engine, it's almost a complete overhaul. For one thing, the art is a lot more colorful, and the game is played from the third-person perspective. The most profound changes are in the role-playing elements added to the engine, including dialogue and a new combat system. Veterans of FINAL FANTASY VII and CHRONO TRIGGER (the two SquareSoft games that influenced ANACHRONOX) will be at home with the combat system. The game's plot spans several planets and dimensions, and you'll be controlling three out of seven available party characters at any given time.

The other interesting addition is how editable the ANACHRONOX engine will be. Like id, Tom Hall plans to release the materials that let you edit items such as camera shots (all cutscenes use the game engine), dialogue, and weapons and items. In effect, Hall is hoping that ANACHRONOX is treated both as a game and as a set of RPG tools, where people can create their own RPG if they have the time to commit to it. We'll keep you posted as the game progresses. *—Thierry Nguyen*

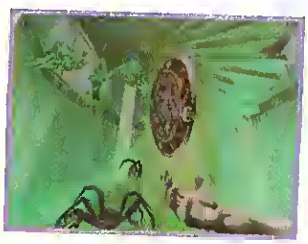
Daikatana Shoots for Spring

The bad news is that DAIKATANA continues to be delayed. The good news is that all that time actually *is* going toward making the game better. And from what we've seen, it seems to be paying off.

The shift to the QUAKE II engine is now complete and the results are simply beautiful. Huge, stunningly lit levels should be the rule in this title, particularly in the menacing medieval castle spotlighted during the Eidos Press Day. Currently, the expanded design team is going through every level on a room by room basis, adding unique features, interesting objects, and animations. According to John Romero, "The goal is to have something cool in every room." Given the enormous nature of the levels, it's a daunting, but admirable, task.

Ion Storm's work on the AI was ably demonstrated in a demo that had enemies using cover and teamwork to slay every gaming editor that tried to beat it. We hope that the monsters in the finished product will be just as nasty.

Pretty much every feature included in the ambitious original design document exists in the game, as well as new features including auto-aiming crosshairs. The crosshairs won't be necessary all the time, especially if you're using some of the more powerful, magical weapons such as the staff that summons a gigantic demon that immediately slays the nearest being. Summon this charmer without an enemy nearby and kiss your time-travelling butt goodbye.



With Ion Storm polishing up the single player game and heading full bore into the multiplayer, DAIKATANA should be out by late Spring. *—Robert Coffey*

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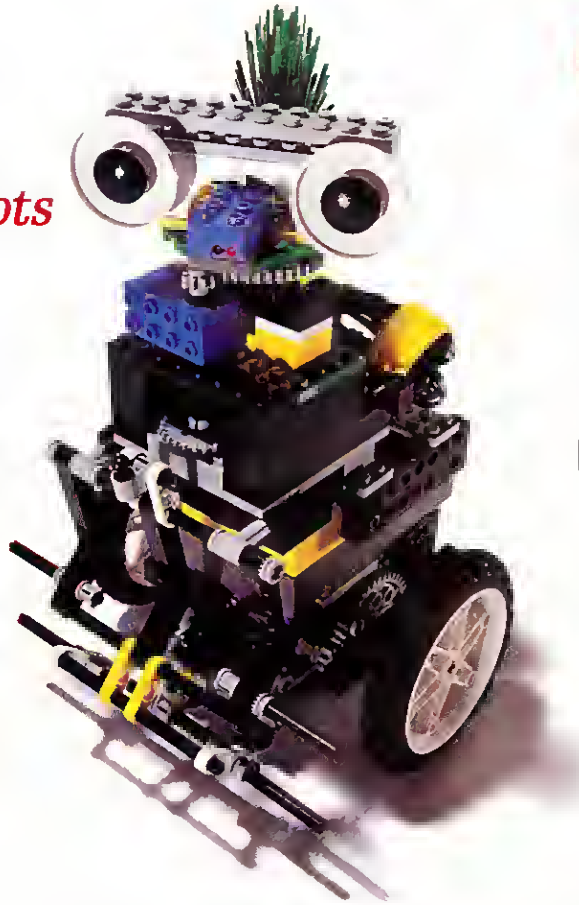

Lego MindStorms has re-defined the smart toy category. With an ingenious convergence of Lego accessories and the home computer, MindStorms allows a user to create autonomous, computer-controlled robotic devices ranging from environmental explorers to battle tanks. These aren't just motorized Lego creations—these are robots that actually react to their environment with the aid of touch, light, and temperature sensors. They can seek the safety of a dark corner, negotiate small obstacles; or act like simple pets that just roam about freely.

You program the robot in two easy steps. The iconic, drag 'n drop interface is easy to use and looks more like puzzle-building than programming. When you're through, you beam the program to the robot's "brain" via an infrared transmitter attached to your serial port. The robot is now ready to be unleashed into the world.

In a couple of hours a computer savvy, mechanically inclined user can begin building simple robots. To build something more advanced like a Mars Pathfinder could take several hours or days.

While not particularly complicated, the sheer volume of the kit can be daunting. There are more than 700 Lego pieces in the kit, including the RCX computer brain, two touch sensors; one light sensor (rotation and temperature sensors are available separately); two motors; a software package including a setup program and tutorials; and complete documentation. In addition, you can augment the kit with nearly any Lego pieces, including the Lego Technic series and three special MindStorms Expansion Sets.

Programming your creations is simple with this drag-n-drop interface. You then beam the program to the robot via infrared, and he's ready to roll.

The system does have a few drawbacks, though. First, the MindStorms software runs at 640x480 which makes it hard for a user to work with a large RCX program in the programming environment. Additionally, the interface is in 256 colors, so the user has to switch the computer's graphics mode down to 8bit. The RCX transmitter uses a serial port so the user may have to unplug a modem or other accessory. Also, some users have reported that they occasionally have to re-download the firmware to the RCX. The iconic programming system does not seem to use all of the capabilities of the RCX hardware as some advanced programmers may wish to use the "Not Quite C" scripting language to access programming variables. Finally, having five separate memory areas in which to store RCX programs in a user's robot may not be as effective as having one large memory area.

Anyone who grew up with Lego and knows how to turn on a computer would have a great time building and programming robots with MindStorms. It's the rare computer toy that is non-violent, appeals to kids and adults alike, and is truly fun to play with. *—Mike Weksler*

Former CGW Technical Editor Mike Weksler is the associate producer of Eidos' CONFIRMED KILL.

Requires a Pentium 90 or better using Windows 95/98
LEGO MindStorms $200 800-243-4870 www.legomindstorms.com

ROBOT BY GERALD AZENARO. PHOTO BY MICHAEL FALCONER

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John Saul's Blackstone Chronicles™

LEGEND

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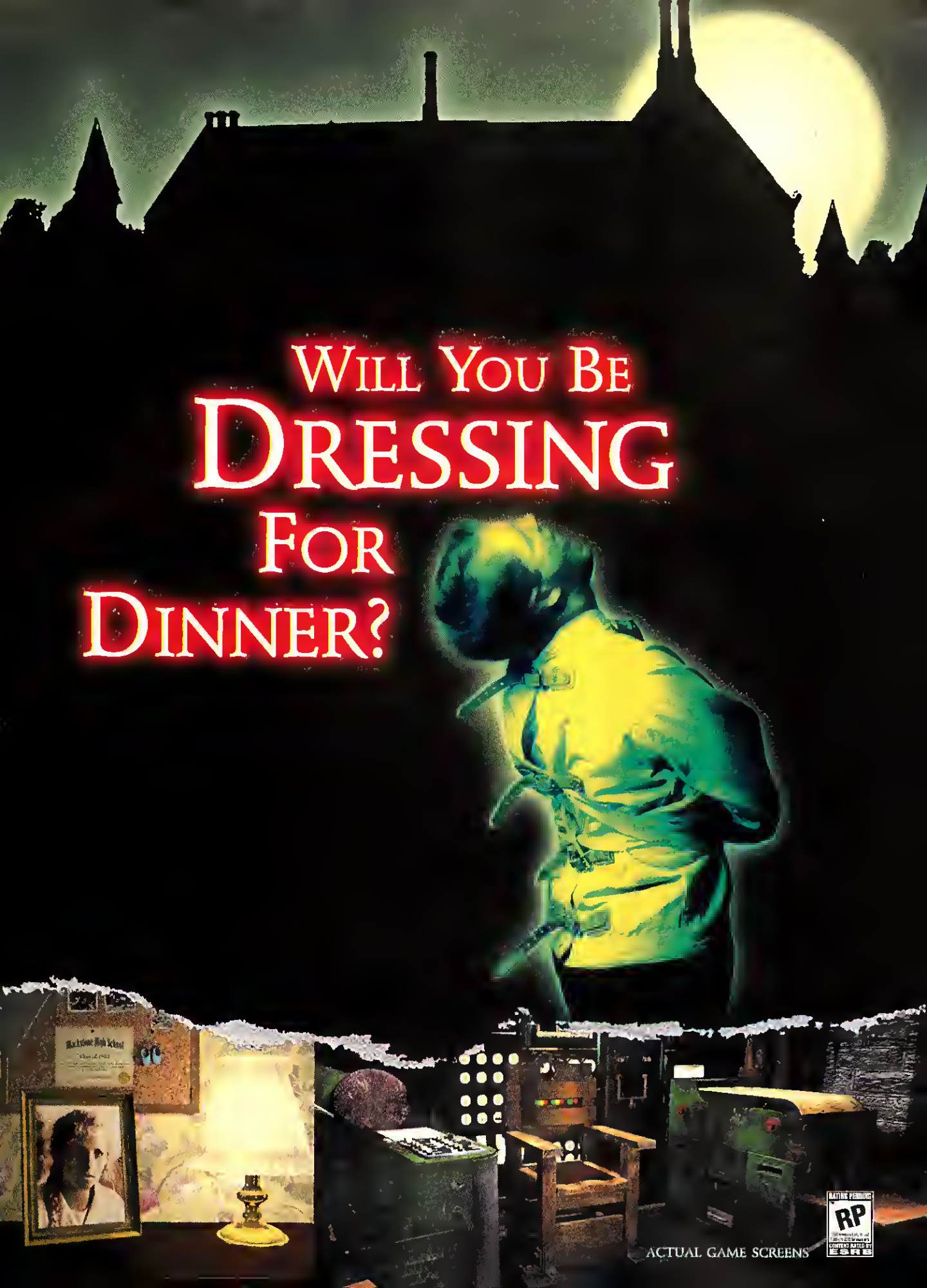
Will You Be Dressing For Dinner?



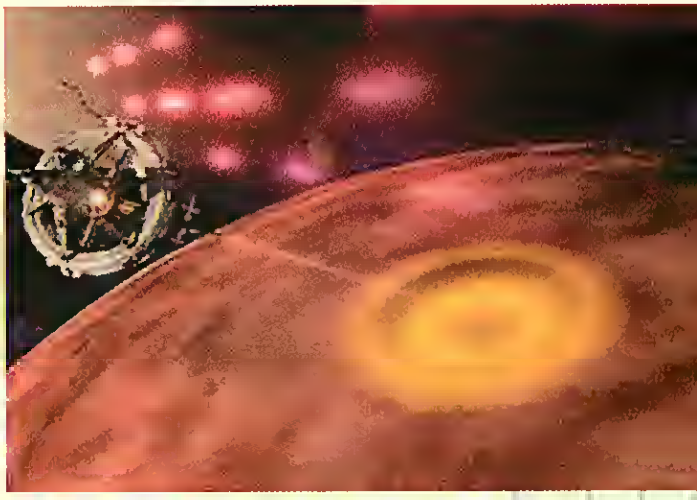
ACTUAL GAME SCREENS

RATING PENDING
RP
CONTENT RATED BY ESRB

Interplay Cuts Back

Interplay laid off about 10 percent of its worldwide staff—approximately 50 people—in late October. The cuts followed Interplay's dismal financial report for the quarter ending September 30. The company reported a net loss for the quarter of $15.1 million (compared with a net loss of $5.5 million for the same period in 1997). The company attributed the loss to "shipping delays for FALLOUT 2 and lower than expected sales for WILD 9." Anonymous sources close to Interplay say that blaming FALLOUT 2 for the company's woes is like "Blaming the *Titanic* disaster on the last life preserver being late to hit the water."

The worst casualty in the cuts was Tribal Dreams, which was eliminated. The in-house development team responsible for OF LIGHT AND DARKNESS had been working on STAR TREK: SECRET OF VULCAN FURY, a title the gaming press had greeted enthusiastically. Meanwhile, EARTHWORM JIM 3D and MESSIAH were both pushed back to the middle of 1999. STAR TREK: KLINGON ACADEMY, STAR TREK: NEW WORLDS, and STAR TREK: STARFLEET COMMAND all remain unaffected by the cutbacks, according to Interplay.



Interplay's closure of Tribal Dreams spells the end of SECRET OF VULCAN FURY.

See GameSpot News at www.gamespot.com for the latest on the game biz.

Seeing Red

Papyrus Exports NASCAR Jobs to Russia

Papyrus Design Group laid off 15 members of its art team recently and outsourced their work to an art house in St. Petersburg, Russia. Papyrus is best known for its high-end NASCAR, INDYCAR and GRAND PRIX LEGENDS racing sims. Director of art production Vlad Starzhevsky, who has been at Papyrus for more than five years, said that about 20 artists in St. Petersburg produce substantial amounts of art for his company. "These guys completed 11 tracks for NASCAR 99, some of which are better than the ones done by our U.S. artists," Starzhevsky said. Only four artists remain under Starzhevsky in the U.S. office. Papyrus general manager Igor Razboff said that the Russian artists know little of U.S. auto racing. "But all that the artists need to do is re-create buildings and other structures from pictures," he said in an interview with GameSpot. Razboff formerly owned the art house (Animation Magic) in St. Petersburg where Papyrus is now outsourcing its art. He has been working with Papyrus since March of 1998. The Watertown, Mass.-based developer is down to a trim 60 employees.

Sir-Tech Shutters Publishing Arm

Canadian Group Continues Development On Two Games

Pioneer role-playing publisher Sir-Tech Software closed the doors of its U.S. publishing operation on October 14, 1998. The New York-based company was largely a victim of the changing marketplace for PC games. Since its foundation in 1981 with the publication of such games as GALACTIC ATTACK and WIZARDRY: PROVING GROUNDS OF THE MAD OVERLORD, Sir-Tech successfully marketed a handful of releases per year and was one of the first companies in the PC marketplace to establish a successful licensed franchise in Japan (including WIZARDRY manga and a WIZARDRY TV series). The company also published German-based Attic Software's DAS SCHWARZE AUGE series of computer RPGs as REALMS OF ARKANIA in the U.S.

In recent days, Sir-Tech weathered huge losses from numerous sources: distributor bankruptcies; the failure of the Telstar line of UK products in the U.S.; and several hundred thousand dollar losses on X-FIRE, an Internet-capable game that never reached a viable performance level. Now, the company's Canadian development division will continue as Sir-Tech Canada and is expected to finish WIZARDRY and JAGGED ALLIANCE 2, the latest products in Sir-Tech's most successful two franchises.

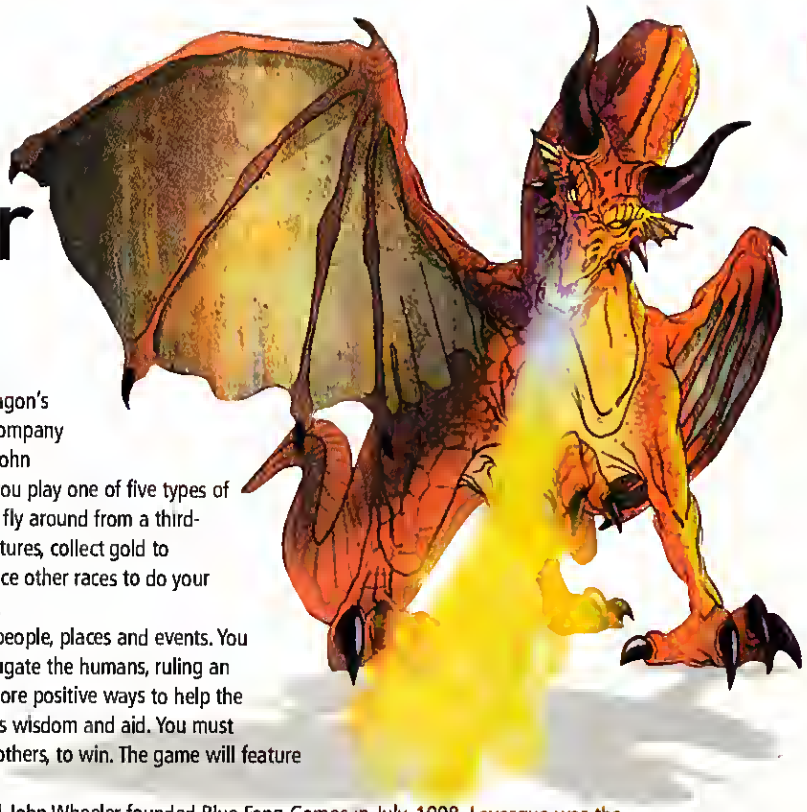
Norm Sirotek, one of Sir-Tech's co-founders, commented on the bittersweet nature of the company's history by quoting his father, Fred Sirotek's favorite statement about the publishing business: "[The software market] is akin to standing with one foot on a banana peel and the other foot in a grave, while drinking champagne and eating caviar." Thus passes the end of a pioneering era.

—Johnny Wilson

EXCLUSIVE!

Dragon Fighter

Dragons Reign in Blue Fang's Strategy/RPG Hybrid



DRAKAN might be the latest game to put you in the dragon's seat, but it won't be the last. Blue Fang Games, the company headed by former Papyrus pros Adam Levesque and John Wheeler, is developing a strategy/role-playing game that lets you play one of five types of dragons. DRAGON HOARD will feature a 3D world that lets you fly around from a third-person perspective. You'll fight other dragons and fantasy creatures, collect gold to increase your hoard, gain prestige and knowledge, and influence other races to do your bidding—all to become the most powerful dragon in the land.

In the game's universe, dragons wield great influence over people, places and events. You decide how you want to play: You can use your power to subjugate the humans, ruling an area by fear and intimidation. Or you can choose to work in more positive ways to help the lesser races succeed, and as a result, worship the dragon for its wisdom and aid. You must become the most powerful dragon in the world, defeating all others, to win. The game will feature both single and multi-player modes.

Former Papyrus Design Group members Adam Levesque and John Wheeler founded Blue Fang Games in July, 1998. Levesque was the producer/designer and Wheeler was the technical lead on NASCAR RACING and NASCAR RACING 2. They are joined by another former Papyrus member, Lou Catanzaro, and a business development director from AT&T, Hank Howie. Boston-based Blue Fang is currently attempting to secure a publishing deal for the title, which is expected to ship in 2000.

For more details, check out the company's Web site at www.bluefang.com. *—Ken Brown*

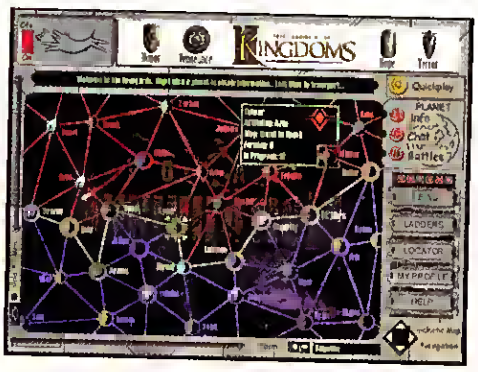
Cavedog Marks New Online Territory

'Boneyards' Seems Modeled After Blizzard's Battle.Net

Cavedog Entertainment has announced the launch of a free online gaming service called Boneyards. The service, apparently modeled after Blizzard's successful Battle.Net, will let gamers chat and compete in Cavedog games such as TOTAL ANNIHILATION. After an initial beta test in November, the service should be live by the end of '98.

Boneyards will offer a ladder and ranking system, company-sponsored tournaments and custom user profiles. The service will also report scores automatically to a host of Internet gaming services.

In addition to TA, Boneyards will also let users play a new game called GALACTIC WARS, based on the TOTAL ANNIHILATION universe. In GALACTIC WARS, players join one of two warring forces fighting for control of 50-70 interconnected worlds across a galactic map. After selecting a planet, players fight TA-style battles with one or more human opponents from the enemy force. Daily tallies will measure each side's progress towards their goal of taking over their opponent's home world.



Future Cavedog and GT games will also support the new service, the company reports. These include TOTAL ANNIHILATION: KINGDOMS (this month's cover story), AMEN: THE AWAKENING, ELYSIUM and GOOD & EVIL. In addition, Cavedog indicates it has no plans to discontinue online, multiplayer TA on other online services.

Owners of TOTAL ANNIHILATION can download the Boneyards front-end for free from www.cavedog.com. *—Ken Brown*

Playing Lately

CGW Survey *Here's what you're blowing the most time on*

	Last Month	Months on Chart
1. StarCraft (Ceedant Software)	1	5
2. Might and Magic VI (3DO)	2	5
3. Quake II (Id Software/Activision)	3	8
4. Unreal (GT Interactive)	9	4
5. Final Fantasy VII (Eidos/SquareSoft)	4	2
6. Diablo (Blizzard/Cendant)	5	20
7. Age of Empires (Ensemble/Microsoft)	4	8
8. Heroes II, Price of Loyalty (3DO/New World)	-	-
9. Mech Commander (MicroProse)	-	-
10. Battlezone (Activision)	-	-

Based on a monthly survey mailed to CGW subscribers.
This differs from the readers' overall "quality ranking" in the Top 100

PC Data Best-sellers

	Last Month	Average Price
1. Deer Hunter II 3-D (GT Interactive)	-	$20
2. Deer Hunter (GT Interactive)	2	$15
3. Need For Speed 3 (Electronic Arts)	-	$38
4. Barbie Nail Designer (Mattel)	-	$15
5. Madden NFL 99 (Electronic Arts)	-	$41
6. Tom Clancy's Rainbow Six (Red Storm Ent.)	-	$42
7. Cabela's Big Game Hunter (Activision)	9	$15
8. StarCraft (Ceedant Software)	1	$41
9. Rocky Mountain Trophy Hunter (GT Interactive)	5	$17
10. Diablo (Ceedant Software)	3	$23

The top-selling PC games as of October, calculated by PC Data (Reston, VA).

SHOCK THE FLUNKY All it takes is a little lightning blast to get a car squatter out of his vehicle. Then, one well-placed shotgun blast and the car is yours.

Redline

On Foot or Behind the Wheel, Cruise Red Asphalt in a Bumper-to-Bumper Blaster

by Bob Lindstrom

Bumper-smashing collisions, gear-grinding maneuvers, fiery accidents, and crazed drivers with murder in their eyes—nothing matches the sheer exhilaration of a Los Angeles freeway commute. For those of you who don't get that daily blast of life-threatening road rage, Accolade's upcoming car combat game, REDLINE, will give you a white-knuckled chance to get behind the wheel and to smash, careen, collide, and crush. And it won't raise your insurance rates.

REDLINE travels that red ribbon of high-impact highway previously driven by such games as CAR WARS, TWISTED METAL, and CARMAGEDDON. What REDLINE adds to the action are breathtaking, 3D-accelerated, go-anywhere environments. And, instead of being locked behind the wheel, REDLINE requires you to put shoe to pavement at strategic moments to wreak destruction on foot à la QUAKE II.

Redline

GENRE: Action
RELEASE DATE: Q1 '99
DEVELOPER: Beyond Games
PUBLISHER: Accolade

If You Can't Shoot 'Em, Smash 'Em

Gamers will face yet another apocalyptic future in REDLINE. Gangs of racing vandals, including the Red Sixers, Templars, and Lepers threaten society. Your objective is to get into a "good" gang and run the bad guys into the mud through a series of missions, each with specific goals

Every car is equipped with weaponry (side and/or front firing depending on the vehicle) for taking on enemy cars and on-foot snipers—not to mention unexpected ordnance and traps You tear around the huge levels sailing over obstacles and pulling bootlegger turns while evading or facing off with nasties in their murder machines. If you don't happen to like the weapons in your jalopy, hop out, fire a special lightning weapon at another guy's street rod, shoot the owner when he staggers out, and then steal his car. Brutality and felony—how can you beat that?

HOOD ORNAMENT He's big, he's nasty, he's got a gun—he's going to make an awful mess on your windshield.

Judging from the four missions that I got to preview, REDLINE is going to be a graphic wonder. The epic scale of the environments makes this game the *Titanic* of car combat. These are spaces so large they dwarf a mere four-car accident The gameworld is rich with expansive stretches, eye-boggling heights, endlessly twisting city streets, and exotically sculpted interiors.

If You Can't Smash 'Em, Shoot 'Em

Sure, you can cruise the countryside smearing enemies across the blacktop and doing impromptu body work with a grenade gun. But if you want to complete a mission in REDLINE, you'll have to park the car, lock and load, and hoof it. Besides, it's easier to line up a Templar with your gun barrel than with your license plate.

When on foot, REDLINE becomes another first-person shooter. Still, the ability to wander the grandiose proportions of an indoor stadium or climb the towering walls of a military installation makes this a shooter of epic scale. There aren't too many games in which you stop to enjoy the view, but I found myself doing just that while making my way to the tallest reaches of a Red Sixer encampment.

BREAKING AND ENTERING Infiltrating huge fortified encampments will thrust you right into the midst of the enemy—if you're clever enough to get inside.

CLIMB EVERY MOUNTAIN This towering mountain is typical of REDLINE's enormous environments. But don't worry, you won't have to climb up there... you'll have to drive up there.

Familiar design conventions popped up in the pre-alpha I played. Health, weapons, and ammo are tucked around the countryside; interior settings hold puzzles that involve finding special rooms, throwing switches, or destroying equipment. Nothing much new there. One nifty effect is a stunning "screen shake." When you trigger a massive explosion, the entire screen rattles wildly while you simultaneously lose your footing or bounce around behind the wheel of your car. It adds a whole new level of immersion and challenge to a shooter.

If You Can't—Oh, Just Blast Everybody

The robust single-player missions would make a satisfying enough experience, but REDLINE also features a multiplayer mode. Compatible with IPX, TCP/IP, and direct serial port connections, multiplayer REDLINE includes special deathmatch settings that minimize the strategy of solitaire missions and permit groups of bad drivers to wreak maximum havoc as quickly as possible. Once you and your hell-driving colleagues have joined in cyberspace, you can form teams for cooperative destruction against another team of human opponents.

High Octane in the Tank

All of this splattering joy comes at a price. Accolade currently recommends at least a Pentium 200 with 3D acceleration (although the game will run without a graphics accelerator). While the version I looked at wasn't optimized for speed, three of the four missions moved along effectively with a Pentium 150 and a Voodoo^2 accelerator in low-detail mode—the only mode available in this preview program. Frankly, I found myself wondering if the low detail was an accurate description of the setting. It's hard to imagine how much better REDLINE could look.

After reviewing half a dozen real-time strategy games and plodding through the most recent first-person shooter, it's easy for your typically blood-drenched and bored software reviewer to become blasé. Although the pre-alpha I had was far from optimized and far from finished, REDLINE jump-started my enthusiasm for the possibilities in action sims. When it's released, REDLINE looks like one game I'll be playing for sheer enjoyment. CGW

Bob Lindstrom hates to admit it, but he's been playing computer games since the pre-Jurassic days of SPACE WARS and PONG. Despite his love of fast action, however, he has never intentionally crushed a pedestrian against a wall while driving around the streets of Los Angeles.

Rub Your Bumper and Pat Your Hood

If you think the headlong driving of REDLINE adds up to just another arcade game, you'll be thinking out of the other side of your head once you get behind the wheel. The futuristic settings may be pure imagination, but the vehicles boast their own realism that drives REDLINE out of no-brainer land and into fantasy sim territory. Even though the physical models for each car were still being adjusted in our preview version, these weapon-clad babies took a deft hand to successfully navigate through twisting streets and straight into armed enemies.

The design team has wisely made compromises toward the cause of fun. In the preview, REDLINE's vehicles could take considerably more damage than your used Yugo, for instance. But there's none of the indestructible spin rolls and survivable 10-story drops as in the pure arcade racing of CARMAGEDDON, for example. REDLINE takes itself more seriously—without taking itself *too* seriously.

The upshot is that there is a lot to do behind the wheel. First, you obviously have to steer that car and tweak its speed—a tricky business in the frequently close quarters of a REDLINE environment. To make those tight maneuvers, one finger has to dive at the Space Bar to yank the parking brake and execute a spinning "bootlegger" turn. When you recover from the turn, you'll want to nail that sniper on your tail, so you stab the firing key with a second finger. Oops, you haven't got the best weapon, so a third finger flies out to the Change Weapon key. If you want to line up the shot with an aerial view, that's another key; if you want to strafe, that's another key; and if you want to slow down, that's another key. Finally, if you want to glance around your vehicle or fire weaponry up and down, you'll need to have one hand on the mouse to smoothly alter your POV or direct your aiming reticule, which leaves you with only five fingers to speed type your way to survival.

In short, whether playing with a mouse, keyboard, or joystick, I quickly found myself running out of fingers. Short of buying an odd-looking and probably very expensive prosthesis, it will take some time to master just the driving phase of REDLINE. Hopefully, the interface will be streamlined prior to release.

"...the odds-on Goldeneye killer for PC." -Next Generation

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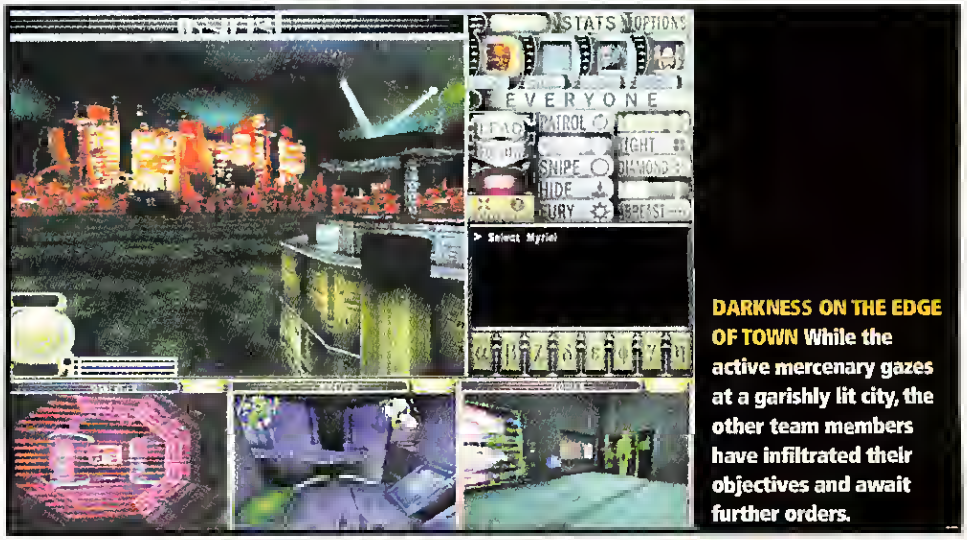
by Robert Coffey



DARKNESS ON THE EDGE OF TOWN While the active mercenary gazes at a garishly lit city, the other team members have infiltrated their objectives and await further orders.

What can a first-person shooter do to distinguish itself these days? On the visual front, virtually every title has jaw-dropping 3D graphics. Deathmatches, capture-the-flag, and fortress-type variations are part and parcel of the multiplayer options in most shooters. Shotguns, rocket launchers, and some big-ass guns—what game doesn't have those? After a certain point, it all starts to look and play the same. But HIRED GUNS, slated for a spring 1999 release, might just provide the breath of fresh air that the shooter genre is looking for.

Team Player

While HIRED GUNS' futuristic, evil corporation back-story isn't going to win any awards for originality, the game breaks from the shooter ranks with its focus on squad-level combat. Gamers will directly control the actions of a four-man squad of mercenaries out to topple a trio of—here it comes—evil corporations. Gamers can play as any of the mercs while giving orders to the rest.

HIRED GUNS' unique approach is immediately apparent in the main game screen. A full third of the monitor is filled with the active character's perspective. Along the bottom of the screen are three smaller windows, each reflecting the current view of the other team members. In the upper-right portion of the screen, you'll find a game interface that allows you to control your team. If you prefer to have a full-screen view of the active character, it's just a toggle key away.

Available orders include: Patrol, Hide, Snipe, and Cover. Your forces can also be instructed to go into "Fury" mode, during which they will just run randomly around a level, firing at any enemy they come across. Further determining the behavior of your "squaddies" is an AI adjuster that will color their threat responses based on three priorities: health, orders, and objectives. Set team members to watch their health and they'll retreat after taking a certain degree of damage. Mercenaries with a high order priority will walk into certain death if you order them to do so. Those mercs that have been given a high objective priority will focus their actions on fulfilling mission goals.

The game interface will also allow you set group formations for your squad of mercs, including Diamond, Tight, and Line configurations. Additionally, a rally button will instruct your private army to make every effort to reach the active character's location.

All Together Now

Coordinating your team's actions and fully using its unique abilities will be a key to success in HIRED GUNS. As an example of team play, you may face a situation in which an enemy sniper is preventing you from entering a building. You'll have to instruct one member to attack the sniper with suppression fire so that other members may enter the building. But which member do you use in these situations? If you need to access a computer inside the building, you'll want to make sure the cyborg gets in so it can interface with the computer system. If you expect incapacitating darkness, you'll want the mercenary with infrared vision inside the building instead of occupying the sniper. This emphasis on using the full team should be the rule rather than the exception since the design team is promising to build what they call "tactically engaging levels."

Powering all this is the ubiquitous UNREAL engine, so you can expect smooth gameplay with glittering graphics—provided you've got the hardware. The early build I saw was striking, with the action in each window sporting richly saturated color and smooth-as-milk frame-rates. But don't expect the gameworld to look that good for long—Devil's Thumb is making a concerted effort to fill the environments with highly destructible objects.

MOON SHOT With the UNREAL engine driving the game, you can expect lots of stunning graphics like these.

Destroying those objects should be a snap, given that you'll have a projected 17 weapons at your disposal. Of the weapons I saw, the most impressive was the sniper rifle. This rifle features an incremental zoom for targeting enemies at different distances and will take out most bad guys with a single, skull-shattering shot.

Due to be on store shelves by mid-year, HIRED GUNS could bring a level of strategy and coordination heretofore lacking in first-person shooters. CGW

Hired Guns

GENRE: Action
RELEASE DATE: Q2 '99
DEVELOPER: Devil's Thumb Entertainment
PUBLISHER: Psygnosis

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For more information on how to enter the Daikatana Deathmatch Contest go to

www.daikatana.com
www.mplayer.com
www.eidosinteractive.com

or check out the February issue of *Computer Gaming World*

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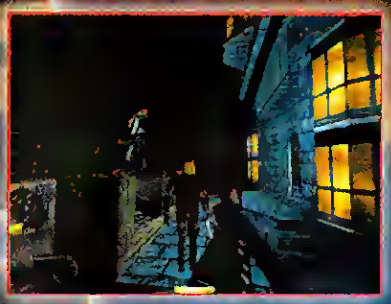

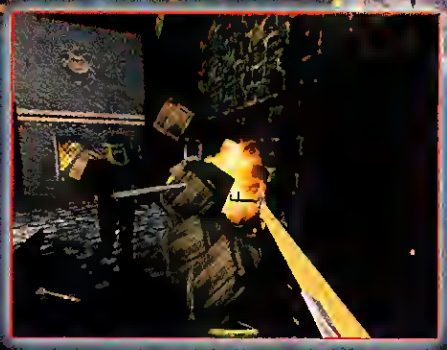

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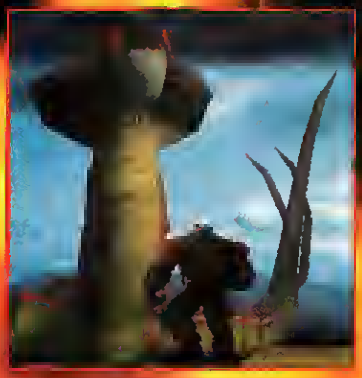

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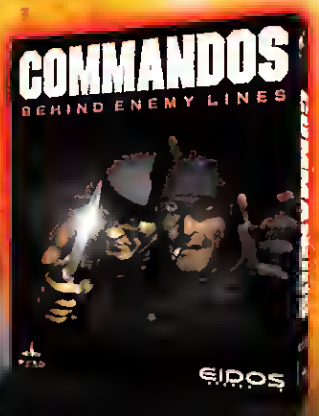

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Early Intelligence on the New Wave of Strategy Games

What will it take to relieve the strategy genre from the grip of mediocrity? Let's face it, strategy games have been plagued by a host of me-too titles, brain-dead AI, useless features for the sake of having features, and a degree of pretension on the order of calling yourself The Artist Formerly Known as Ginger Spice.

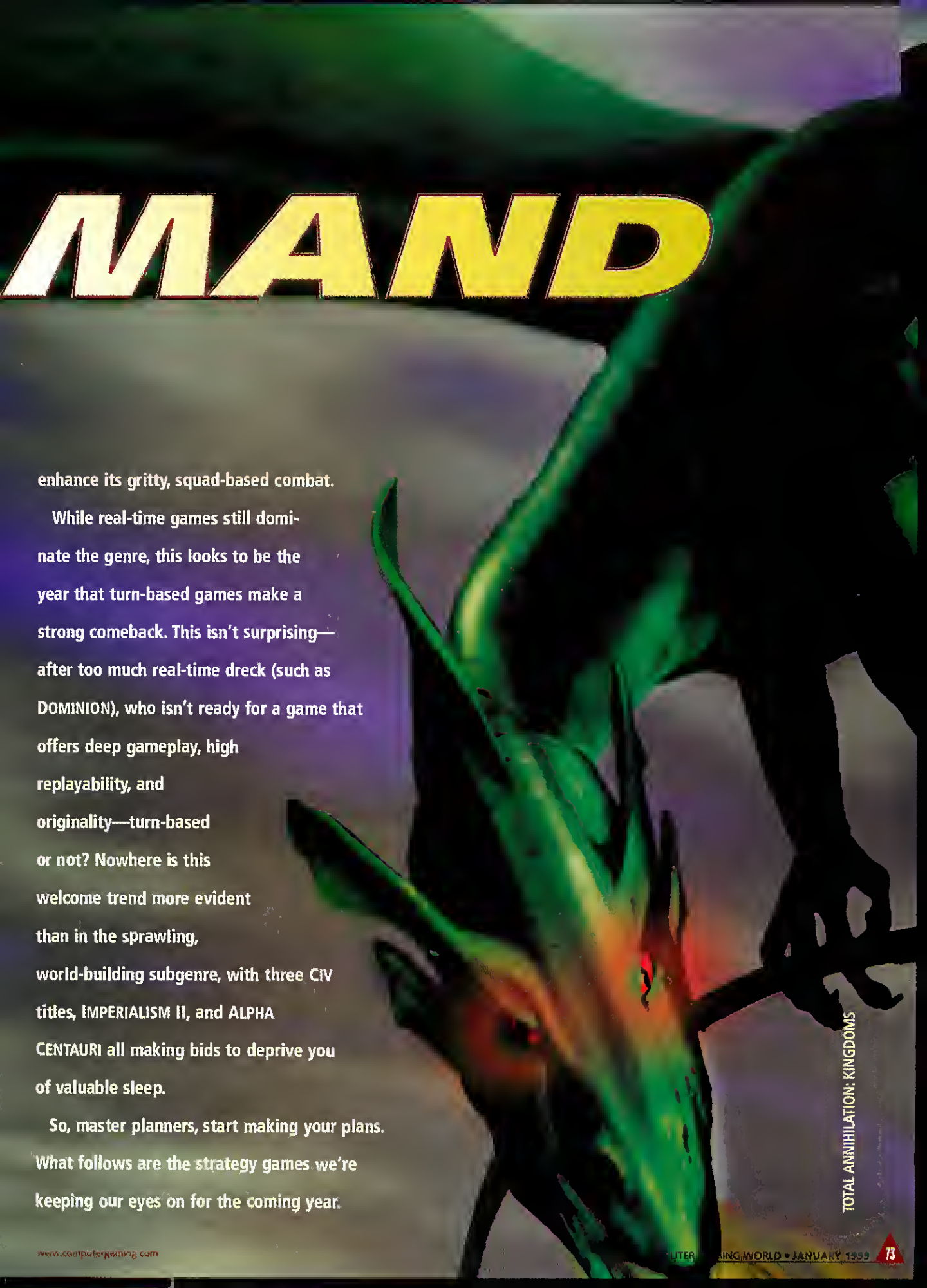
Thankfully, it seems as though the coming year will feature games less concerned with following trends than with setting them. Sure, every game and its sequel is hopping aboard the 3D bandwagon, but the good titles strive to get something out of 3D other than a nifty buzzword to paste on the box. HOMEWORLD promises to redefine 3D strategy gaming by throwing in the Z axis along with good ol' X and Y, and SHADOW COMPANY makes use of hardware acceleration to create realistic environments that

MAND

enhance its gritty, squad-based combat.

While real-time games still dominate the genre, this looks to be the year that turn-based games make a strong comeback. This isn't surprising—after too much real-time dreck (such as DOMINION), who isn't ready for a game that offers deep gameplay, high replayability, and originality—turn-based or not? Nowhere is this welcome trend more evident than in the sprawling, world-building subgenre, with three CIV titles, IMPERIALISM II, and ALPHA CENTAURI all making bids to deprive you of valuable sleep.

So, master planners, start making your plans. What follows are the strategy games we're keeping our eyes on for the coming year.



TOTAL ANNIHILATION: KINGDOMS

Total Annihilation: Kingdoms

Cavedog's Fantasy Free-for-All Offers Tag-Team Excitement

by Johnny L. Wilson

As a preadolescent, I had a fascination for "professional wrestling." I may use the term advisedly, but the performers *were* paid and some wrestling occasionally took place. I wasn't all that enthusiastic about the one-on-one matches, but I could get really excited over the tag-team matches. Tag-team matches, for those of you who had more refined tastes than the young Johnny Wilson, were those in which a wrestler in trouble could touch the hand of his partner outside the ring and change places with him. This would, of course, shift the balance of the match by bringing fresh blood into the ring to take the place of the beleaguered grappler.

Genre: Real-time Strategy
Release Date: Q2 '99
Developer: Cavedog Entertainment
Publisher: GT Interactive
www.gtinteractive.com

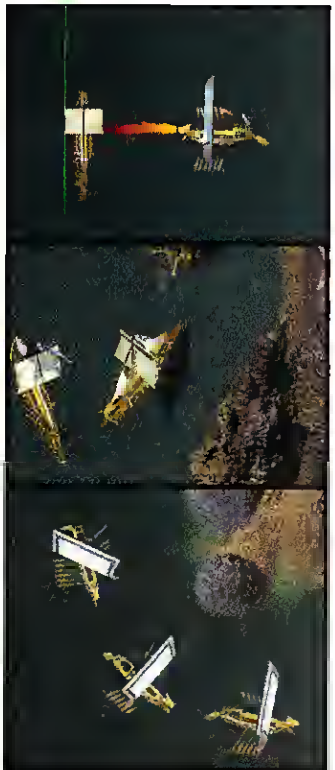
The atmosphere was further charged by the fact that one of the two-man teams was always the "good guys," the play-by-the-rules guys, the other team was the "bad guys," the cheat-if-you-can guys. It was melodrama. It was adrenaline-pumping excitement to an impressionable 10-year old. It worked.

TOTAL ANNIHILATION: KINGDOMS is a fantasy tag-team match on a global scale. It's melodrama. It's excitement. It works. Like some classic tag-team grudge match, TA: KINGDOMS features two good kingdoms (Aramon and Veruna, representing the powers of Earth and Water respectively) against two evil kingdoms (Taros and Zhon, representing Fire and Air). The wrestling ring comprises an entire world called Darien, where ambient magic called "mana" powers everything. The kingdom of Aramon resembles a magical version of the Roman Empire—benevolent imperialists—while Veruna is more cosmopolitan (think Venice during Marco Polo's era). Taros seems a near-demonic depiction of totalitarianism (complete with landscapes from hell), while Zhon has all the chaos of a sorcerous Third World nation set on a primitive continent. All four civilizations use magic, but the good kingdoms escalate warfare with gunpowder while the evil kingdoms up the ante with sorcery.

In multiplayer terms, it's easy to imagine double crosses and stabs in the back. The global wrestling ring comes to life in a four-player struggle for domination. In single-player terms, the game features one continuous story from beginning to end, but you'll have to change sides (as the gamer, not as a character within the story) from time to time in order to experience the entire story. Designer Clayton Kauzlaric likes to think of the story as a novelized perspective. When you shift sides your viewpoint changes, complete with differences in interface art and music, as well as different units, spells, and powers at your disposal. Since the mage-kings (the commander units) of the four kingdoms are the offspring of the same immortal mage-emperor, the storyline in TA: KINGDOMS adds the

CREATURE FEATURES The sorcery-wielding tag team of Zhon and Taros often summon monstrous creatures like this giant arachnid and dragon to do their nefarious bidding.

WRESTLING RING The tag-team match between the four siblings in TA: Kingdoms takes place on the world Darien.



STERN WARRING The ancient ships and war galleys look impressive. The Greek Fire and broadsides look great, but don't you wish you could run along the side of those galleys and shear off their oars?

spice of sibling rivalry to the standard good guys versus bad guys conflict.

In This Corner...

The combatants in TA: KINGOOMS differ greatly from the contenders in TOTAL ANNIHILATION. Whereas the original incarnations of TA allowed for the rapid addition of new units, constantly expanding the size of army orders of battle, TA: KINGOOMS will ship with about 160 different units and the downloadable units will not be released as often. TA: KINGDOMS displays characters and vehicles in a larger format than did its predecessor, a nod to gamers who complained that it was difficult to discern physical differences between many of the units in TA.

The games differ also in how they treat those units. TA treated units like expendable minions; TA: KINGDOMS will use a new experience point system to actually reward gamers who conserve their units. For example, your swordsmen begin fairly weak, but if you manage to keep them alive long enough, they can reach parity with high-level units. Units can improve in movement rate, armor class, weapon strength, mana ability, and building speed, among other factors.

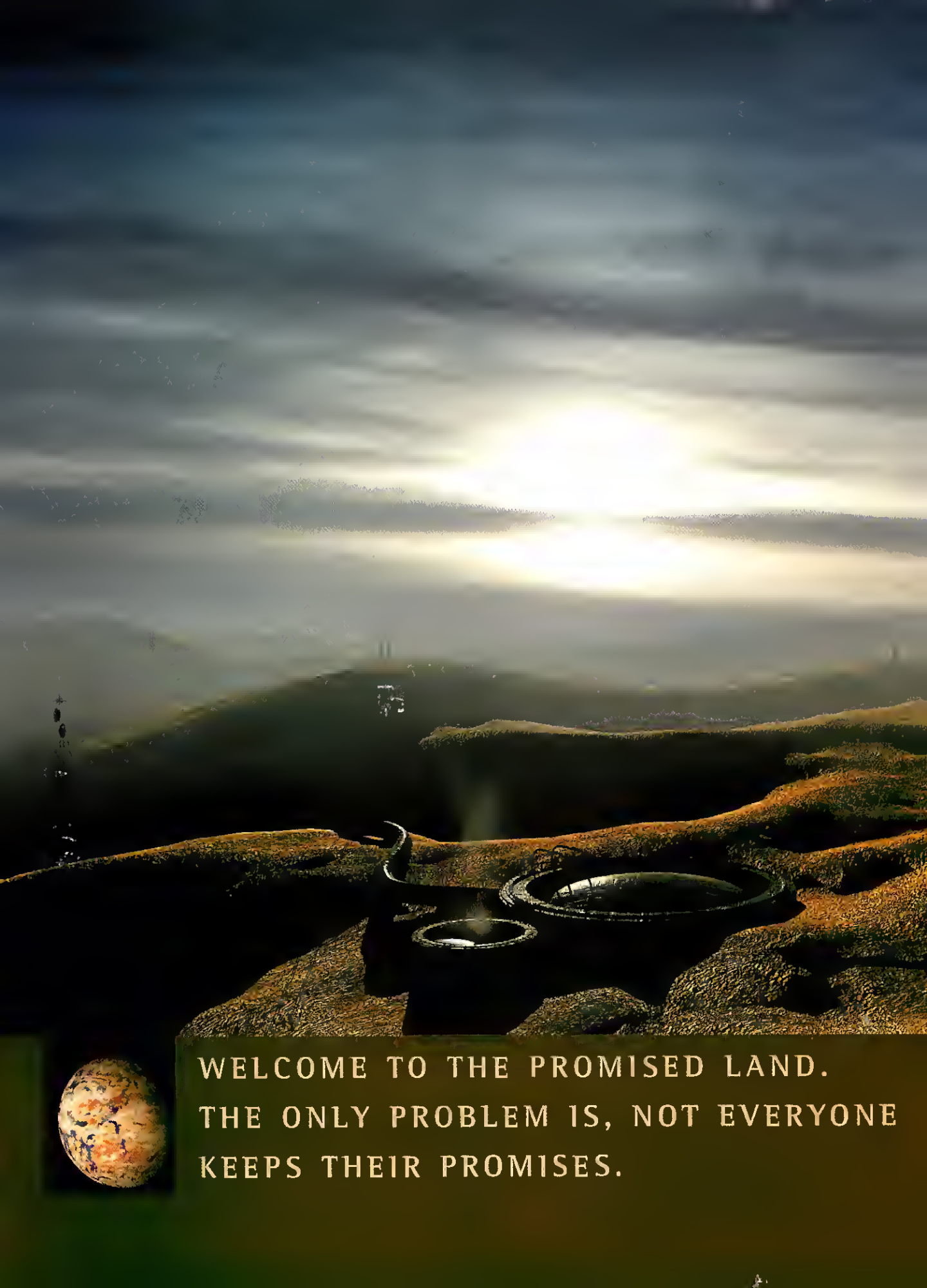
TA: KINGOOMS will also feature a limited number of some units (certain heroes and dragons) that, once lost, cannot be rebuilt. These characters or unique units will be introduced via narrative twists and should have the potential to shift the balance of play. Another intriguing balance shifter in TA: KINGOOMS is the appearance of deities. Any time a player builds a temple dedicated to a particular deity, there is a random chance that the god will take form as an avatar and participate in battles. Of course, such an incarnation may well presage a counterbalancing appearance by a rival deity.

The game differentiates the four kingdoms not only in terms of units but also in terms of build cycles. In addition, the kingdom of Zhon has units with the capacity to self-replicate. They won't be able to engage in battle as they clone themselves, but the self-spawning capacity provides an awesome power, nonetheless. Other units will have built-in immunities to certain forms of attack (particularly the undead creatures who can be harmed only by magical attacks). Unlike the amazing disappearing dead of TA, corpses in TA: KINGOOMS will remain persistent for a time during the battle (the exact duration of this persistence has not yet been determined). As long as the corpses remain, high-level priests from Aramon and Veruna can resurrect the units. High-level sorcerers from Taros or Zhon, however, can reanimate the units into zombies or skeletons.

The naval units for TA: KINGDOMS are particularly impressive. War galleys, men-of-war, and fire ships abound, complete with animated oars, flowing pennants, turning rudders, and billowing sails. Partisans of ancient naval warfare will be disappointed that the game doesn't allow ramming or shearing (when a lighter, faster ship runs alongside the hull of a heavier, slower ship, breaking off its oars to reduce its speed and maneuverability prior to ramming it). The naval warfare is closer to that of the Byzantine Era, when projectile weapons and Greek Fire were becoming the order of the day, and rams had a tendency to break after one use. More important, all ships in the game have a variable transport capacity, adding to logistic flexibility and the art of maneuver.

One other unit that enhances the play in TA: KINGDOMS is the Mage Healer. The Mage will have a healing radius and will automatically begin to restore hit points to damaged units within that radius. Of course, the opposition will have its corresponding tag-team partner: certain advanced undead units that will be able to sap strength from any unit entering their vampiric radius.

PLAYING FOR KEEPS Buildings such as the Keep, pictured here, serve as summoning circles for the units you'll conjure to comprise your armies.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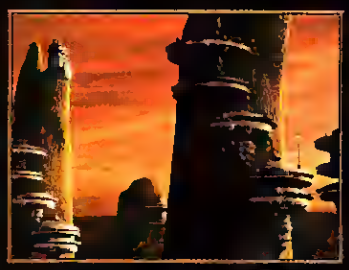

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RP

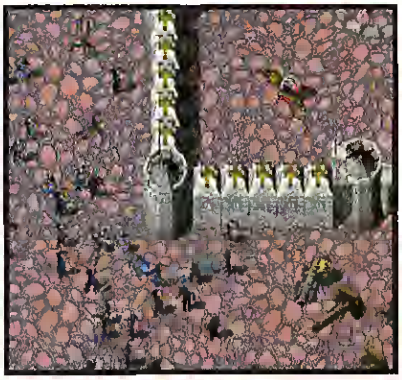
Tipping the Scales At...

In TA, you had to extract metal and collect energy. In TA: KINGDOMS, you have an abstract economy based upon mana (the ambient magical energy, which represents the limited resource in the game) and the attendant drains on that energy pool in terms of units of time and units of labor. Every unit in the game either builds or consumes mana. You don't have to mine or process this energy, just use it.

The sacred sites rank as one of the game's most valuable assets. Gamers will have to find the sites within the gameworld, but finding them makes a significant amount of mana become available to your kingdom. You can use mana to summon creatures or heroes, construct additional buildings, or prepare massive armies for an all-out offensive.

According to the design team, the shift in approach to resources was based on the feeling that the economy in TA didn't work. "When you're just getting started," says Kauzlaric, "the TA economy makes sense and seems to work, but 20 minutes into the game, resources cease to matter." The mana-based zero-sum economy means that there will always be trade-offs in the game, but you won't have to micromanage mining and ecology operations in order to keep funding your troops.

Within a given radius of influence, each unit capable of construction can build certain units. Gamers won't be overwhelmed by irrelevant build menus on which half of the units are "grayed out" as inapplicable to the current situation. The build menu (buttons on the left-hand side of the screen) displays only those units or buildings eligible for construction within a given situation. Once you choose a unit or a building and its location, you see a ghost image of what's being built in that spot. You can also stop construction (or summoning) at any point in time.



COME TO THE CANNONADE Whether in the midst of sieges or open-field warfare, you'll appreciate the firepower offered by the ballistae, cannon, and trebuchets in the game.

The construction capability in TA: KINGDOMS is particularly important in one regard. In TA, gamers were susceptible to early rush attacks. TA: KINGDOMS allows you to quickly build fortifications to thwart early aggressors. Stone walls will hold off an assault of archers or swordsmen, forcing your opponent to build up ballistae, cannon, catapults, siege engines, and/or trebuchets prior to making an assault. One caution, though: It's possible to build fortifications such that you virtually pen yourself in.

A major difference in AI will quickly become evident when gamers first boot up TA: KINGDOMS. While TA used a mathematically correct line-of-sight that factored in terrain effects, TA: KINGDOMS has expanded that to make the line-of-sight changes in terrain and elevation more perceptible and satisfying. Ironically, the actual calculations are less realistic, but the resultant pathfinding, peeling back of fog-of-war, and missile range seem *more* realistic as you play. When you fire catapults off a cliff or order archers to shoot down a slope, you now sense more readily that you're getting increased line-of-sight and range. You didn't always feel that in TA. Sometimes, perception *is* reality.

Another difference is that the state-based AI will respond according to the unit's need. If the unit is being defeated, the AI is smart enough to retreat. If the unit is supposed to attack, it will keep exploring until it finds something to attack. If the unit is supposed to patrol, it will patrol (via gamer-designated waypoints) until it finds something to attack. Instead of being scripted only to respond, the AI-controlled units will react according to where they are in the game. In one playing of the game, we watched a jungle orc from the Zhon army traverse the entire map and kill every enemy he encountered without any instructions from us. The program took it and ran.

DESERT STRIKE Evil hordes assault a desert town in TA: KINGDOMS.

Wearing the White Trunks...

Some gamers will never be happy with the prebuilt scenarios in a game. Fortunately, TA: KINGDOMS provides a map and mission editor that will enable you to build your own maps for both single-player and multiplayer action. The best news is that the mission editor uses a scripting language that allows for random events, timed events, and custom victory conditions for both single-player and multiplayer encounters. For example, you could script an epiphany from a hostile or friendly deity or even a full-scale invasion by an AI kingdom for a certain point in a multiplayer battle.

More important, TA: KINGDOMS will be fully functional with Boneyards, Cavedog Entertainment's new online gaming service. Boneyards will provide not only matching services for TA: KINGDOMS foes, but also a persistent environment (something like a competition ladder, but with more fiction) in which those battles will make sense in the larger scheme of things. As of press time, Boneyards was being tested with such a system for TA, called GALACTIC WARS.

For me, as that 10-year-old wrestling fan years ago, the best part of any tag-team match occurred when all four combatants jumped into the ring and chaos reigned. The hapless referee would try in vain to break up the melee, and you knew that the bad guys would get in some cheap shots while he wasn't looking. TOTAL ANNIHILATION: KINGDOMS looks as though it will offer lots of entertaining, impressive chaos and plenty of opportunities for those of you who enjoy playing the bad guys (you know who you are) to get in some cheap shots. In short, "Let's get ready to rumble!" CGW

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Courtesy of Combat Flight Simulator

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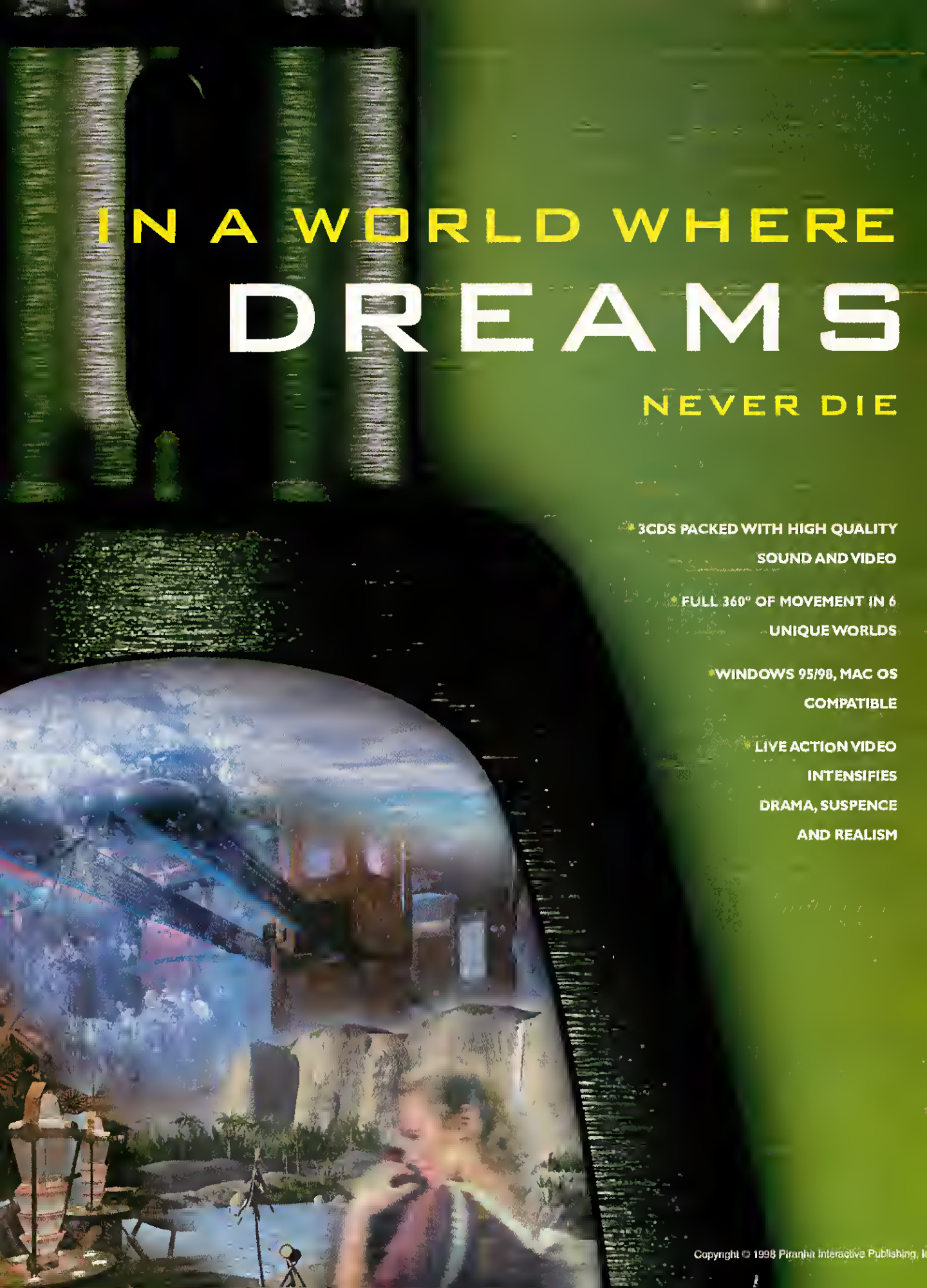
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Close Combat III

Third Time's a Charm

by Terry Coleman

Historians constantly argue over which battle of the Revolutionary War was the most significant, or whether Lee could have won at Gettysburg on the second day if he'd pressed harder, or whatnot. When it comes to the eastern front of World War II, however, most of the arguments focus on minutiae because the big themes of the conflict are pretty much free of debate. When the Germans launched Operation Barbarossa, they set in motion the single largest land conflict in history. Over the course of four years, tens of millions were captured, wounded, or killed. The very names of the battles still resonate, even more than a half-century later: the desperate defense of Moscow; the bitter, protracted siege of Leningrad; the turning point at Stalingrad; the largest tank battle in history at Prokorovka; the liberation of Warsaw; and the sacking of Berlin.

Most of the great boardgames and computer wargames of the past three decades cover this monumental conflict from either an overall strategic or a middle-ground operational viewpoint. CLOSE COMBAT III, true to its name, gets its hands dirty at the grunt level. Even more than A BRIDGE TOO FAR, CLOSE COMBAT III succeeds at portraying the chaos of the battlefield. But it never gets unmanageable and is always engrossing.

Genre: Real-time WWII
Release Date: Q1 '99
Developer: Atomic Games
Publisher: Microsoft
www.microsoft.com/

Part of this is due to the situation. Almost every kind of WWII battle you can imagine was fought on the eastern front. Still, it's a tribute to the design that a system started as primarily an infantry-oriented simulation now easily handles the vast number of tanks, half-tracks, artillery units, and other military hardware that took center stage for much of 1941–45.

The AI doesn't simply maneuver these war machines competently, it also uses them adeptly to exploit its terrain advantages, especially in building-to-building fighting—at least in the scenarios that have been finished at this point. If you thought that enemy firepower was deadly in A BRIDGE TOO FAR, you'll be running for cover here almost from the time you boot the program. The Germans have tanks galore and a well-developed command structure to go with a core of veteran troops. The Soviets counter with heavier tanks, lots of antitank guns, and the dreaded human wave tactic. The first time

CONCENTRIC COMMAND The multicolored circles not only contrast sharply with the barren battlefield, they also show the command radius for each commander and his subordinates.

Last Dance at the Volga

Viewed from farthest zoom-out, the fighting in the factories at Stalingrad resembles nothing so much as a paper wargame, with the unit icons appearing like cardboard counters.

At medium view, you get a better idea of how desperate the Soviet situation is. Note the gray German tank to the left of the screen, closing to support the 88mm antitank guns.

In extreme close-up, you get an idea of how aggressive the German AI is; though I might have waited for more units, the Germans have racked up quite a body count. Keep in mind that staying in this view too long invites disaster since you miss the big picture.

you sacrifice dozens of Soviet soldiers to take an objective, you'll reel from the slaughter. Eventually, though, you realize that this was the mindset that Soviet commanders—and soldiers—actually had during the war. My hat is off to the designers for not shying away from this unpleasant truth.

ROCKETS AWAY! A view of Wurframmen rocket artillery in action.

RED SQUARE IN WINTER The art style is anything but dull, as in this Moscow scene, which could easily have sprung from a surrealistic painting.

All the Amenities

CLOSE COMBAT III comprises more than 20 battles and a dozen campaigns, covering everything from small engagements to the entire war in the east. Despite the game's incredible scope, there

1a-1b Buildings in CLOSE COMBAT III vary greatly in size, shape, and materials, which makes a huge difference to troops trying to use them for cover.

2 CLOSE COMBAT III handles gullies and other depressions better than its predecessors—and certainly much better than the typical RTS game.

3a-3c Pacing is tough to execute in any game, but here the units' movement rate over dirt roads, paved roads, and even rail lines seems to be just right.

4 This German half-track has gotten too far ahead of its support for its own good. It's about to be roasted by...

5 ...this T-34 flamethrower tank. While flamethrowers are a bit expensive for you to requisition, the design team seems to be obsessed with them.

6 A medium German tank in camouflage. Given its present location, this vehicle might have been better left in the woods offscreen.

7 While its fixed gun can be a problem at times, this German tank destroyer is perfectly poised to nail the Soviet tank ahead.

8 A Sherman tank, given to the Soviets via lend-lease from the U.S., has the sense to wait for a good shot: The tank's commander knows he'll probably get only one.

9 These infantry are armed mostly with rifles and submachine guns. If a German tank ventures too near, however, those soldiers who pass a morale check can assault the armor up close.

10 Since both sides fielded powerful antitank guns, those units almost always get targeted early in CLOSE COMBAT III.

11 By leaving the strategic window active you can see the overall battle at a glance without having to zoom in and out frequently.

Meet the Microsoft® Sidewinder™ Force Feedback Wheel and the Force Feedback Pro joystick. Feel the force of every game action in the palm of your hand, thanks to a colossal 16 bit, 25 MHz processor. And with Game Controller Software you can program buttons to the actions in the games. Did we mention you can use them with over eighty games? Buckle up. You're in for a bumpy ride.

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Atomic for Power, Turbines for Speed

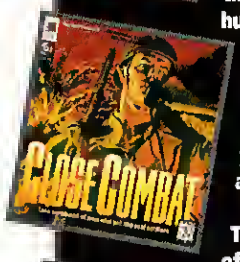
(With apologies to Adam West)

Some wargame designers—Norm Koger, for one—create games from all periods of history. Keith Zabalaoui and his crew at Atomic Games have stuck to simulating the battles of WWII, but they have a lot more range than they get credit for. Besides, I know Zabalaoui is still dying to do a Starship Troopers game...

The V FOR VICTORY series was ahead of its time in meny weys, combining the familliarity of boerdgame conventions with better functionality and a generelly easier learning curve. Sure, the games were turn-based, but for operational-level gemes, it's yet to be proven that real-time ection is better. These were some of the first SVGA gemes, not just for strategy/war gemes, but for any genre. The best of these was UTAH BEACH (released by 360 Pecific in 1993), a marvelous, tense look at D-Day that holds up e half-dozen years later. It's still available on CD in THE COMPLETE WARGAME COLLECTION from SSI. Later games in the series added technical innovations, but as games they were handicapped by their settings.

After the demise of 360 Pacific, Atomic entered into a relationship with Avalon Hill. The two companies had somewhat different ways of approaching game design, but the tensions worked positively in OPERATION CRUSADER, easily the best PC game set entirely in North Africa. At this point, Atomic's AI did a much better job ettacking than defending. Since the best "mobile defense" in Cruseder was to counterattack, the computer opponent acquitted itself pretty well—meking this worth buying if you can find it. Maybe Hasbro will consider reprinting this as part of an "AH computer classics" collection.

The creative tension between Avalon Hill and Atomic became outright dissonence in STALINGRAD, not at ell based on the old AH boardgeme. The operationel-level scenarios worked fine, but the late eddition of a 400-meter-per-hex scale for some parts of the fighting within the city simply didn't work. As e contest between two human generals, however, this is still a good game.

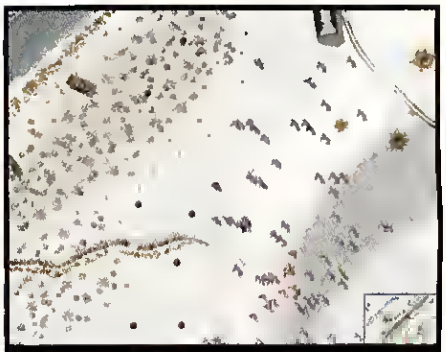


CLOSE COMBAT, Atomic's first geme for Microsoft inspires respect more than pleasure. It often feels as though the game were running under its own steam—the last thing you want in this kind of game since hard-core wargemers are notorious for being control freaks.

This time Atomic got it right and truly captured the flavor of small-level WWII combat. The psychological profiles ere more fleshed-out in CLOSE COMBAT: A BRIOGE TOO FAR,then in the original, and the game works better on every level—particularly for multiplayer action. If you don't already have this in your collection, you're missing a real treat (but it's not too late to drop a hint for Christmes). With the success of this game and the upcoming sequel, it's doubtful we'll ever see the Atomic folks going back to turn-based games—which is a real shame since they've shown they can do both.

are things the design doesn't yet allow for. You don't see—as occasionally happened in real life—units being outfitted for summer campaigns but having to fight in the snow. Because the battles are short and sweet (a boon for multiplayer action), you don't deal with trying to paradrop supplies into the surrounded German Sixth Army at Stalingrad. But these are quibbles, and there are plenty of other games if you want to be Guderian or Zhukov.

If, however, you want to be a small-unit commander moving up through the ranks of the German or Soviet army, there's no better place to be—at least on the PC. CLOSE COMBAT III



INVASION OF THE ANTS CLOSE COMBAT III does a wonderful job of showing the Soviet's human-wave tactic in action: It can be especially effective when employed with camouflaged troops in the snow.

RUSSIAN TREASURE The currency of CLOSE COMBAT III is measured in requisition points. The higher you rank, the more you can spend on units end the more elite units you gain access to.

doesn't require a Pentium II 400 or the hottest 3D accelerator on the market. What it does require is a cool head, a love of challenges, and a desire to immerse yourself in the grittiest land campaign in history. I've been critical of many real-time wargames in the past few years because the "real" was too often missing. CLOSE COMBAT III is as close to looking down a gun barrel as most of us want or are likely to get. CGW

BLACKBELT NOT INCLUDED

THE UNTOUCHABLE

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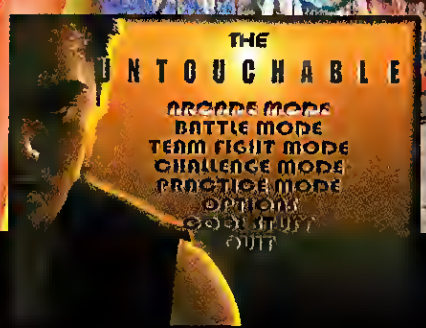

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Homeworld

This Sci-Fi Strategy Game Pushes the Boundaries of 3D Space

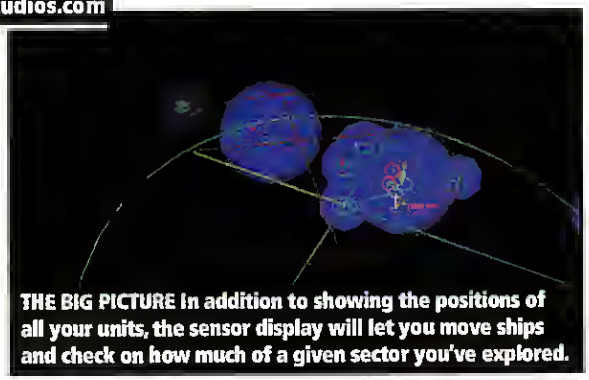
by Robert Coffey

Did you ever want to jump out of your Excalibur star fighter in a WING COMMANDER game and start calling the shots instead of just taking them? Did you ever wonder just who was drawing up the mission plans in TIE FIGHTER? Did you ever think to yourself, "I can come up with a better strategy than this" in DESCENT: FREESPACE? Well, you Commander Adama wanna-be, HOMEWORLD may be the answer to your prayers—serving up heaps of epic space combat in which you create and command huge fleets of space vessels instead of just pilot them. As leader of an entire civilization fleeing from adversaries who have driven you from your adopted home, you'll traverse space in a desperate race to find the legendary planet of your origin: your homeworld.

Battlestar Fantastica

The first thing you'll notice about HOMEWORLD are the graphics. Visually, the game should be stunning. Using virtually every 3D trick in the book, the design team has created a vibrant, living world in the cold expanses of deep space. The universe brims with richly detailed space ships, fields of bobbing asteroids, and beautiful, shifting nebulae.

Genre: Real-time Sci-fi
Release Date: Q1 '99
Developer: Relic Entertainment
Publisher: Sierra Studios
www.sierrastudios.com



THE BIG PICTURE In addition to showing the positions of all your units, the sensor display will let you move ships and check on how much of a given sector you've explored.

SHOOTING STARS HOMEWORLD's free-moving camera allows for some breathtaking perspectives of battle. Here, a wing of scout ships moves in to finish off the enemy.

ONLINE
Look for another HOMEWORLD preview at **www.gameguides.com**

Adding to the game's graphic appeal is its zoom feature. Pull out for a wide view and you'll be able to take in every ship in the sector—zipping fighters trailing ion streams, gently spinning research stations, enemy bombers peppering the hull of your massive mothership with exploding plasma bombs. Zoom in tight and you can ride right behind a wing of attacking fighters, all the better to ogle the glowing engines and brilliant explosions. Beautiful and dramatic, the action in HOMEWORLD could run the risk of working against its playability since gamers may neglect their strategic duties to marvel at the splendor of the gameworld.

But odds are that won't happen since HOMEWORLD seems poised to give gamers some of the most innovative strategy gaming in a long time. Just the addition of a truly three-dimensional world promises to open up all sorts of new strategic challenges. You'll be able to flank enemies from above and below as well as from the sides, but surrounding a key enemy target should prove more daunting given that those targets will have more avenues for escape than in a traditional game.

Viewing your position from various angles will be vital to your success, so HOMEWORLD utilizes a camera with a full 360 degrees of freedom. This lets you whip from a view high above your mothership to just below it in a heartbeat. Should you need to check on scout ships far from your primary position, you'll be able to call up the strategic map of that sector and click on those units to be instantly transported to their position.

Getting There From Here

Directing the actions of units in a true 3D environment presents a slew of challenges not present in other games. Given that your monitor is a two-dimensional device, you can't select a unit and actually click on a point in space: How does the unit know where on that plane you want it to go? Should it move straight ahead or five miles deeper? To its credit, the design team at Relic is doing a good job developing an interface that doesn't get in the way of enjoyment yet allows gamers to control their forces with precision.

As in most real-time strategy titles, units in HOMEWORLD can be gathered into groups by simply clicking and dragging a box around them. Groups can be of an unlimited number and can be assigned to hot-keys. For the tricky business of moving units, you'll simply press the M key, which calls up a graphic overlay of a large dish representing the horizontal plane the selected units currently occupy. Clicking anywhere on that dish sends those units to that point. To send them to a place either above or below that point on the plane, you'll have to press another key. This will allow you to move your cursor off the original plane and triangulate a destination for your units. In print it sounds clumsy, but in practice it's quick and effective.

In fact, a great deal of the interface relies on using the keyboard. Gamers who have never used hot-keys for actions in games such as STARCRAFT will probably have some adjusting to do. Keys are used not only to direct movement, but also to call up the

SCIENTIFIC METHOD Multiple research modules will let you investigate several technologies at once or accelerate inquiry into just one.

strategic map, to set unit posture for guarding and the like, and to select formations.

Form and Function

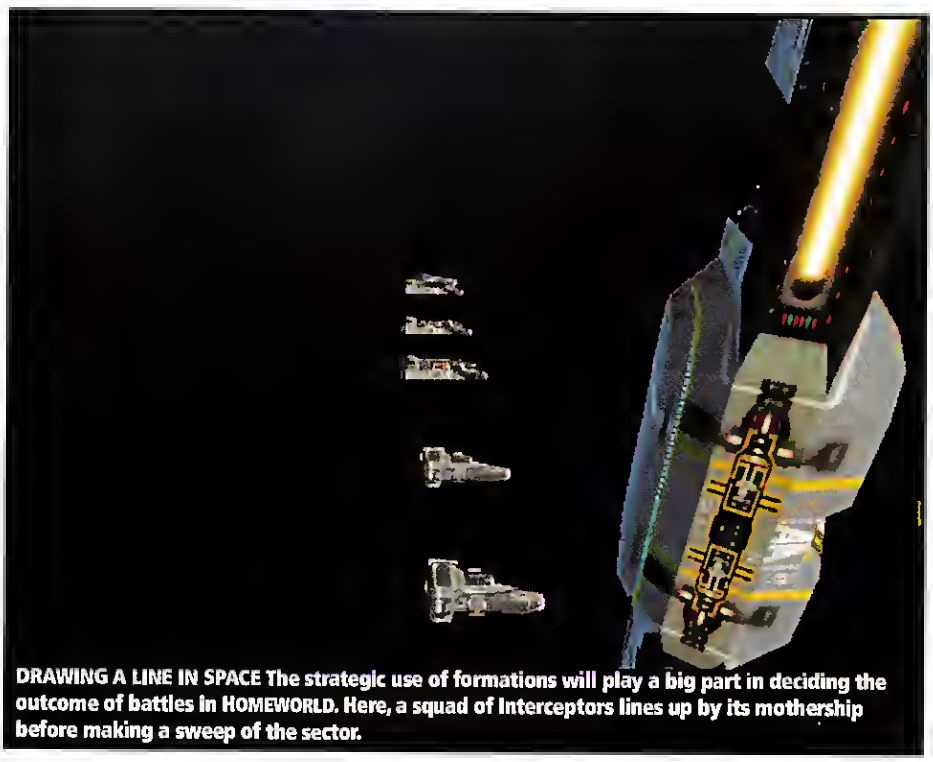
Formations promise to be as integral to gameplay in HOMEWORLD as they are in MYTH. You should be able to send squadrons of Interceptors in wedge formation to penetrate and scatter an enemy's forces before you follow up with a solid line of heavy Corvettes to pound the enemy into oblivion. Formations operate intelligently as well. If you tell a group of Defenders to go into a sphere formation with your mothership, the Defenders will arrange themselves around the mothership rather than trying to force the enormous mothership into being part of the sphere.

Deep space noticeably lacks terrain, so you won't be able to count on mountain ranges and the like to provide defense for your forces. Instead, defense will hinge largely on your deployment of units. You'll need to place your more valuable and vulnerable scanners, research stations, and mothership in the center of a growing fleet. Lighter, quicker craft—like Interceptors and Bombers—will need to patrol the edges of your "base" to extinguish or severely wound attacking forces. Defenders will be particularly handy. While they're almost useless as a mobile, attacking force, they are formidable when they stick to guarding your assets. And there will be some environmental phenomena you can exploit for defense: You can charge gas clouds, for example, to create impassable electrical fields—or to give a devastating shock to enemy harvesting vessels.

Research in the game will be accomplished via modular research stations. Unlike in other games in which specific buildings research specific technologies, the research station will be responsible for all scientific advancement. Research may be slow at first, but you can increase your speed by building additional station modules. As the research structure grows, so will your research speed. Alternately, you may research more than one technology by assigning different research tasks to separate station modules. New technologies will enable you to create new ships, develop better weapons, and access even more technologies.

Poised for an early 1999 release, HOMEWORLD has the potential to be a breakthrough title among real-time strategy games. By fully utilizing 3D technology it will add a whole new dimension to the genre. CGW

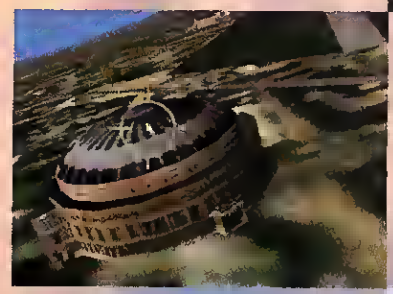
THE BIG PICTURE, PART II Whether rendering shifting nebulae or brilliant explosions, HOMEWORLD's 3D-accelerated graphics give the game a unique epic feel.



DRAWING A LINE IN SPACE The strategic use of formations will play a big part in deciding the outcome of battles in HOMEWORLD. Here, a squad of Interceptors lines up by its mothership before making a sweep of the sector.

Rediscover the romance and nostalgia of flying perfectly recreated WWII planes.

THEN BLOW THEM OUT OF THE SKY.



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Fleet Command

Jane's Tests the Real-time Waters With This Naval Warfare Game

by Denny Atkin

Nobody knows weaponry like Jane's Information Group, the book and magazine publisher that has documented weapons of mass destruction for most of this century. Jane's Combat Simulations—a cooperative venture between Electronic Arts and the original Jane's—has built a similar reputation for accurately portraying weapons systems with titles like LONGBOW, F-15, and 688(I) HUNTER/KILLER. Now that Jane's Combat Simulations has risen to prominence in the simulations market, it is turning its sights to strategy gaming with FLEET COMMAND, a real-time naval warfare strategy game.

FLEET COMMAND is an interesting hybrid. Although the game features a command interface that's no harder to use than your typical COMMAND & CONQUER clone, the battles aren't simplified and abstracted as they are in most real-time strategy games. You'll watch your attacks play out in a 3D window that seems ripped from a flight simulation. You'll see the influence of the group's simulation experience in how the battles play out as well—all the weapons systems for each vehicle are individually simulated.

Genre: Real-time Strategy
Release Date: Q1 '99
Developer: Sonalysts
Publisher: Jane's Combat Simulations
www.janes.ea.com

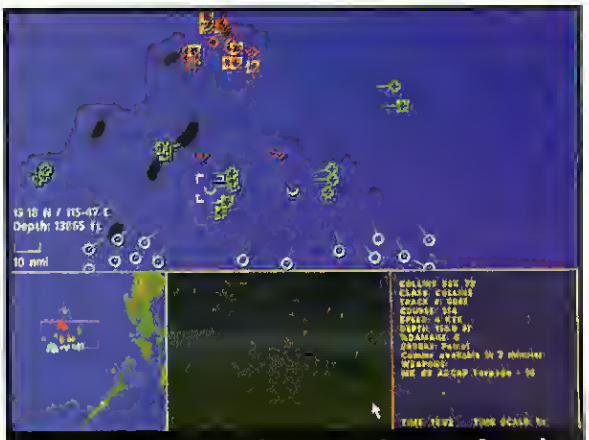
Not Sub-standard

This simulation influence isn't surprising when you realize that FLEET COMMAND's developer is Sonalysts, which has been creating tactical and weapons-platform simulations for the Navy for a number of years. Jane's 688(I) HUNTER/KILLER, a nuclear attack submarine sim, marked Sonalysts' entry into the consumer simulation market. The developer had planned to follow that product with a detailed Aegis missile cruiser sim. As that sim evolved, the designers realized that, since they had to simulate an entire carrier battle group anyway, they had the workings of an interesting tactical strategy game.

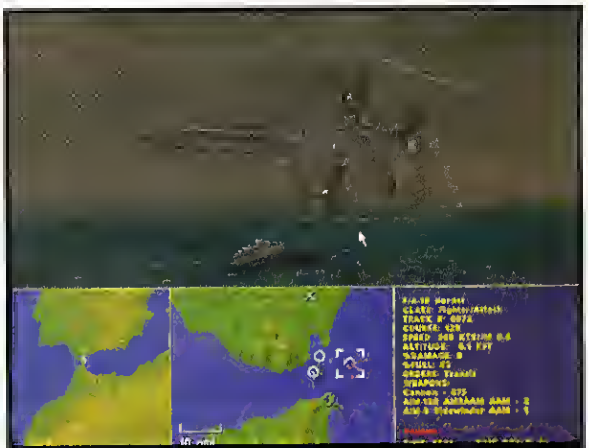
The weapons roster in FLEET COMMAND includes the major naval and naval/aerial weapons systems for 19 countries. With the inclusion of ocean maps for the entire planet, there's literally a world of possibilities for potential missions. Whether you want to play out a melee between American and Russian carrier groups, restage the battle for the Falkland Islands, simulate a Middle East hostage rescue, or create a hypothetical regional conflict between India and Pakistan, the appropriate maps and tools are here.

The game equips each force with a fairly complete lineup of current-technology ships and aircraft. The United States, for instance, features carriers, missile cruisers, destroyers, Marine assault craft, nuclear attack subs, and a wide variety of other ships. On the aviation side, the U.S. has F-14 Tomcats, F/A-18 Hornets, EA-68 Prowlers, S-3 and ES-3 Vikings, E-3 Hawkeyes, and a variety of helicopters. Other vehicles are available when appropriate: If you have a Marine assault ship in your force mix, you'll also have AV-88 Harriers and AH-1 SuperCobras. And land bases will give you access to P-3 Orion antisubmarine warfare aircraft.

You don't need to be a military buff or a wargamer to be able to command these forces. Telling one unit to attack another is as simple as clicking the unit, then clicking the target. If the target



CLEAN AND SIMPLE You give commands to your forces by clicking on a simple tactical map; a detailed 3D window displays the selected unit.



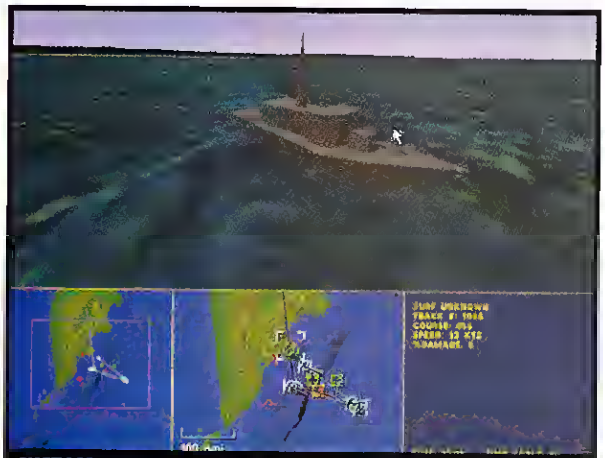
FOUL WEATHER FIGHTING The game features dramatic weather effects; to improve your view you can swap the tactical and 3D windows.

TYPE UNKNOWN If a ship or aircraft hasn't been identified, it shows up as a simple, generic polygonal view.

LAUNCH BREAK Smoke and missile trails highlight the launching of a surface-to-surface missile that's about to send an enemy cruiser to Davy Jones' locker.

SILENT RUNNING A nuclear attack submarine slides under the ice. When you have subs at your disposal, you'll be able to give them orders only when they come to communications depth.

ICON SEE YOU If you prefer, you can replace the NATO unit symbols with ship and plane icons.



CUSTOM COMBAT The editor in FLEET COMMAND includes a number of handy shortcuts, including one that creates an entire carrier battle group with two clicks.

unit is in weapons range, your unit will fire; if not, your unit will move into range and then open fire. Of course, you can also manually select weapons systems, choosing, for instance, among AIM-120 AMRAAM, AIM-9 Sidewinder, and the 20mm cannon when you send an F/A-18 against an air target. With a Ticonderoga class cruiser, you'll find available guns; cannons; SAMs; torpedoes, and Harpoon, TLAM, and TASM missiles.

To get the most out of your forces, you'll want to understand the strengths of each unit and weapon. This is where the Jane's connection comes in. Basic information on a unit's status and capabilities appears when you select it. If you need more data, just press the appropriate key and you can get full performance information and descriptions from *Jane's Fighting Ships*, *Jane's All the World's Aircraft*, and other publications put out by the company.

The game will have scalable realism. For instance, with the difficulty settings dialed up, it will take a specific amount of time to ready aircraft and helicopters for launch. Putting a plane on Alert 5 status will let you launch it within 5 minutes of game time, but it takes 25 minutes to prepare a plane for Alert 5. Gamers looking for a more immediate experience will be able to set the game so that it takes 30 seconds, not 30 minutes, between selecting a hangared plane and launching it. Of course, even if you're playing with full realism, you'll be able to accelerate time when there's no action.

Looks That Kill

FLEET COMMAND's tactical map control interface is austere. You have a choice of NATO unit symbols or simple unit icons, displayed on a topographical map of the combat theater. But the game is far from plain. A 3D window in the bottom-center of the screen shows a detailed view of the selected unit. And I mean detailed: FLEET COMMAND features texture-mapped 3D terrain, moving seas, and highly detailed 3D vehicles. When you fire a weapon, it shoots from the appropriate location on your ship or plane, complete with semi-transparent smoke trails; and vehicles display damage when they get hit. You can swap the 3D window into the top half of the screen (normally occupied by the tactical map) if you want a close-up look at the destruction you cause. The game will support Glide, Direct3D, and OpenGL 3D cards.

The 3D interface doesn't give you an unrealistic advantage when it comes to identifying the enemy. If you've detected a unit but haven't sent in a recon flight to identify it, the unit appears in the 3D window as a generic ship or aircraft shape. This anonymity is important because many missions will require you to make an ID before firing on the enemy. And beware—that plane coming at your carrier battle group may well be a civilian Airbus.

Scripted, but Not Predictable

FLEET COMMAND will include three mission types: training, single mission, and campaign. At this point in development, while the campaigns are actually single missions, they're very long-running ones in which you'll have to achieve multiple goals before winning the battle.

Although the missions are prescripted, the game should still offer long-term playability. FLEET COMMAND includes a very sophisticated, yet easy-to-use mission editor, which should help spawn numerous add-on missions on the Internet. Even the built-in missions are good for multiple replays since the editor supports multiple levels of randomness. You can set a number of types of ships and aircraft in a task force and set percentage chances—not only for which ones will appear, but also for where they'll appear. When you replay, therefore, you may find yourself facing a dramatically different force mix approaching from a different area of the map. This system offers the creative control of scripted missions, while giving players the unpredictability of a dynamic campaign.

In multiplayer mode, up to nine sides can be present, and there are intriguing opportunities for teamwork. For instance, you might set up one player to handle an aircraft carrier and its planes, while another player handles the other ships in the same battle group.

Jane's is concerned that gamers realize FLEET COMMAND is a strat game, not a sim. But the title has the potential to have very wide appeal. Strategy gamers looking for a more in-depth experience than the typical click-fest will find it appealing. The systems modeling is so deep that the game will likely appeal to the wargaming crowd, and sim fans can look at it as a "third-person" naval sim. However it's classified, it's a breath of fresh air in a me-too market. CGW

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Civilization: Call to Power

Can Activision Remake CIVILIZATION in its Own Image?

NO ONE KNOWS WHO THEY WERE
But your rivals will know where you come from if you build Stonehenge.

Genre: Turn-based Historical
Release Date: Q2 '99
Developer: Activision
Publisher: Activision
www.activision.com

by Terry Coleman

In 1997, Avalon Hill, motivated by a need for cash flow and a desire to strike a blow at MicroProse—which it had long considered to have ripped off one of its most prized franchises—licensed the computer rights for ADVANCED CIVILIZATION to Activision. Since SID MEIER'S CIVILIZATION II was one of the few MicroProse titles making a ton of money over the past three years, the MicroProse folks in Alameda protected their investment by suing for copyright infringement. MicroProse delivered its legal masterstroke by purchasing Hartland Trefoil's boardgame company, the original designers of the *Civilization* boardgame, effectively ending any claim Avalon Hill had to the title. When the litigious smoke settled, Avalon Hill had lost all rights to ADVANCED CIVILIZATION, including the boardgame rights (which it had held in North America for 17 years). The more than $400,000 settlement that Avalon Hill had to pay in legal fees hastened the end of the company.

SEXTANT AT MY SIDE Some of the tech advances will be quite familiar to CIV II players—if a bit gussied up, as with Oceanfaring here.

Activision came out of the suit ahead, as it gained the rights to publish CIVILIZATION: CALL TO POWER and at least one add-on product. As one former AH employee said, "Can you imagine Activision going to MicroProse before all of this and asking for rights to publish a CIVILIZATION competitor to Meier's game? They'd have laughed [Activision CEO] Bobby Kotick out of the state."

The irony of all this is that MicroProse and Avalon Hill are now both owned by Hasbro, so something might eventually happen with ADVANCED CIVILIZATION. In the meantime, however, we have CALL TO POWER, and it's a good thing that the legal posturing is over, because Activision's CIVILIZATION is so obviously based on Meier's game that any lawyer would be muttering "look-and-feel lawsuit" in his or her sleep.

Just imagine the three-quarter perspective of SID MEIER'S CIV II in 16-bit color, with bigger sprites à la AGE OF EMPIRES, and you have a good idea of the game's layout. The varying time scale, with turns representing fewer and fewer years as you enter the modern era, is left virtually unchanged. Even now, the pacing and the flow of the game is CIV-like, so the design team has nailed at least one aspect of its intended audience.

Wonder of Wonders

Several things have changed from CIV II, however. The Great Library is now reduced to essentially a Civilopedia, and a lot of your other favorite Wonders of the World are either footnotes or missing altogether. The good news is that the new Wonders of the World are interesting, and there are a lot more of them proportionally later in history—which is when a typical CIVILIZATION II game tends to slow down a bit. The Global E-Bank network, for example, serves much the same function as Adam Smith's Trading Company in CIV II, except that it increases your funds in the 21st century.

The most controversial of the new Wonders will undoubtedly be the Emancipation Proclamation. You see, CALL TO POWER is the first

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MATURE M AGES 17+ ESRB

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HASBRO Interactive

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game in a long time to deal with the emotionally charged institution of slavery throughout history. While some gamers may find the idea repugnant, slavery hardly seems out of place in a game in which every civilization can blithely go around nuking one another. In CALL TO POWER, using slave labor is cheaper than using your own populace, but the temptation to do so lessens with more enlightened forms of government. The Emancipation Proclamation effectively ends slavery as an institution, not only gaining victory (and moral) points for your side, but also likely wrecking the economy of your enemies. It's a bold stand, and whether it will work with CIV fans remains to be seen. Still, you have to admire Activision's guts in not taking the politically correct route (just think how often SS units have been conveniently left out of WWII games). In any case, CALL TO POWER lets you toggle off slavery, just as you can any other major item in the design.

HARRIET TUBMAN'S FRIEND? Abolitionists get their due in CALL TO POWER; shown is both an early watercolor painting and the final computer-generated art.

Let's Get Religion!

The freshest things in CALL TO POWER aren't so much the new units—Leviathan Heavy Tanks, for instance, are just a variation on units found in every sci-fi strategy game from COMMAND AND CONQUER to TOTAL ANNIHILATION—as the new government types. Most of these take their inspiration from some unpleasant aspect of history generally ignored by games. My favorites are the Ecotopians, a bizarre group that seems to idolize the "Free Love" period of the 1960s but is prone to outbursts of extreme violence—sort of "Greenpeace meets Islamic Jihad," according to lead designer William Westwater. In addition to normal tactics, these ecoterrorists can set off an LSD-like bomb in an enemy city—which tends to render the city somewhat ineffective, whether or not it goes into revolt immediately. The Ecotopians even have their own anti-Wonder, a Genesis device that remakes all life on the planet in a new image (though without, as yet, the cool special effects from *Star Trek: Wrath of Khan*).

Religion also rears its head, with clerics that are similar to the priests from AGE OF EMPIRES. In addition to simply converting enemies to your side, clerics can drain an enemy city of gold, entice its population to revolt, and other nasty things, all in the name of organized religion. By the way, the advanced unit of the cleric in CALL TO POWER is the televangelist, every bit as creepy as that sounds (unless I have one, of course).

Living in the Real World

The design team for CALL TO POWER comprises some of the biggest CIVILIZATION freaks I've ever met. Like me, they would be eternally happy playing the main campaign of what project director Cecilia Barajas called "the most replayable game ever made." Problem is, CALL TO POWER goes further through history than even CIV II—from 4000 B.C. to A.D. 3000. Not everyone these days has the time or the patience for a 40-hour game—especially for multiplay. Activision plans a battle.net–type server, ActivLink, to host CALL TO POWER Internet games (whether this service will be live by the time the game ships was unclear at press time). The game should support LAN and direct modem linkup as well.

One thing the design team is still hedging is exactly how turns will work in multiplayer format. One possibility is to do everything in simultaneous turns, as in WARLORDS III. But CALL TO POWER pushes around more information per turn than WARLORDS ever dreamed of, with high-res graphics to boot. Regardless, Activision intends to have a number of scenarios playable in an hour: an ambitious goal, and an obvious attempt to appeal to the AGE OF EMPIRES crowd. Let's hope it works.

War and Peace

Since Activision doesn't have access to the source code for CIV II, it may be hard for the company to match that design's sophisticated diplomacy system. But the designers have implemented a fairly detailed menu-driven interface to let you trade land or goods for cash or military units. We imagine they'll continue to play-balance this system and integrate it into the economic model right up until the game ships.

Combat, on the other hand, is already well fleshed out. Unlike CIV II, CALL TO POWER gives you advantages for attacking or defending with a stack of units, including combined arms modifiers—like those in WARLORDS III, but not as detailed or realistic as in THE OPERATIONAL ART OF WAR. As you go further into the future, you get more high-tech units, such as a futuristic U2-style spy plane, which may be based on the rumored Aurora of the U.S. Air Force. In general, there seems to be greater emphasis on recon units that help to lift the fog-of-war. In another departure from classic CIV, units can utilize a more active defensive posture, and some units even have—gasp!—ranged combat.

Will all of these changes from classic CIV lore work? It's hard to say, though I'll freely admit I had a good time with the beta. The play balance is the thing here, since many of your tried-and-true CIV strategies will need tweaking if you are to survive in this New World order. I'm still a bit skeptical of the game not ending until A.D. 3000, because it smacks of a cheap attempt to end-run SID MEIER'S ALPHA CENTAURI. My main concern, however, is that Activision, with its recent track record for shipping incomplete products, takes the time to finish this promising game. Then we can spend more time arguing the merits of Ecotopian versus Fundamentalist governments and less time downloading patches. CGW

UNCONVENTIONAL WARFARE

The Ecoterrorist, the Slaver, the Combat Engineer, and the Infector (who specializes in biological warfare) show how much the units differ from those of CIV II.

Civilization II Multiplayer Gold Edition

Mining for More Gaming Treasure

You have to feel a little sympathy for the folks at MicroProse. Here they are, with a new version of one of the greatest games of all time, wondering exactly how far they can stretch the design. Do too much that's unfamiliar, and you risk alienating the more than 1 million fans of SID MEIER'S CIVILIZATION II. Add too little that's new, and you have what one *CGW* editor called "a multiplayer patch for a two-year-old game."

Since they do plan to charge money, it's nice that CIV II MULTIPLAYER GOLD will at least be comprised fully of 32-bit code: so long, WinG. It also supports TCP/IP, IPX, LAN, and even play-by-email, complete with standard and simultaneous turns, with an optional timer for each gamer.

Our experience when playing multiplayer was that some of the scenarios worked rather well, but it's hard to finish a full campaign game. To be fair, CIV II works much better with four to six people than MOO II ever did, and while it isn't as smooth as AGE OF EMPIRES, you have by far more diplomacy. You can't simply rush into the middle of the map and start bashing away.

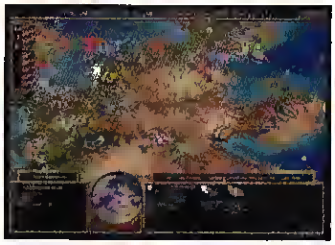
Even for solo players, this might be a good buy because you get classic CIV II (which now runs faster), plus a number of additional scenarios. Since Hasbro seems to be giving the team plenty of time to work out the kinks, this game should avoid the problems associated with 1995's CIVNET. —*Terry Coleman*

Genre: Turn-based Historical
Release Date: Q4 '98
Developer/ Publisher: Hasbro/MicroProse
www.microprose.com

Sid Meier's Alpha Centauri

It's World Building at its Best as You Settle the Final Frontier

Ever wonder what happened to the colonists who left Earth at the end of CIV II? ALPHA CENTAURI gives you the chance to find out. In the game a group of U.N. colonists crash-land on a mysterious planet, and seven factions splinter off from the group—each seeking to settle the planet according to its own principles and ethos. With factions including God-fearing fundamentalists, radical militarists, planet-hugging conservationists, and money-loving capitalists, there should be a splinter group to appeal to every type of strategy gamer.



An enormous tech tree lies at the heart of ALPHA CENTAURI. Researchable technologies are based on plausible science, not the more fanciful stuff of something like, oh, *Lost in Space*. Research will yield a host of new options affecting your sociological structure, your ability to exploit the planet, the units you can build, and other factors. The unit-building feature is particularly noteworthy: As you discover new technologies, you'll be able to customize the units you wish to produce. Choosing from various chassis, weapons, armor, energy sources, and special items, you can create exactly the sort of machine you want. Gamers will have to juggle their unit creation wish list between what they want a unit to have and what those features will cost. Multiplayer games should be fascinating as each side churns out custom units that their opponents have never imagined, let alone seen. —*Robert Coffey*

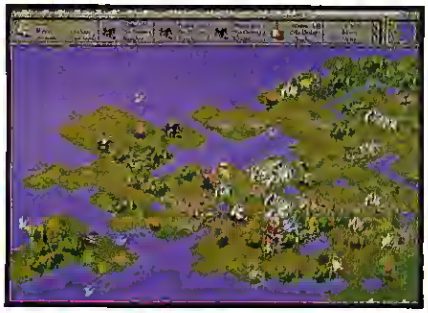
ONLINE
Look for more SID MEIER'S ALPHA CENTAURI at www.gameguides.com

Genre: Turn-based Sci-Fi
Release Date: Q2 '99
Developer: Firaxis
Publisher: Electronic Arts
www.ea.com

Civilization II: Test of Time

Will CIV Be in the Muck Without Meier?

OK, you already have one CIV II title in production—CIV II MULTIPLAYER—so of course you add another. Huh? What's more confusing is that no one at MicroProse seems to know where this product is going. It's evidently going to have a lot of scenarios and a full campaign based on the *Midgard* world from CIV II: FANTASTIC WORLDS. Then again, MicroProse hinted that it might develop *Alpha Centauri* scenarios: It's not nice to take shots at Sid Meier (or his next game) just because he's gone, folks.



Aside from the attempts to add a little 3D and some animation to the three-quarter CIV II perspective, little else seems new here. MicroProse can't even guarantee that TEST OF TIME will support *multiplay*. Part of the problem is that the management has insisted that every product in the CIV II line be backward compatible. With that kind of thinking, it's no wonder we have this muddle instead of a potential CIV III. The only reason not to give up on this product is that Mick Uhl, who gave us the excellent CONFLICTS IN CIVILIZATION add-on, heads the project. We wish him luck. —*Terry Coleman*

Genre: Turn-based Historical
Release Date: Q2 '99
Developer: MicroProse
Publisher: Hasbro/MicroProse
www.microprose.com

DREAMWORKS INTERACTIVE

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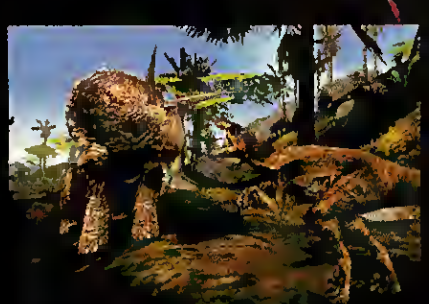

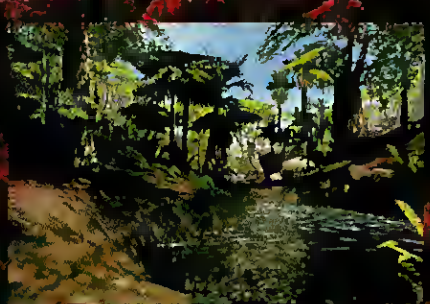

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Imperialism II: Age of Exploration

Holy Bismarck, Batman! It's More Expansionist Than the Original!

by Robert Coffey and Terry Coleman

Gamers who desire grand strategy gaming face a tough decision this year: Figure out which of the tangled mass of CIVILIZATION titles is most worthy of attention and play it, or forgo the confusion and just play IMPERIALISM II. In this instance, the simpler choice may turn out to be the better one.

Genre: Turn-based Historical
Release Date: Q2 '99
Developer: Frog City
Publisher: SSI
www.ssionline.com

Brave New World

For those unfamiliar with the title, the original IMPERIALISM offered the usual mix of expansion, exploration, and exploitation typical of the genre, with the added fun of being loosely set in the period that spanned from the beginnings of the Industrial Revolution to the ascension of Teddy Roosevelt and Otto von Bismarck. While IMPERIALISM II retains its predecessor's classic style of gameplay, the designers of the game have introduced so many additions, changes, and modifications that in many ways it's more of a new game than a sequel.

When you start IMPERIALISM II, one of the most basic changes immediately becomes apparent—or should that be *un*-apparent, since fully half of the randomly generated map is now shrouded in black. In order to emphasize the sense of exploration and discovery appropriate to the game's time frame—from the 16th to the 19th century—everything except the Old World portion of the map is hidden until you, acting as ruler of one of the Old World nations, discover and explore the New World. Certainly, this use of fog-of-war is a lot more realistic—especially in a psychological sense—than the "Is there a tree beyond the next pixel, because I forgot to bring the map from the orbiting starship?" so common in recent tactical strategy games. Besides, Columbus thought he found Cathay, not a new continent; you should experience the same potential confusion and sense of wonder when playing the game.

This, however, brings up one of the few flaws in IMPERIALISM II: The Far East is conveniently ignored, even more so than in many western civilization–centered histories (no wonder Nehru felt compelled to write *History of the World* from a different perspective). You don't worry about trading with China or trying to muscle in on Venice's spice trade through Arabia; they simply don't exist. Maybe they'll magically reappear in IMPERIALISM III?

PARCHMENT PLUS The tutoriels are both more colorful and more informative than in the original IMPERIALISM.

WHEN ENGLAND'S NOT AN ISLAND Generating the world from scratch every game gives you the right countries in some unfamiliar spots. Note that the designers plan to include purely historical scenarios, but even then the New World will be random.

Military and Civilian Strikes

In any case, once the New World is discovered, you'll be able to colonize, exploit, and conquer whatever you find there. But be forewarned that you're going to face stiffer competition here than in the first IMPERIALISM.

This higher challenge will come courtesy of a much tougher computer opponent. Rival, computer-controlled countries will recognize threats and ally to defeat you. While the AI in IMPERIALISM fell apart in the later stages of the game, this new version promises to fight you to the end. And not just through direct attacks, either. The AI will disrupt your trade routes, thus wrecking your economy, starving your citizens, and costing you the game. You'll need all your cunning to win, because smallpox occurs in the New World (to Terry Coleman's great lament) only as a "rare" random

OFF TO UNIVERSITY Research is much more developed than in the original IMPERIALISM, for both civilian and military units.

HERE COME THE FLOODS Random events add a much needed touch of uncertainty to IMPERIALISM II.

event. You'll have to wipe out and otherwise abuse that native population through hard work—Cortez would have been proud.

You'll also need a technological edge. Frog City is making a concerted effort to revamp the tech tree for this game. Even its kindest critics were forced to admit that IMPERIALISM's tech tree left a lot to be desired, especially for veterans of MASTER OF ORION and CIVILIZATION II. Whereas the original had all countries progressing at more or less the same speed, IMPERIALISM II will let you outpace your adversaries. The advantages to this should be apparent the first time your steel-sided steamships sink an armada of wooden ones. A handy menu will let you pick research priorities and then suggest technologies to research in order to meet your goals.

About the only thing we miss here that we enjoy in similar games like CIVILIZATION II is the sense of technological brainstorms. There seems to be only one research path in IMPERIALISM II to each discovery. So, there's no reason—in the long run, anyway—not to research *everything*, something that never really happens in real life, where the Tom Edisons and Nikola Teslas of the world make intuitive leaps and let someone else worry about going back and filling in the gaps. Aside from any concerns of perceived "realism," this can be a huge gameplay issue—although IMPERIALISM II mostly makes up for this by allowing you to develop a spy network and lift research nuggets from your enemies (and your friends). Of course if you get caught playing Mata Hari, you risk losing Most Favored Nation status with your crucial trading partner, and you might even precipitate a huge war that costs everybody money.

Finally, it's harder to crack the formula that keeps your nation of workers happy and productive, since there are just too many outside factors that you can't predict. Say, for example, that you're building your mercantile empire around being the largest producer of crab apples in the world. Suddenly, one of your trading partners enters a war with a country that happens to be your main source of sugar. Unless you've had the foresight to stockpile a few extra tons of the crystalline sweet stuff, everybody's fried crab-apple pie suffers, workers revolt, and now you may be the one falling behind in the economic race.

WIGGED OUT Our spy is about to be permanently removed from play.

All of these factors require that you keep a critical eye on not only your trade routes, but also the changing political landscape—the dynamics of which are the best part of IMPERIALISM II's design. If you go isolationist, as the United States did early in this century, you risk losing the game, as well as missing out on all the fun.

Giving Orders

None of the additional depth and new and delightful ways to screw one's neighbor in IMPERIALISM II would help much if the game weren't also easier to play than the original. On that front, we've seen evidence that the game is moving toward a more streamlined, user-friendly interface that will make managing your budding empire less cumbersome. In particular, the number of screens you have to deal with is being reduced—so that you don't have to click on the factory, then the worker, then back to the main interface—and those that remain are being better organized for functionality (for instance, all the Diplomatic options are now on one screen).

TRADE WARS The trading model—which was always the best part of IMPERIALISM—lets you build an economic empire from sugar, ore, manufactured goods, trees, and small furry creatures, among other delights.

Right-clicking on menu items will give you more detailed information on those items, and most of the menu buttons will have hot text for instant, capsule explanations. One visual treat from the first game, the turn-by-turn newspaper that announced game developments, is gone, having been replaced by a succinct summary box. While we'll miss the kitschy stories and the period flavor the newspaper provided, we agree with the design team that the fiction often obscured the real game info from the gamer. Finally, a helpful tutorial will ease newbies into the game and should also be useful for introducing IMPERIALISM veterans to the new gameplay.

What few quibbles we had with the original seem to have been answered in this well-thought-out sequel. IMPERIALISM II looks more challenging, easier to play (especially multiplayer), and more replayable than any of its "conquer the world" competitors that are likely to release this year. We're ready, and we promise a steam train in every town and a flintlock musket in every house. So you better trade with us. Or else. CGW

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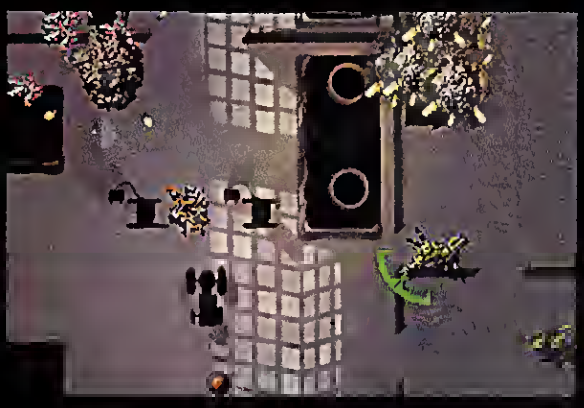

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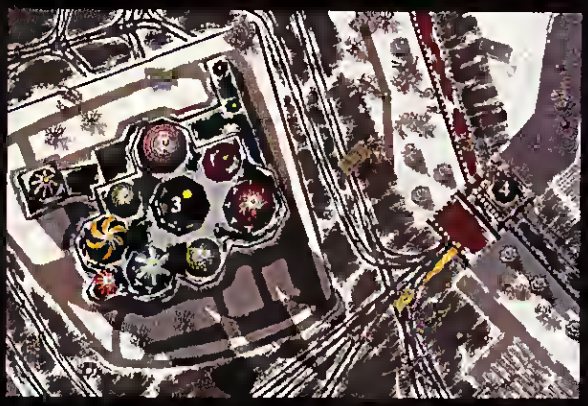

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Populous: The Beginning

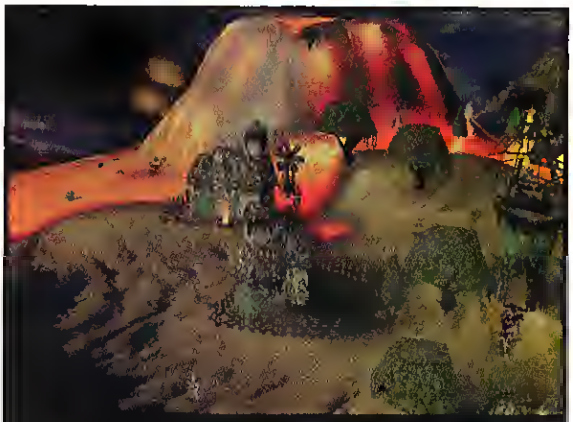
Aspiring Deities Never Had It So Good

by Robert Coffey

The more we see of this game, the more we can't wait to get our hands on it. Richly imagined visuals, innovative gameplay, and an oddly charming personality utterly unlike any other game are certain to set POPULOUS: THE BEGINNING (POP: TB) apart from the "me-too" games flooding the real-time market. The best news is that by the time you read this, POP: TB should be hitting store shelves.

Spreading the Good Word

A prequel to POPULOUS I & II, the original god games, POP: TB takes place prior to your deification. As a shaman with a yen to become the all-powerful master of time, space, and dimension, you must become the sole monotheistic focal point for 26 different planets in order to achieve your goal. Sure, you can attract and convert followers, but who wants to take the time to do that when you can summon Angels of Death, call forth lightning strikes, or raise up enormous, devastating volcanoes to get rid of pesky nonbelievers?



NATURE'S FURY The volcano spell is easily one of the most dramatic in the game, raising a lava-spewing mound that is certain to destroy small villages like this.

The game's developer, Bullfrog, is strongly emphasizing the use of magic in POP: TB's gameplay. Although gamers will build structures and raise armies, it's the strategic use of spells that will decide the outcome of most scenarios. This is particularly evident on one planet where you have no followers or villages and must conquer three rival shamans and their villages with nothing more than your magic.

TWISTER AND SHOUT From a safe distance, a shaman calmly watches villagers run screaming from the hurricane she has summoned.

BEACHFRONT PROPERTY The planets in POPULOUS: THE BEGINNING run the gamut from dark and foreboding to blanketed in snow to this world's scarlet sea and sky.

Fortunately, the spells you'll have at your disposal are more than up to the task. In addition to those already mentioned, you'll have a hurricane spell, an erosion spell that proves cataclysmic for coastal settlements, a land bridge spell perfect for reaching islands, and more. Aside from their more obvious uses on offense, spells will figure largely in strategic maneuvers. For instance, because the gameworlds are rendered in true 3D, you can use the erosion spell to carve passes through mountain ranges that are blocking your forces. Similarly, the land bridge spell will raise an impassable wall between two peaks.

The design team has focused on variety and entertainment when it comes to creating the missions. As a result, expect POP: TB to happily stray from the real-time strategy path. Fog-of-war exists on just a few planets and only as the result of a rival shaman trying to obscure your vision. This makes sense—as a demigod, you should be able to see a whole planet. One-shot spells exist on many of the planets and are generally the key to victory. Success on one of the later worlds will hinge on casting the single-shot Armageddon spell, summoning all shamans and their units to a gladiator-style pit. The last one standing wins.

The use of terrain in POP: TB will be just as important as the use of spells. Higher elevation will extend your shaman's spell range, so you'll want to get your alter ego on top of the highest elevation whenever possible. Put your shaman in a tower on top of a hill and you can cover an enormous amount of real estate.

Genre: Real-time Fantasy
Release Date: Q4 '98
Developer: Bullfrog
Publisher: Electronic Arts
www.ea.com

God's Country

POP: TB promises to look and play like no other real-time strategy game. Its 3D graphics are more than a nod to a trendy buzzword; they actually affect gameplay. On the most basic level a 3D world totally alters the multiplayer game. Think about it—most multiplayer maps start gamers out in different corners of a big, square grid, leaving them vulnerable to attack on just two sides. But with POP: TB's truly global worlds, players are essentially exposed on all fronts.

If the beta is any indication, the game should be visually stunning, with whimsical, almost Dr. Seuss-ian buildings; dramatic spell effects; and worlds awash in brilliantly hued skies and gently lapping crimson oceans. The lively animations of your followers are especially entertaining, whether they're stomping terrain flat before building, chopping wood, spinning helplessly in a hurricane, or desperately running away from a flood of lava.

Since the earlier POPULOUS games are considered classics by most gamers, POPULOUS: THE BEGINNING will have a lot to live up to. Odds are it will. For strategists starved for something fresh, POP: TB may well be manna from heaven. CGW

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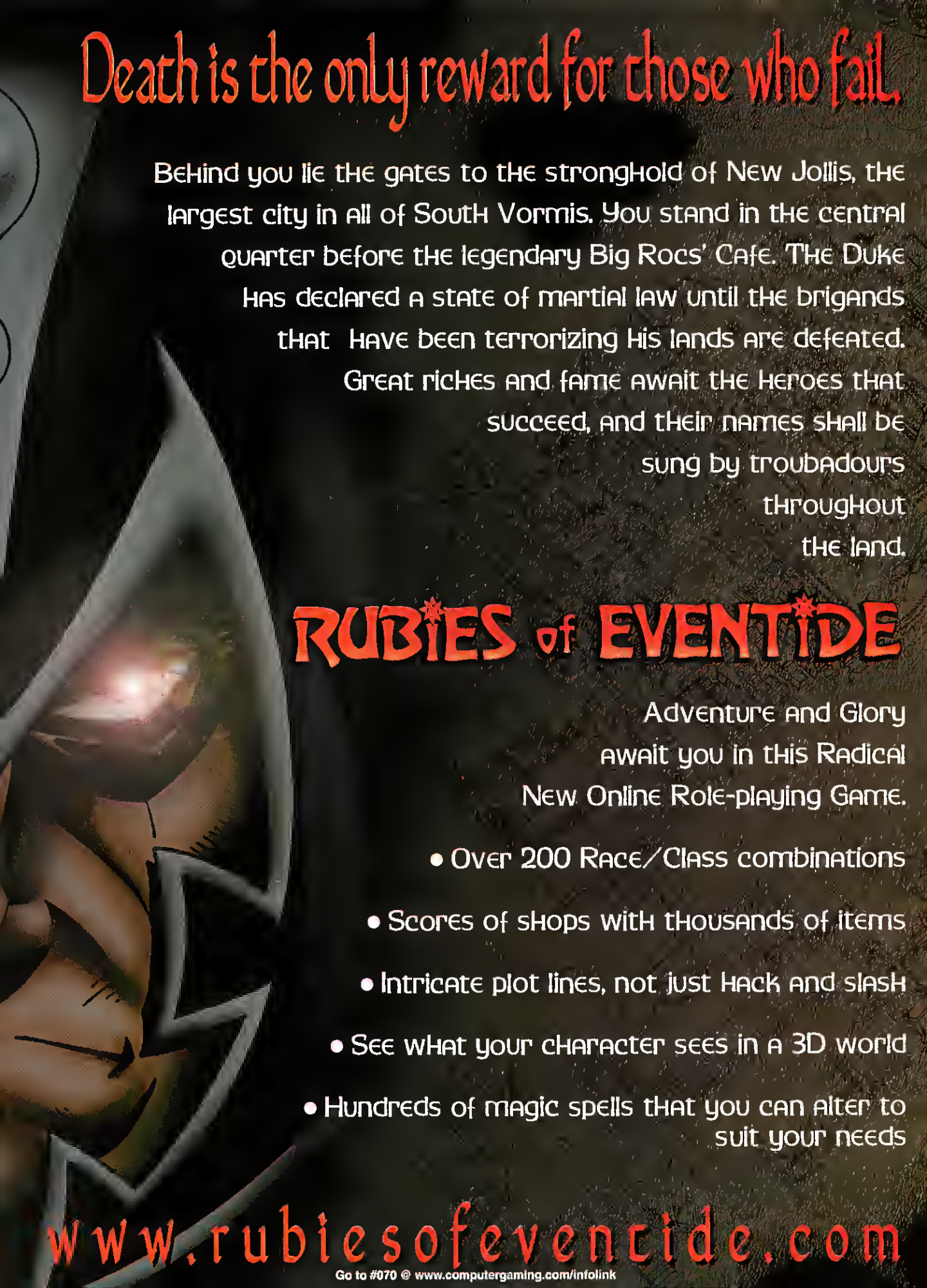
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Shadow Company

Is This the Real-time Squad Game We've Been Waiting For?

by Robert Coffey

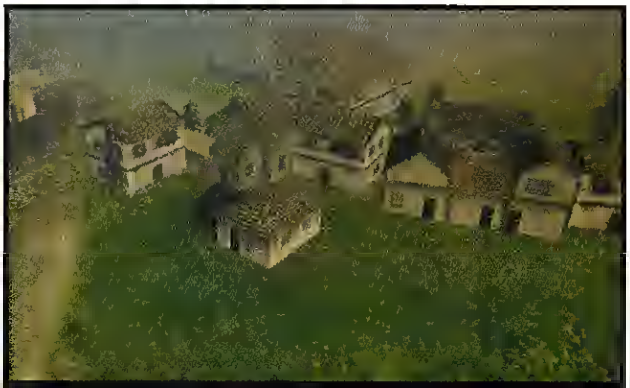
This could be the game COMMANDOS should have been. That game disappointed many gamers by promising real-time, squad-based combat but delivering action that was more of an elaborate puzzle than anything involving tactics or strategy. If SHADOW COMPANY follows up on the promise evident in the pre-alpha version we saw, it could satisfy gamers who are hungry to lead small squads in realistic, combat-intensive operations.

Soldiers of Fortune

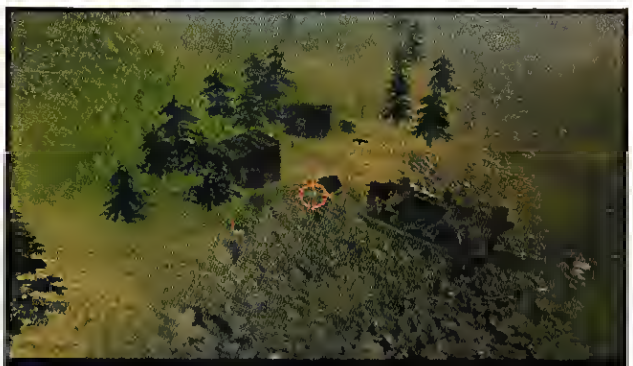
The premise behind the game sounds like a Chuck Norris movie: You and your small band of mercenaries, recruited by a less than ethical corporation, are left behind in hostile territory after a private war goes sour. Vowing revenge on the traitors who hired you, your team fights its way back to civilization.

Visually, SHADOW COMPANY is striking, even at this early stage of the game's design. The gameworld is realistically detailed, with units, objects, and vehicles all rendered in 3D. Yep, you're going to need hardware to run this one. As in an increasing number of games, you view the gameworld via a swooping, panning camera à la MYTH. A smooth zoom function lets you pull out for a bird's-eye view of a mission site or move in tight to facilitate detailed movement of your troops.

The game will be broken up into campaigns, and missions will feature multiple objectives. A typical mission may have you first take out a small base in order to obtain heavier weapons, then shut down an airstrip, and conclude by having your team wipe out the bases of two warlords. These are fairly hefty mission goals, especially when you consider that you've got only a three-person team. Often outmanned and outarmed, you'll need to maneuver your band of hired guns deftly, using cover, stealth, and brute force appropriately.



THE BIG PICTURE Zooming the game camera out as far as possible gives you a quick picture of the lay of the land and helps you plan your approach.



GOOD NEWS, BAD NEWS The good news is the dried-out riverbed let this mercenary sneak up on the bad guys. The bad news is the terrorist has the advantage of higher ground in the ensuing firefight.

Tools of the Trade

ONLINE

Look for more on Shadow Company at www.gameguides.com

Fortunately, there should be lots of items at your disposal to help ensure success. Weapons will include rifles, explosives, and grenade launchers; and you'll also have access to scuba gear, flak jackets, wire cutters, binoculars, and starlight goggles. For transportation, you'll be able to make use of boats, tanks, snowmobiles, and helicopters.

Missions will take place in a variety of environments. Expect to take on bad guys in deserts, on tropical islands, in savannas, and on frozen tundra. These locales are more than window dressing; they will come alive with dynamic, physics-based weather effects including rain, wind that affects bullet trajectory, and snow in which you'll leave footprints.

Genre: Real-time Modern Era
Release Date: Q2 '99
Developer: Sinister Games
Publisher: Interactive Magic
www.imagicgames.com

It's hoped that the characters in SHADOW COMPANY will be more than the glorified puzzle pieces that populated COMMANDOS. Early indications are very encouraging. Sinister Games is promising individually scripted AI for each character, ensuring that each responds differently in a given situation. While the pre-alpha I played obviously hadn't implemented most of the AI, I was happy to see team members independently return enemy fire when they were shot at—you won't see that in COMMANDOS. The game will feature 12 primary mercenaries along with several reserves, and each unit will have his or her own skills and abilities, though all will have the ability to crawl, run, climb, and patrol.

While mission design and AI are vital parts of any strategy game, they are going to be absolutely crucial in SHADOW COMPANY. Unfortunately, the extremely early preview build I played showed only the very beginnings of these elements. If Sinister Games can create varied, challenging scenarios peopled with smart player characters and enemies alike, SHADOW COMPANY could be one of the sleeper hits of the coming year. CGW

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Age of Empires II

Your Adversaries Get a Lot Brighter in the Dark Ages

OUTSIDE THE CASTLE The artwork shows the same meticulous quality as in the first AGE OF EMPIRES, but the building scale has increased.

Genre: Real-time Strategy
Release Date: Q2 '99
Developer: Ensemble Studios
Publisher: Microsoft
www.microsoft.com

by Ken Brown

The racket you hear next to the Central Expressway in Dallas, Texas, is the sound of AGE OF EMPIRES II being nailed together. The work crews at Ensemble are building battering rams, cannon galleys, unit formations, and castles to prepare for a late spring assault. Here's the latest on what to expect, straight from Lead Designer Mark Terrano.

Age of Enlightenment

The game's basic premise and interface remain the same. You'll pick 1 of 13 civilizations and lead it through four ages to build a wonder or to soak the Earth with the blood of your enemies. A new option—Regicide—offers a different victory condition by letting you play capture the flag with a royal.

All of the pathfinding and unit AI is being rewritten. Units will be smart enough to find their way to any accessible location, Terrano says. Units will also stay together if you group them, so defensive units can escort trade goods or relics. All units will have equal pathfinding, so the computer player won't have the upper hand.

TROUBLE BREWING Paladins and swordsmen square off in a clearing.

JAPANESE VILLAGE Male and female villagers tend a farm, blacksmith shop, stable, and mill.

Improving the first game's weak AI has been a top priority for the design team at Ensemble. Villagers will automatically yield to those dropping off resources, and they'll get out of the way of advancing troops. Military units will look smarter and fight better, according to Terrano. They can be told to guard a unit or a building, and you can set differing levels of aggressiveness for those units. In aggressive mode, your units will attack and pursue anything they see. In defensive mode they will engage attackers and then return to their positions. In addition, units will take advantage of targets of opportunity. Paladins, for example, will ride to the range of their line-of-sight to spear a villager.

Computer opponents should play smarter as well. In AGE OF EMPIRES, computer players had a preset strategy in each game. In AGE II, opponents will react to what's going on in the game. If they see an opportunity to build a wonder, they'll do it; if they realize they need to tear down your wonder, they'll try to do that, too. Even better, they'll make or break alliances based on their purposes. "Our goal is to make the experience much closer to playing a human player," Terrano says.

Formations will add a new dimension to AGE II, but the design team is still working on implementing them. In most cases, the AI will select a default formation based on unit types. These will usually consist of columns and lines, with archers automatically taking position behind swordsmen or pikemen. You can also form a phalanx or wedge, or you can form a box around a unit such as a trade cart or priest. The team is experimenting with custom formation options, as well.

Instead of artifacts, AGE II will feature relics. Relics confer special benefits on their owners, such as inspiring soldiers on the battlefield or generating gold in churches. Terrano envisions relics offering a +2 attack for those units in possession of them.

Siege the Day

Castles should play a pivotal role in the new game. The castle is a large military facility that will enable you to build the special "superunit" unique to each culture. Castle assaults require siege weapons such as battering rams, trebuchets, mangonels (similar to a stone thrower), and bombard cannon. Unfortunately, the game currently won't let you put archers on the walls, but you will be able to garrison troops in towers.

Finally, look for high jinks on the high seas. You'll have new warship types that shoot cannon, blast Greek Fire, or ram other ships. New boarding ships are like the priests of the sea: They can be used to take over enemy ships. Since the new trade boats will hold hundreds of units of goods, piracy will pay off.

So, avast ye scalawags! Prepare to surrender your gold for the coming of the new AGE. CGW

Upon further reflection,

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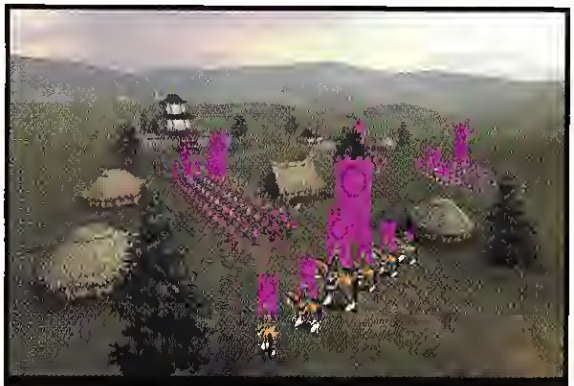
Shogun: Total War

Become the Biggest Warlord on the Block in 16th-Century Japan

by Alan Dykes

A thousand years before Machiavelli established the rules for dictatorship in 16th-century Italy, a Chinese military genius and philosopher by the name of Sun Tzu established the rules of generalship. His manuscript, *The Art of War,* brimmed with useful tidbits like, "To fight and conquer in all your battles is not supreme excellence; supreme excellence consists in breaking the enemy's resistance without fighting." I mention this venerable strategist because SHOGUN: TOTAL WAR, a game set in feudal Japan, uses some of his principles in its overall design and—believe it or not—its artificial intelligence routines. So you'll have to be careful: The enemy has gone to school.



DEATH AT DAWN Cavalry and foot soldiers ready themselves for battle as the enemy's banners peek over a distant hilltop.

Genre: Hybrid Historical
Release Date: Q2 '99
Developer: Creative Assembly
Publisher: Electronic Arts
www.ea.com

Throne of Blood

SHOGUN: TOTAL WAR, set in Japan between the 15th and 17th centuries, combines almost RISK-style strategy and tactical real-time warfare. Playing the part of a Daimyo, or feudal warlord, who controls a small part of one of Japan's three main islands, your ultimate aim is to become Shogun—absolute warlord ruler of Japan. The game is all about diplomacy and espionage as well as war, allowing you to train both diplomats and ninjas. The diplomats will soothe ruffled neighbors and form alliances, while ninjas will infiltrate opposing fiefdoms for the purposes of spying, sabotage, or assassination. You can, of course, be defeated while trying to attain your goal, but in accordance with the game's style, your sons are your extra lives.

CLASH OF TITANS With armies numbering into the thousands, SHOGUN: TOTAL WAR will fill even the largest of monitors with epic battles.

RISK-Y STRATEGY In between the huge, real-time tactical battles, SHOGUN players will deploy troops, spies, and ninjas via an interface that bears a striking resemblance to a RISK board.

Shadow Warriors

While the strategic element is all about intrigue and alliance, the tactical element gives you direct control over Japan's legendary samurai warriors, along with some disgruntled, armed peasants. Tactical battle scenes, at first glance, resemble those in DARK OMEN or MYTH, but once I played the game the differences became obvious. First and foremost, this has to be the most expansive real-time battle scenario yet seen in a game. Creative Assembly claims the game will let you move up to 3,000 units at once, each with limited individual AI. This is a tad misleading since these units move in columns, each with its own leader and flag. But when battle is joined at close quarters, they eventually split into melee groups just as real sword-and-spear troops would do. Well-motivated troops, on the other hand, will stay together when faced with a cavalry charge.

The tactical battle screens are graphically expansive and lavishly picturesque, with a real heroic feel. There is complete control over camera movement on all planes, granting you total visual control of your armies at all angles. You can set you troops in squared, deep columns or stretch them in long lines with ease. In fact, unit formations can be a tactical tool: Spread out some of your troops in a long, thin line on top of a hill and you may fool your enemy into thinking you have more men there than you actually have. This allows the rest of your troops to gain an advantage.

One neat feature lets you create an avenue in a column of men to allow another through. With this feature, you can send a column of archers forward supported directly behind by halberdiers. Then, if the enemy charges your archers, you can order the archers to separate a man apart and send your infantry through to form a barrier of steel in front of them.

During this period in Japan the Portuguese and the Dutch began to arrive and trade. They brought firearms and Christianity, not necessarily in that order. While the Portuguese sold guns only to Japanese converts, the Dutch sold to everyone, and some point during the game, these outside forces will come into play. You'll then have to decide whether to become a Christian Daimyo or to remain faithful to Shintoism. Be ready to deal with the consequences of your decision. Either way SHOGUN: TOTAL WAR is looking very tasty indeed, and potential Toshiro Mifunes should look for it in the new year. Hai! CGW

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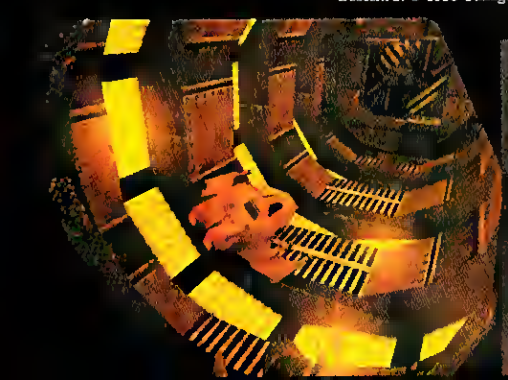

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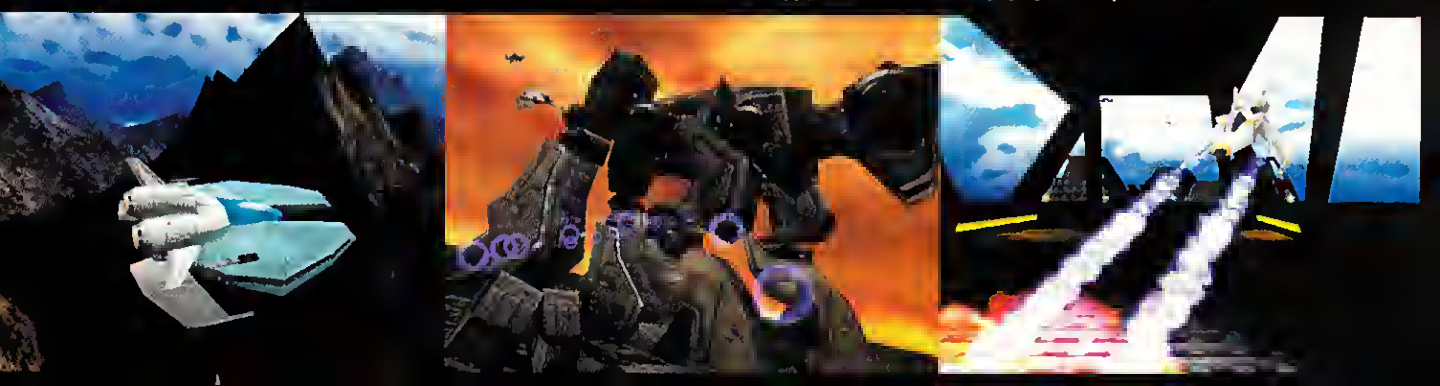

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Combat Mission

A Fighting Phoenix Emerges From the Ashes of Squad Leader

Designer Charlie Moylan likes to be different. Because he loved the Macintosh, he designed FLIGHT COMMANDER for that platform, even though all his fellow designers told him you really couldn't make money that way. As vastly improved graphics and processor capabilities led to a new generation of high-end flight simulators for the PC, Moylan decided he would rather make turn-based flight-combat games. After it became apparent that he and Avalon Hill weren't seeing eye-to-eye on the specs for COMPUTER SQUAD LEADER, Moylan removed any traces of copyrighted Avalon material from his design and launched into COMBAT MISSION.

What he has achieved thus far is potentially the best tactical WWII game we've seen. COMBAT MISSION is more playable than TIGERS ON THE PROWL and more realistic than games like the upcoming SHADOW COMPANY, and it sports a better interface than STEEL PANTHERS.

Genre: Turn-Based WWII
Release Date: Q2 '99
Developer/ Publisher:
Big Time Software
www.bigtimesoftware.com

Zero to Sixty

COMBAT MISSION is not your typical turn-based variation on *Panzerblitz* or PANZER GENERAL. Each player issues orders—movement, suppression fire, retreat, and the like—to his units; once all orders are entered, they're executed simultaneously for both sides during an action phase that represents one minute of actual time.

The action phase idea isn't totally new. It has been used before in boardgames in which each side secretly plots moves. The advantage here is that the computer handles all of the tedium, resolving initiative, morale, and casualties where necessary. What's more, this is the first time we've seen this attempted in a WWII game on the PC—a genre for which this approach is eminently suited.

As your soldiers move around in the 3D terrain, avoiding equally 3D tanks and minefields, you feel as if you are playing a tabletop game over terrain that you've sculpted by hand—except this is *better*. The damage model tracks projectiles even after they've missed the intended target. They could damage terrain, take out civilians, even cause friendly fire casualties. Moreover, the game seems to have no trouble handling tricky vertical (y-axis) lines of sight, even when a unit is partially obscured by slopes or terrain.

We have no worries about the AI, since Moylan is one of the best in the business at creating a tough computer opponent. The subject matter has been done before, but this is such a different take on WWII combat that even jaded old grognards at *CGW* are looking forward to this one. Now excuse me while I go lube my '88. —*Terry Coleman*

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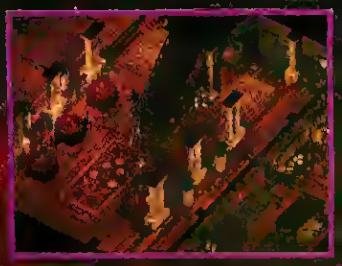

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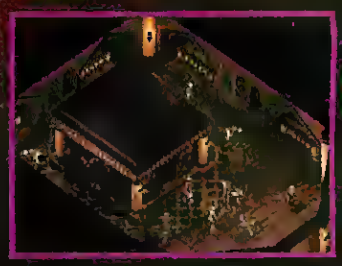

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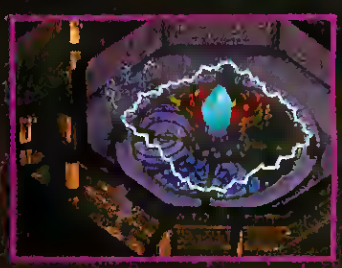

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Fighting Steel

Polish Your Long Lance Torpedo

The lines between ship simulators and wargames always blur a bit, particularly because reflexes—at least in games—are not quite so important at sea as they are up in the virtual clouds. We'll still claim FIGHTING STEEL as a naval wargame, because it requires that you think in terms of commanding task forces rather than captaining an individual vessel.

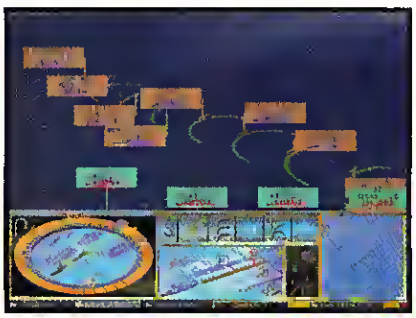
If you insist on reliving your bygone GREAT NAVAL BATTLES (GNB), there is plenty of micromanagement available here. (Thankfully, you don't have to play SimShipFireman as you did in the too-combustible GNB3.) But the good news is that FIGHTING STEEL de-emphasizes that level of management. Rather than require you to run around and do everything from loading torpedoes to identifying the radar contacts yourself, the game has you concentrate on the giving of orders. To that end, the interface has been modified since our last visit with the game (*CGW* #170), so that you can more easily command your formation of ships.

Not every vessel will snap to as quickly as you'd like, however, and that reveals a particularly nice design feature: Everything depends on crew quality. Mediocre crews not only take longer to zero in on a designated target, they also reload more slowly than crack crews, and they tend to drift out of formation. So, especially during night battles, you can easily create the chaos of a WWII naval battle in FIGHTING STEEL with no real increase in complexity for the gamer.

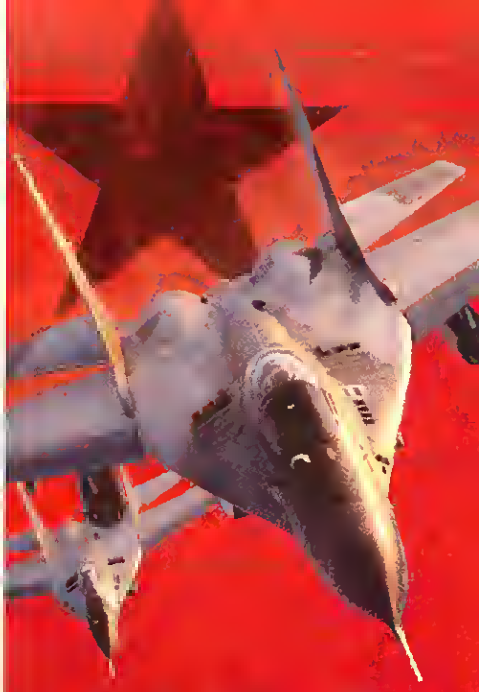
Genre: Real-time Naval WWII
Release Date: Q2 '99
Developer: Divide By Zero
Publisher: SSI
www.ssionline.com

The areas in and around the Pacific depicted in the game so far appear almost too evocative of the gray seas they represent—they're a far cry from the liquid ripples of TOTAL ANNIHILATION: KINGDOMS. Nonetheless, the 3D ship models show promise, and it seems as if SSI will require a 3D card for this one.

Once the more than 100 ship classes are ready to go, they'll sail through campaigns for both the Japanese and Allies during the years 1941–43. Before you complain about the time limitation, keep in mind that it reflects a reality the Japanese faced: If they could not win by the end of 1943, they were simply going to be ground down by the weight of the U.S. industrial war machine. Also, FIGHTING STEEL focuses strictly on surface ship combat—no subs and no aircraft carriers—and that doesn't leave a whole lot to simulate after 1943. Given SSI's trumpeting of its integrated LIVING BATTLEFIELD series, however, I wouldn't be surprised to see a carrier battle or three in some future product.



Current plans are for FIGHTING STEEL to support IPX, TCP/IP, and LAN—a very good thing, since this game is most likely to hit its stride when played online. Most real-life naval battles were essentially over in an hour or less. FIGHTING STEEL, like most games of this type, has a default speed a bit faster than real life, and it's easily adjustable. You can thus spend more time contemplating your stately maneuvers than Admiral Halsey ever had, or you can navigate on the fly while trying to sink your buddies over a lunch break. This game is taking almost as long to finish as it took for MacArthur to return to the Philippines, but it looks as if it will be worth it. —*Terry Coleman*



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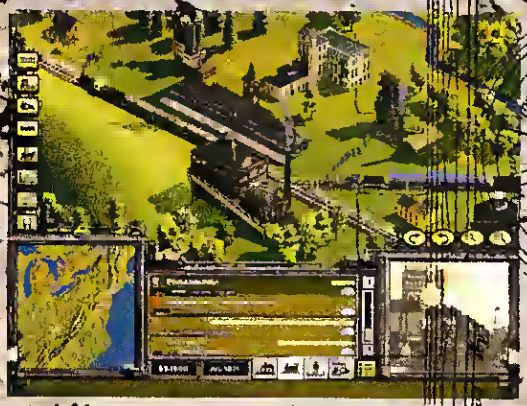

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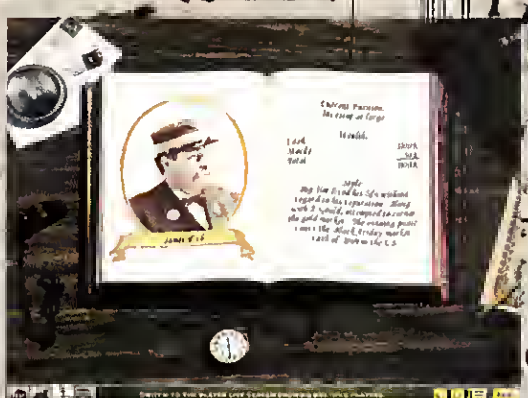

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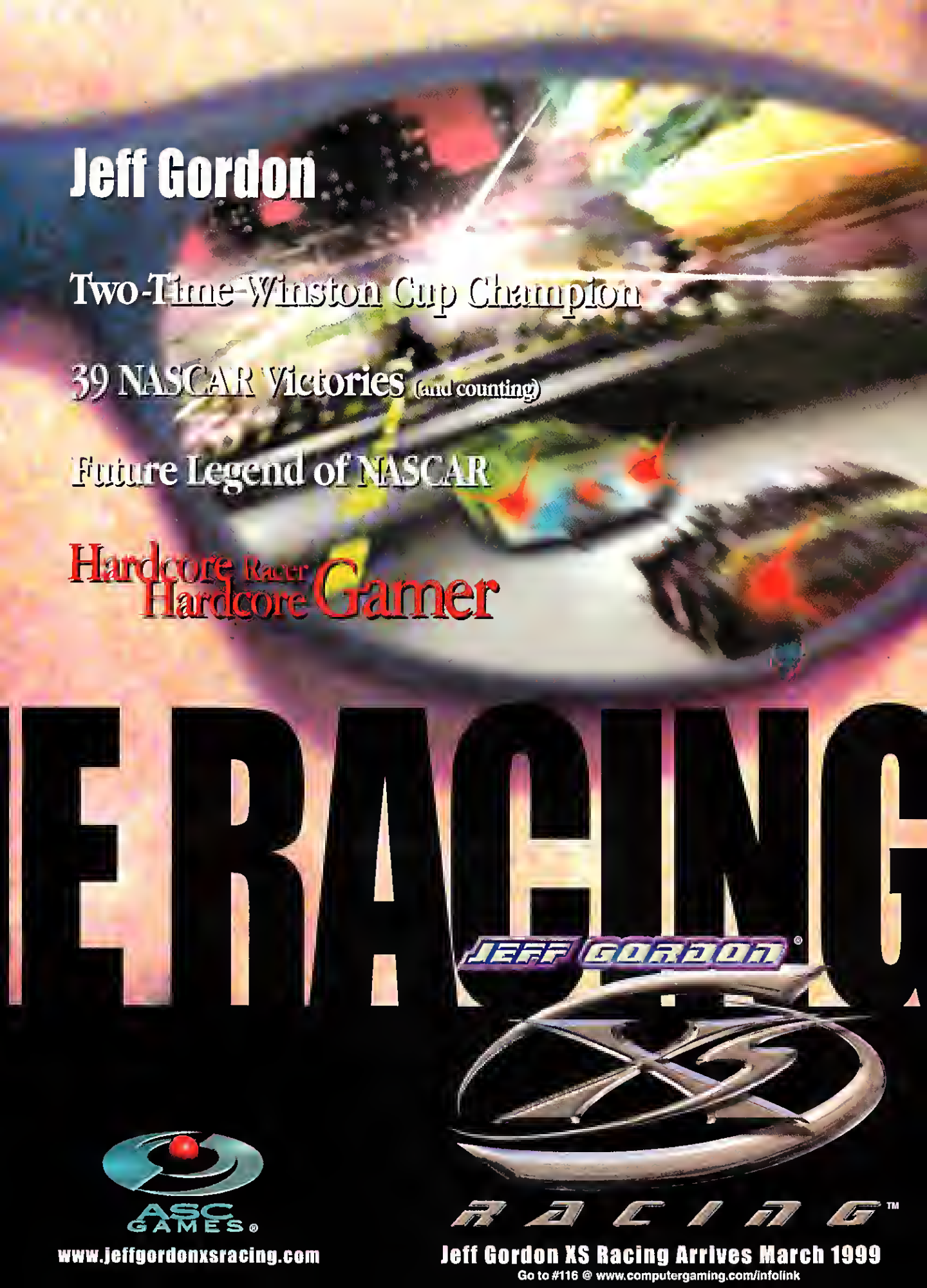
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Seven Kingdoms II

It's SEVEN KINGDOMS All Over Again—Only Really Different

by Robert Coffey

With its refreshing de-emphasis on combat and its strong focus on economics, construction, espionage, and diplomatic relations, SEVEN KINGDOMS ranked as one of our favorite games of the past year. While every other cookie-cutter real-time strat game tried to be WARCRAFT II or AGE OF EMPIRES with different costumes, SEVEN KINGDOMS wasn't afraid to be different. Now, with the ink still wet on a new five-year deal with Interactive Magic, designer Trevor Chan and Enlight Software are hard at work on SEVEN KINGDOMS II.

Genre: Real-time Fantasy
Release Date: Q2 '99
Developer: Enlight Software
Publisher: Interactive Magic
www.imagicgames.com

The More the Merrier

The ambition behind SEVEN KINGDOMS II is going to be hard to miss—there's more of everything. The developers have added new civilizations—the Carthaginian, Roman, Celtic, and Indian—as well as new units, including cavalry, archers, chariots, and elephants. Gamers can also expect to see civilization-specific units, such as ninjas for the Japanese.

A role-playing element has also been added in the form of heroes. These special units will appear in the course of play and can be carried over from one campaign scenario to the next. Heroes should be powerful assets to anyone's army—able to greatly influence any battle whether by innate skills or by their ability to carry powerful artifacts. Among heroes' abilities, expect to see spell-casting, increased offensive or defensive prowess in combat, and leadership bonuses.

This population explosion goes beyond just those units available to the gamer. The Fryhtans from the original SEVEN KINGDOMS have returned, with 10–15 entirely new Fryhtans tossed into the mix. In fact, the Fryhtans have a far greater role in SEVEN KINGDOMS II than they did in the first game. The new game begins with the world overtaken by the monsters. It is up to the gamer to prevent the enslavement and subjugation of mankind by toppling the Fryhtan rulers, often with the assistance of computer-controlled humans. On the other hand, should you think the Fryhtans are horribly misunderstood, take solace—this time around you'll be able to play as a Fryhtan commander.

STORMY WEATHER Terrific weather effects including driving rain and brilliant bolts of lightning will help bring to life the world of SEVEN KINGDOMS II.

GETTING A POINT ACROSS If your neighbors refuse to cooperate, just send a squad of archers to make your position clear—as this Persian troop is doing.

NICE TOWN YOU GOT HERE Just because SEVEN KINGDOMS II hasn't leapt upon the 3D bandwagon, doesn't mean it won't deliver rich, impressive graphics.

Random Acts of Violence

While the original game was nonlinear, some gamers longed for a campaign. Interactive Magic has responded to those wishes, but in a way that shouldn't alienate fans of the first game's openness. SEVEN KINGDOMS II will ship with a random campaign generator, which will link together several scenarios, each with its own objectives. This should ensure that no two games of SEVEN KINGDOMS II WILL play the same. While this feature wasn't implemented in the extremely early pre-alpha I played, it's an intriguing concept and, if executed properly, should give the game heaps of replayability.

You may well need all that replayability to fully explore all the new research and espionage options. In addition to all the sciences from the original game, gamers will now be able to research farming, spying, advanced military units, advanced mining, advanced manufacturing, and other subjects. Each nationality will apparently also have its own new research upgrade. There should be advanced ax-throwers for the Vikings, advanced Druid magic for the Celts, advanced chariots for the Egyptian—an advanced *something* for everyone.

As large a part as spying played in SEVEN KINGDOMS, you can expect even more in this sequel. Espionage techniques must now be researched, with spies having to undergo training at their version of Mata Hari University. Spies should be more powerful units and will also be able to camouflage themselves.

With all these changes, additions, and enhancements, look for SEVEN KINGDOMS II to be every bit as addictive and strategically deep as its predecessor. CGW

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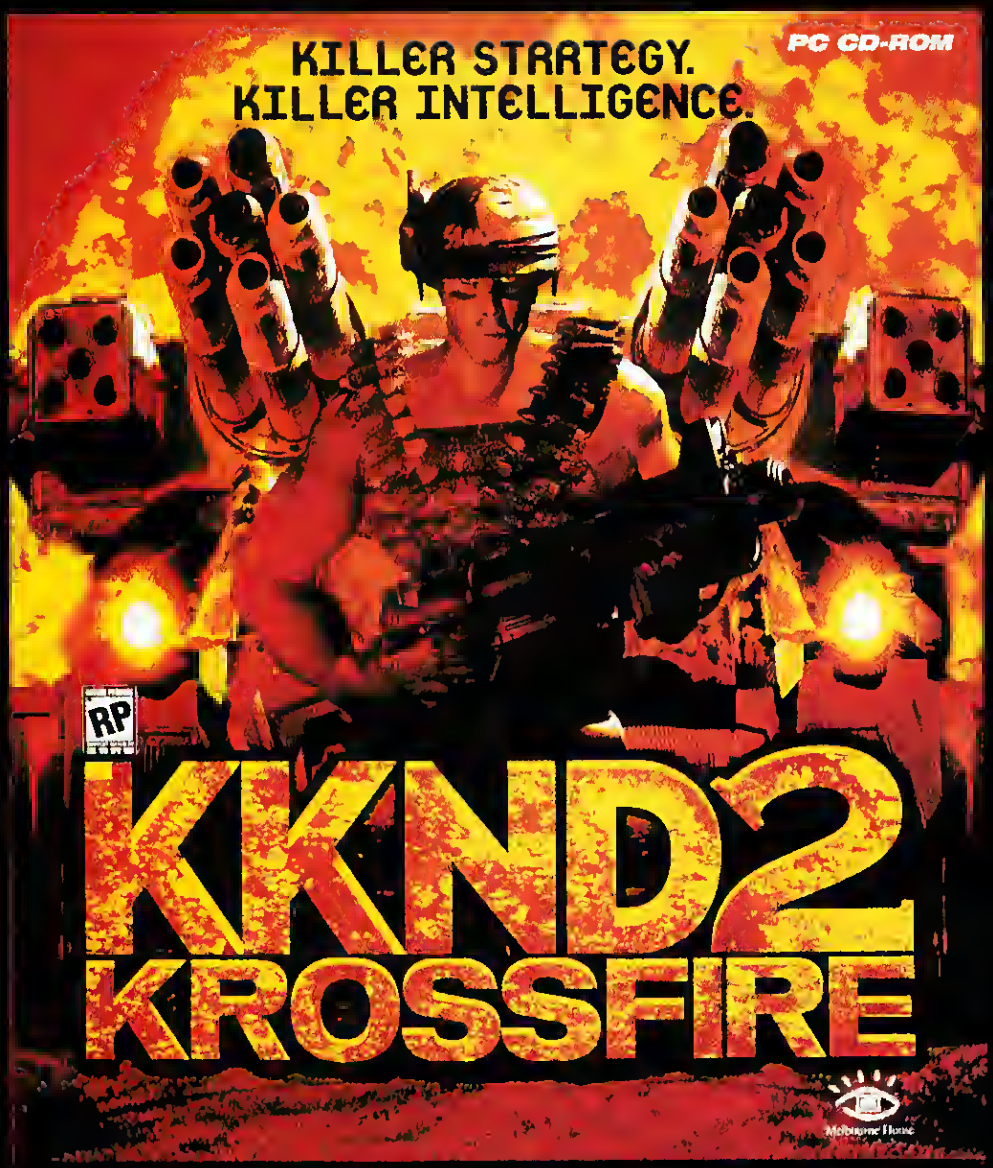

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Star Fleet Command

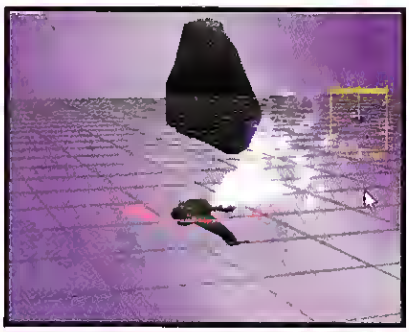
Star Fleet Battles *Finally Makes It to a PC*

Nearly 20 years ago, an enterprising engineer licensed the *Star Trek Technical Manual* as source data for a science-fiction tactical starship combat boardgame he was developing. Word quickly got around that *Star Fleet Battles (SFB)* was as close as you were likely to get to being Captain Kirk—or Captain Kang of the Klingon Empire or a secretive Romulan commander. As time went on, however, the boardgame added so many complex rules that it nearly collapsed under its own weight. Luckily for Trekkers, Interplay's STAR FLEET COMMAND brings the classic *SFB* to the PC, replacing the often tedious impulse system of the boardgame with a thoughtfully paced real-time movement.

Genre: Real-Time Sci-fi
Release Date: Q2 '99
Developer: Quicksilver
Publisher: Interplay
www.interplay.com

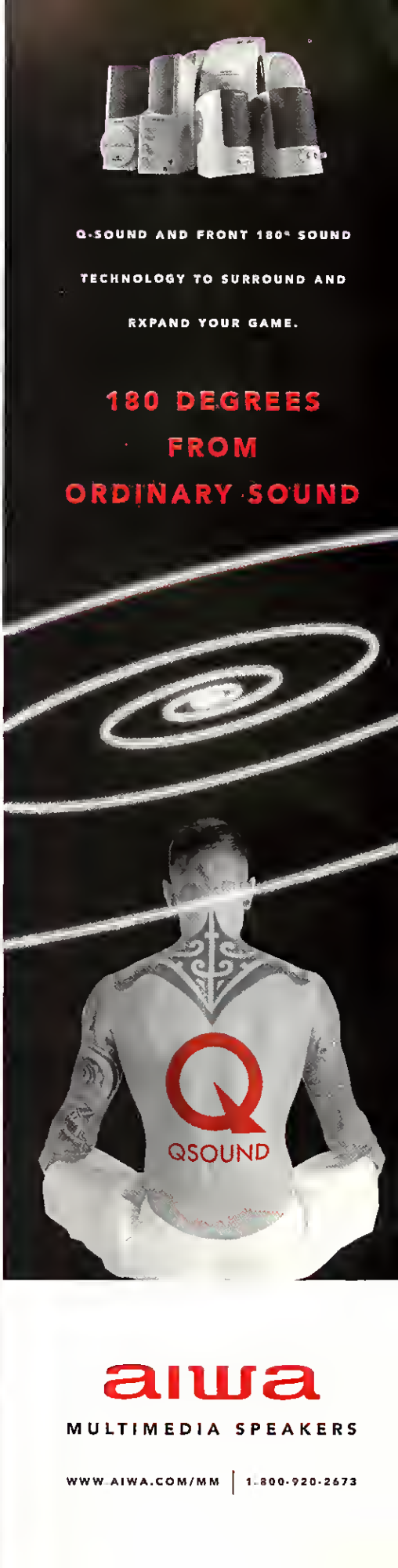
This is no space sim, Vulcan-boy: You maneuver your fleet of starships via mouse and hot-keys through a panoramic view very much like that of *Star Trek: Wrath of Khan*. Those who wish to go phaser-happy may find themselves on the short end of a photon torpedo, because this is one game that actually models energy use (you have to recharge weapons), critical hits, damage control, and crew quality.

Since we last wrote about STAR FLEET (*CGW* #166), new races from the boardgame—Lyrans and Hydrans, among others—have been added to the official *Star Trek* universe with Paramount Pictures' permission, which means more starfaring races and cool sci-fi weaponry to play with. More than 100 different ship hulls of various races are planned for the game, so that you can cruise near the Neutral Zone with a souped-up Romulan War Eagle, take on diplomatic missions in an *Enterprise*-class Federation Heavy Cruiser, or hide in a nearby nebula in your sporty new Orion Pirate Raider.



STAR FLEET now fully supports Direct3D, and it's possible that there will be a software-only solution as well (after all, you'll want to make the galaxy safe for Klingons even on your laptop), but Interplay isn't guaranteeing this yet. The AI is still being tweaked as we go to press, but the multiplayer mode already works. Plans are to have *SFB* support up to four gamers by LAN and IPX.

The only concern I currently have is how well the Dynaverse (dynamic universe) campaign will turn out. It's certainly ambitious to let gamers pursue their own careers in an open-ended game, and if Quicksilver and Interplay can pull it off, we could have the *Star Trek* computer combat game we've always wanted—even if we did have to wait two decades. —*Terry Coleman*



Dungeon Keeper 2

More Murder, Mayhem, and Evil—All the Things We Hold Sacred

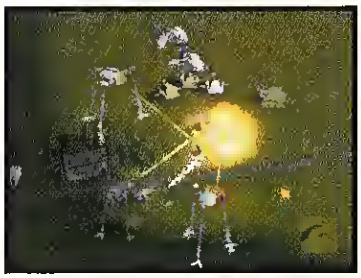
Genre: Real-time Fantasy
Release Date: Q2 '99
Developer: Bullfrog
Publisher: Electronic Arts
www.ea.com

Deep down inside you know it. Admit it. You're tired of getting along, sick of doing the right thing, disgusted at bending over backwards in order not to rip the delicate fabric of civilized society. But you can help only so many little old ladies across so many streets before you're gripped with an urge to shove that ungrateful hag smack into the semi rumbling down the road. Damn it, after a certain point you *need* to be evil.

Thank God for Bullfrog and DUNGEON KEEPER 2 (DK2). Casting the gamer in the role of a malevolent, dungeon-building fiend, DK2 promises to provide a more than adequate outlet for all those antisocial tendencies. Bullfrog is wisely not tampering too much with the original game, focusing their efforts instead on enhancing and growing the title. Gamers will still construct dungeons full of torture chambers, gold hoards, and Horned Reapers, only now they'll be able to toss brutal Black Knights and Queens of the Nest into the mix. New spells to combat the forces of good include a wall and creature toppling Tremor spell, and a costly Turncoat spell that will convert enemies and get them to stab their former compatriots in the back. Direct3D will allow for flashy lighting and texture effects, while full support for LAN and Internet play will let gamers battle other evil geniuses. Best of all, the designers intend to post new levels, creatures, and spells on their Web site after the game's release. Slated for release sometime this spring, DK2 is sure to warm the blackest of hearts. *—Robert Coffey*

War of the Worlds

Mars Attacks and Earth Fights Back



Genre: Real-time Sci-fi
Release Date: Q4 '98
Developer: Rage
Publisher: GT Interactive
www.gtinteractive.com

We've been interested in WAR OF THE WORLDS ever since GT first announced it. Based on H.G. Wells' science-fiction classic, this title just might invade software stores in time for the holidays. We sure hope so. Invading Martians, resourceful Englishmen, steam-powered weapons, nonlinear gameplay—what more could you want from a game?

Unfortunately, we haven't been able to see a build of the game for about two months. This much we do know: Gamers will be able to play as either side, British or Martian. As you'd expect, each side will have a unique set of units. Martian forces will use their advanced technology while the British will rely on late 19th-century steam technology to power their units. While both sides will have to gather and manage resources, this technological disparity will dictate that each side pursue different materials.

The game promises to unfold across a strategic map of the British Isles. Instead of battling in a predetermined sequence of scenarios, gamers will marshal their forces, then invade or reclaim sectors of the map. This nonlinear, tug-of-war combat should lend a significant amount of replayability to the game. Battles should be spirited affairs, taking place both day and night and using a wide variety units, including underwater and underground vehicles.

Like every game but MINESWEEPER, WAR OF THE WORLDS will support the latest 3D technology. Gamers with the right hardware can look forward to full 3D-animated objects; dynamic particle effects for fire, fog, and dramatic explosions; and realistic terrain that will reflect battle damage. *—Robert Coffey*

Warhammer 40,000: Rites of War

Look Out, It's Warhammer General!

Genre: Turn-based Fantasy
Release Date: Q3 '99
Developer: Dreamforge
Publisher: SSI
www.ssionline.com

A lot of editors at *CGW* share a dark secret: We are *Warhammer* fanatics. And while we wait not-so-patiently for WARHAMMER: CHAOS GATE (see last issue's "Holiday Hot 100") to get our X-COM tactical-combat fix, we've always wondered what would happen if *Warhammer* went through some bizarre mating with PANZER GENERAL (PG). Well, we finally have our wish—and the offspring is doing nicely. Prestige (from PG) converts easily into Glory Points in RITES OF WAR, and if your victories capture enough headlines, you can build and customize your unit types, weapons, and warrior skills.

The simple turn-based PG system seems to capture the flow of the *Warhammer* tabletop game—without the gamer having to pore over endless charts to see exactly what an Eldar using a Psyker spell on a Tuesday night will do to an enemy wearing punk shades.

The campaign features more than 70 weapons (all rendered and animated) and two dozen missions, as the Eldar battle the evil Tyranid throughout the explored galaxy, on planetary terrain that covers the gamut from lush forests to ice-covered lands. Multiplayer options include head-to-head and cooperative play for up to four gamers via LAN, IPX, or TCP/IP. We're already hooked, and the emperor hasn't even called on us to save the galaxy…yet. *—Terry Coleman*

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Metal Fatigue

A Little Strategy, a Few Giant Robots, and a Touch of Anime...

by Denny Atkin

It takes a lot to stand out in today's real-time strategy arena—more than dropping in a few MECHWARRIOR-style giant robots. The good news is that METAL FATIGUE is more than just COMMAND & CONQUER with giant robots tossed in the mix. An innovative three-level combat arena, a technology salvage system, and a supposed "rush"-proof setup should set METAL FATIGUE apart from the crowd.

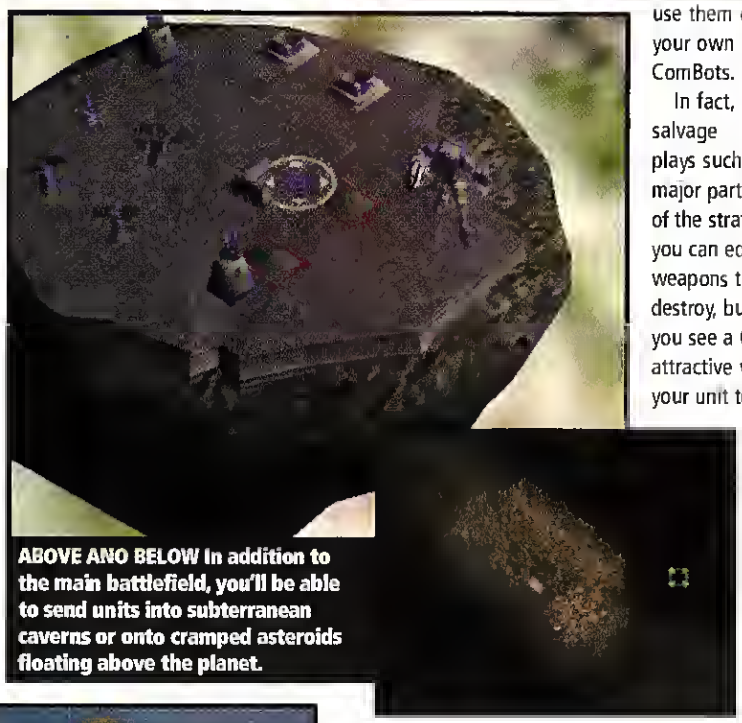
HEAD FOR THE HILLS Moving your ComBot units to higher vantage points gives them better fire coverage and a wider view of the battlefield.

Genre: Real-time Sci-Fi
Release Oate: Q2 '99
Developer: Zono
Publisher: Psygnosis
www.psygnosis

Close Com-bots

METAL FATIGUE's anime-inspired story takes place in the ever-popular 23rd century. The opening cinematic introduces three brothers who encounter an alien robot. After they defeat the robot, a struggle ensues for control of the robot's technology. The brothers split, and each goes to work for a different CorpoNation that is attempting to gain control of technology on the abandoned alien planet of Hedoth Prime.

Each CorpoNation has acquired various alien technologies, and the game's three forces will be equipped with distinct weaponry. The basic equipment is similar—each side has tanks and other small vehicles, but the powerhouse forces are giant robots called ComBots. While each side has certain advantages, there's a way to even things out. If you take down an enemy robot without destroying it, you can salvage its parts and use them on your own ComBots.



ABOVE AND BELOW In addition to the main battlefield, you'll be able to send units into subterranean caverns or onto cramped asteroids floating above the planet.

In fact, salvage plays such a major part of the strategy in this game that you can equip your ComBots with weapons that are designed not to destroy, but rather to amputate. If you see a ComBot toting an attractive weapon, you can tell your unit to holster its long-range missiles and move in to attack with a giant ax or buzz saw. The animations on close combat are superb, much like a miniature 3D fighting game. Ironically, your own weapons technologies are the ones your units are most vulnerable to, so you'll want to do your best to keep the enemy from capturing those technologies.

WATCH YOUR STEP! Tanks can easily end up as so much cannon fodder for giant robots, but they'll come in very handy when the war goes into caverns that are too cramped for the big guys.

Third Floor: Toys, Hardware, and Asteroids

METAL FATIGUE's missions play out on a planetary terrain that's 3D in more ways than one. The primary planetary surface battlefield features hills and valleys, and terrain elevation offers significant sighting and range benefits.

Where METAL FATIGUE differs from similar games is its inclusion of two more levels: orbital asteroids and a subterranean level. The asteroids make for very cramped battlegrounds, but the real challenge comes in the underground catacomb levels. The cramped environs keep you from taking your giant robots down below, so

this will be your chance to make use of the rest of your force mix (which is otherwise pretty much cannon fodder for the ComBots). Drill through to a cavern under your enemy, build an elevator shaft, and you can bring your units right up into the center of an enemy camp. But be warned—elevators are considered neutral resources, and the enemy can just as easily take the elevator *down* to attack your subterranean forces.

One interesting feature in the game—and one that should be welcome to multiplayer veterans—is the "prebuild" mode at the start of a mission. Each side will be able to set up a fully functional base before the mission starts. Although you'll want to expand these bases, they should have strong enough defenses to fend off tank rush–type tactics once the game starts.

Missions will fall into three campaigns, one from the vantage point of each brother. The game's AI is being developed by Mark Baldwin of EMPIRE and PERFECT GENERAL fame. The computer-controlled generals will feature a number of distinct personalities, which Psygnosis hopes will help add replay value. The Neuropa CorpoNation may feature an aggressive, militant leader in one game, but the next time around you may face a general who concentrates on hoarding resources and building up forces before attacking.

Backed by impressive hardware 3D graphics and the talents of a veteran AI programmer, METAL FATIGUE is an intriguing design. And where else can you get your MECHWARRIOR and STARCRAFT joneses satisfied in one sitting?

Jagged Alliance II

Happiness Is a Warm Gun

In the old *Mission: Impossible* series, agent Jim Phelps and crew corrected wrongs in the Latin American country of the week with a few high-tech toys, some really limited scripts, and a lot of latex disguises. In most of the action films of the '90s, on the other hand, said country would be liberated by a small cadre of improbably muscled, incredibly well-armed individuals who have a propensity to torch the villages they save right along with the bad guys. JAGGED ALLIANCE II (JA2) comes as close as any computer game we've seen to being a happy marriage of both the cerebral and the action-oriented methods.

Genre: Hybrid Historical
Release Date: Q2 '99
Developer: Creative Assembly
Publisher: Electronic Arts
www.ea.com

The intentionally corny storyline reveals that your archenemy, defeated in the first game, has returned—if these ubervillains ever retired, we'd have a lot fewer sequels—and only you have a chance to restore freedom to the tiny nation of Arulco. You begin "on the Web," trying to recruit mercenaries from agencies that just manage to stay one step ahead of international law. As in the original, each merc has a personality, and getting the right chemistry in your band of hopefuls is just as important as picking the guy (or gal) with the best stealth or markmanship skill. Pick carefully, however: Some mercs come with a high price tag, and you have to make money with each mission or your organization won't stay solvent.

EXCAVATE THIS! The turn-based tactical firefights are fought over a wide variety of terrain, such as these Mayan ruins.

MY A.I.M. IS TRUE The world of JAGGED ALLIANCE II is now high-tech, which means that you find your operatives on secret Internet sites.

NIGHT ON THE TOWN Nighttime actions emphasize stealth and offer a nice change of pace.

Combat in JA2 is even more like that of X-COM: UFO DEFENSE than ever (a good thing), as it goes from real-time strategic to turn-based tactical once an enemy is sighted. Mercs can now run, climb, and crawl—all moves featuring plenty of animated SVGA frames, a far cry from the VGA of the original JAGGED ALLIANCE.

The role-playing aspects, one of the main enjoyments of JA, are more fleshed out this time around. In addition to watching your mercs improve their stats—or groaning when a merc you've nurtured for several missions goes down for the count—you have to deal with the local populace, who may either betray you or help you (provided that you remember to bring the letter from their cousin in America).

From what we've seen so far, the campaign looks like it could be better than that of the first game. And when you've exhausted your solo replay options, you can outfit squads and take them online to out-covert your mercenary-inclined buddies. —*Terry Coleman*

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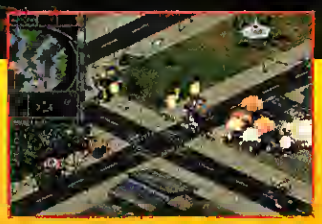

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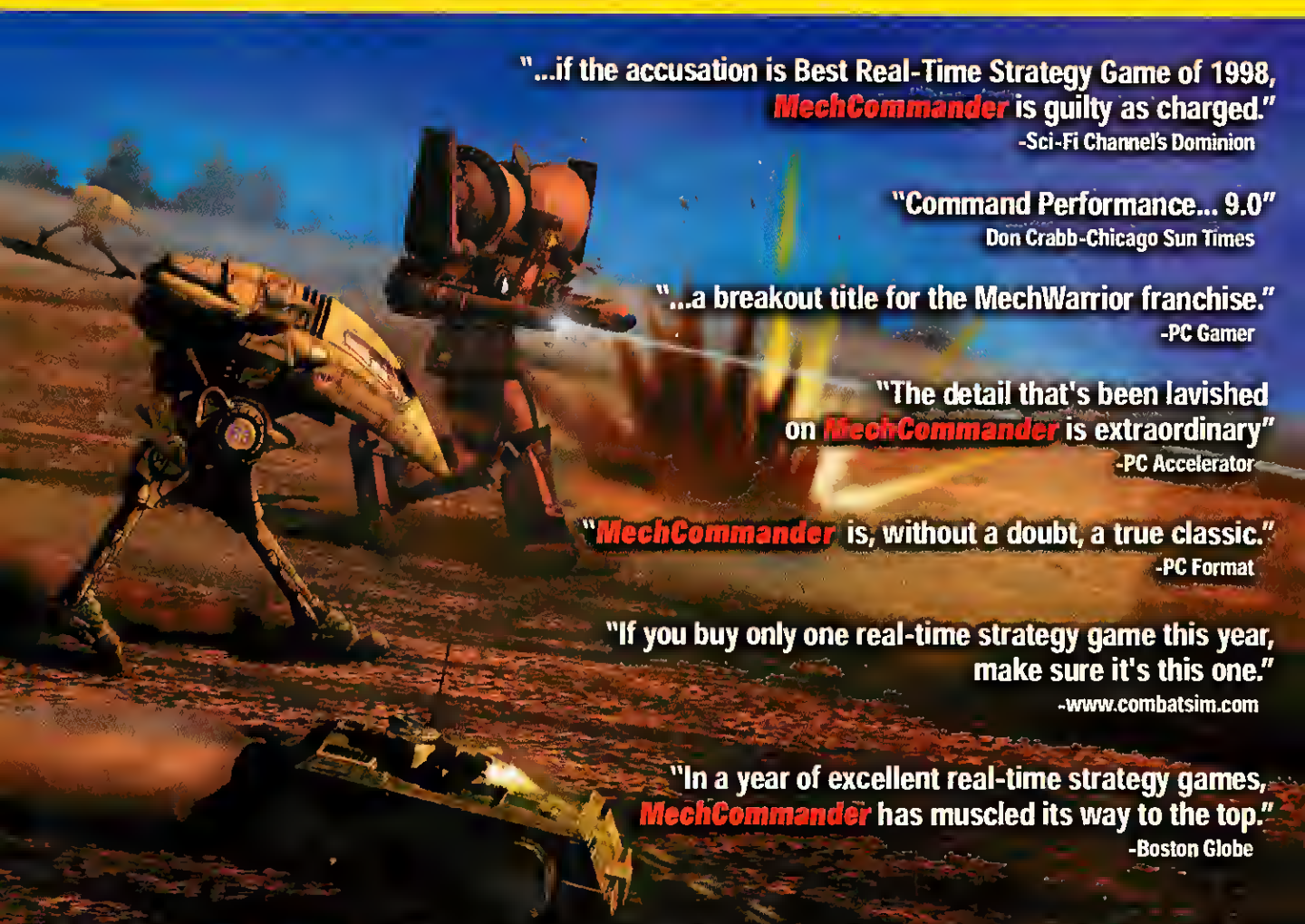

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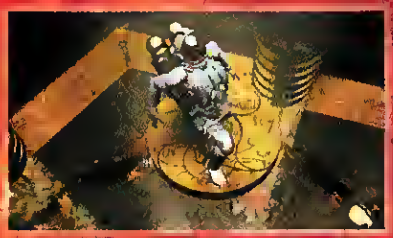

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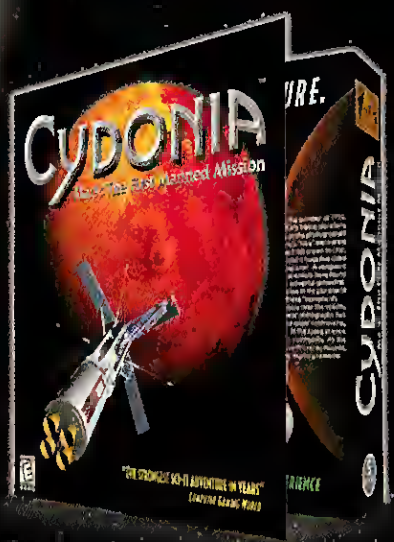

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Braveheart

Kilts, Battle Axes, Evil Englishmen, but No Mel Gibson

Formerly known as TARTAN ARMY, BRAVEHEART has a brand new movie license and some seriously ambitious design plans. If the designers can pull it off, this might be the first game with a movie license that actually doesn't suck.

A lot of that promise lies in the fact that BRAVEHEART isn't concerned with trying to re-create or rehash a movie—the focus from the get-go has been on compelling gameplay. You play as a Scottish clan leader in the Dark Ages. With the country's clans torn apart by rivalries and everyone under the cruel thumb of the English, your path to victory lies one of three ways: conquer all the clans, win over enough allies to force a vote and ascend to the throne, or drive those stinking Englishmen off your island.

The battle portions of the game are reminiscent of MYTH, with a swooping camera taking in the carnage. The free-moving perspective is even more expansive than in MYTH, zooming out for a distant bird's-eye view or all the way in to the first-person view of your leader. The game promises to render the fields of war in full 3D, and they should be stunning. Red Lemon is shooting to create battles with literally thousands of animated polygonal units, including swordsmen, archers, ladder brigades for scaling walls, catapults, and more. The mayhem should be even more remarkable with the planned weather effects—imagine all those men fighting in a driving rain, slipping and falling in the mud, their war machines mired in muck.

The use of formations should add a bit of order to this chaos. Troops in BRAVEHEART can be ordered to form lines, wedges, circles, and more. This will allow you to set a wall of pikemen in front of charging English cavalry or to put a protective circle of axemen around more vulnerable units. Unit facing will also play a part in determining your success, with units delivering considerably more damage when attacking their enemy's flank or rear.

As compelling as the battle sequences will be, there is an additional, larger scale level of strategy to the game as well. Operating from a map of Scotland, aspiring William Wallaces will have to manage their growing number of clans, set supply lines, conduct research, create and move armies, and juggle diplomatic relations. True to the time, the diplomacy model in the game will encourage deceit and backstabbing, even to the extent that leaders can be bribed in the midst of a battle to switch allegiances.

Even with these features, there are two more things we hope to see: a save option for the epic multiplayer games; and the ability to fight in battle as your leader, not just see through his eyes. In any event, this is an ambitious game with real promise. We hope BRAVEHEART's reach won't exceed its grasp.
—Robert Coffey

Genre: Real-time Historical
Release Date: Q4 '99
Developer: Red Lemon
Publisher: Eidos Interactive
www.redlemon.com

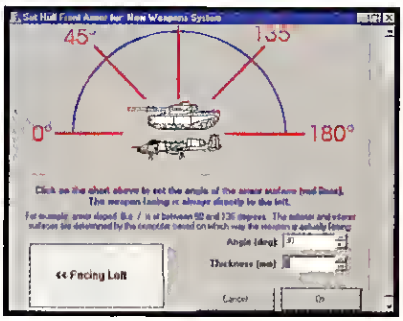
Point of Attack 2

HPS Returns to Its Modern Roots

Of the few genuine independents left in the computer gaming industry, no company has stayed more true to its roots than HPS Simulations, publisher of games so realistic and detailed that they can make TalonSoft's BATTLEGROUND series seem abstract. POINT OF ATTACK 2 marks a welcome return to the type of modern-era wargame that gave HPS its start, with the expected database of several thousand weapons from the U.S., Soviet, Chinese, French, British, German, and North Korean arsenals, among others.

The scale seems appropriate, at 100 meters to a hex, with one-minute turns. If you don't like the scale, you can adjust it. POINT OF ATTACK 2 will also include weapon and ammunition editors, so you can create "what if" high-tech weapons, such as energy weapons. Everything, including the map and scenario editors, should be easier to use than in the original POINT OF ATTACK since the new version has been coded specifically for Windows 95/98.

HPS claims that the penetration calculations will be "the most realistic ever portrayed in a combat simulation." Given that the algorithms take into account such minutiae as the air-drag coefficient of each projectile, penetrator hardness, explosive yield strength, slope of defending armor, and even the ogive angle of the projectile's nose cone, we're in no hurry to argue.
—Terry Coleman



Genre: Turn-based Modern
Release Date: Q2 '99
Developer/ Publisher: HPS Simulations
www.HPSsims.com

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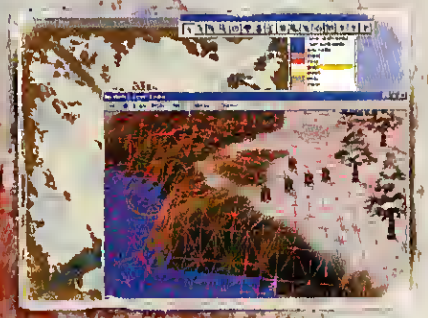

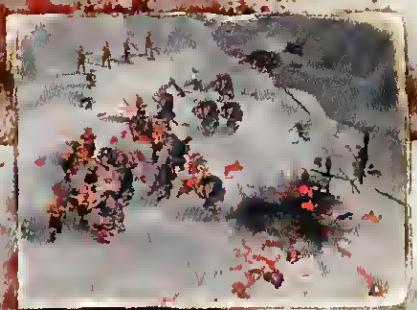

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Warzone 2100

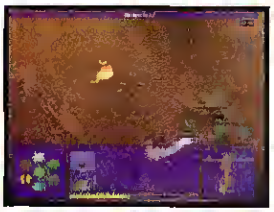
Don't Just Build Your Forces, Design Them

With every real-time strategy title scrambling to find some way to distinguish itself, WARZONE 2100 has left it to the player to make the game unique. How? By letting gamers themselves custom design their own combat forces.

WARZONE 2100 doesn't veer too far from the tried and true in terms of core gameplay—gamers still must explore, find energy resources, research technology, and build units for combat. But when it comes to the units themselves, well, that's where things get different.

As gamers acquire technology, they can set out on various research paths to upgrade and develop their forces. Using that research, gamers will be able to construct their units through a three-step design interface. By choosing which type of turret, body type, and propulsion source to use in a vehicle, gamers can build the units they think will be best suited for the mission at hand. With about 400 options from which to choose, gamers will have thousands of possibilities. Fortunately, since you'll be able to delete any obsolete designs, you won't have to pick through hundreds of options each time you build a unit.

Genre: Real-time Sci-Fi
Release Date: Q1 '99
Developer: Pumpkin Studios
Publisher: Eidos Interactive
www.eidosinteractive.com



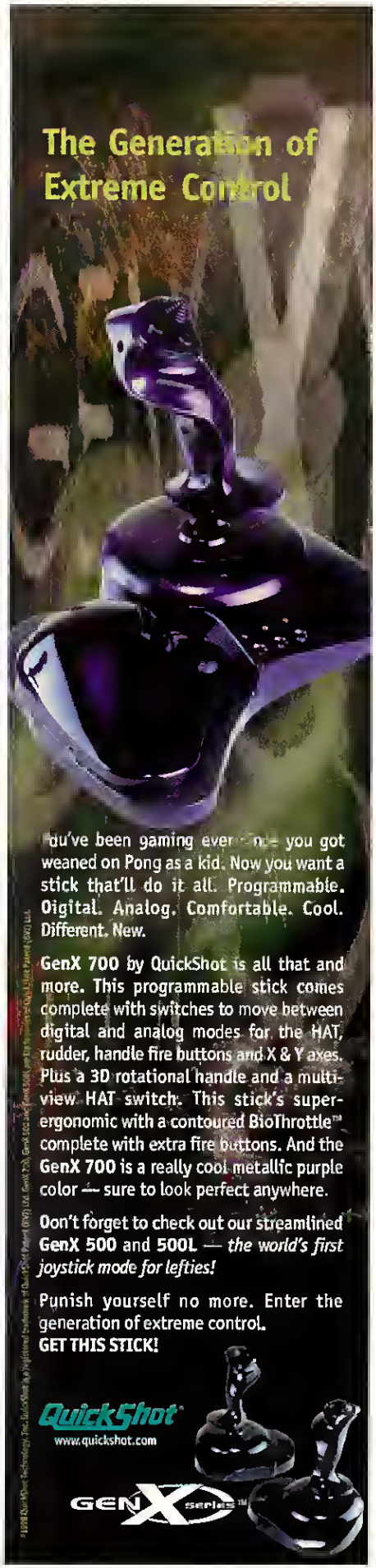
While individual design characteristics will greatly determine a unit's effectiveness, experience will play a part as well. Vehicles will carry over from one mission to the next, gaining experience that will make them perform more efficiently. If you take care of your units, you'll be able to put together a skilled, deadly fighting force after just a handful of scenarios.

This persistent world quality spills over to other parts of WARZONE 2100. Instead of presenting the gamer with a new map for each mission, the game expands the original map in range. Thus, your base must be developed and protected through a series of missions. This doesn't mean you'll be stuck with the same map throughout the game, however: There will be 38 missions spread across 3 campaigns taking place in valleys, mountains, and ravaged cities.

Not surprisingly, WARZONE 2100 has jumped aboard the 3D bandwagon and will feature true 3D terrain and vehicles. Elevation will affect combat effectiveness, with higher units having a decided advantage over forces on lower ground. To keep track of units and battles, gamers will use a free-moving camera that can pan in any direction and zoom. The effect is similar to that of MYTH but is somewhat more intuitive.

With the custom unit design, multiplayer matches promise to be interesting. Pumpkin Studios plans to support multiplayer games of up to eight gamers over LAN or Internet and is also working on creating a built-in ranking system.

All in all, WARZONE 2100 is an ambitious product. Whether it can fulfill its ambitions remains to be seen. —*Robert Coffey*



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Star Trek: New Worlds

Star Trek *Enters the Real-time Neutral Zone*

If I'm sorely in need of a Mr. Spock fix, I need go no farther than my local pharmacy. There I can wander like a drugged Andorian, blissfully picking up *Star Trek* paperback novels, *Star Trek* Band-Aids, *Star Trek* vitamins, *Star Trek* videos (with more than a minute of original footage never before seen on TV!), and my favorite—*Star Trek* toilet tissue. Given the franchise's expansion into every universe imaginable in the past three decades, it's hardly a surprise to see a *Trek* spinoff in the real-time strategy gaming genre.

Genre: Real-time Sci-Fi
Release Date: Q2 '99
Developer: Binary Asylum
Publisher: Interplay
www.interplay.com

The folks at Interplay are being highly secretive about STAR TREK: NEW WORLDS, but in between the usual buzzwords such as "total interaction" and "uniquely immersive," our Tholian spies have discovered a few facts. The 3D environment does look nice, with colorful explosions. Even at this early stage, the combat strives for that *Trek* feel, as the ground units hover above the surface and maneuver like land-based starships. All the races from the series have the toys you'd expect: Romulan Cloaking Tanks, Klingon Mobile Disruptor Batteries, and Phaser Tanks for the Federation folks. (At press time it's not clear to us whether you'll first have to try to talk your enemies to death before shooting them.)

Other touches include tricorder readings for your strategic map, hydroponics facilities to build, and the like. While STAR TREK: NEW WORLDS supports multiplayer action, we're guessing that the mission-based campaigns—full of exploration, planetary exploitation, and bad blood—could make this the game that OUTPOST II should have been, with *Trek* flavor to boot. —*Terry Coleman*

Fantasy War

Sony Goes Into Battle Online

While it *is* turn-based, FANTASY WAR isn't simply a rehash of WARLORDS III or HEROES OF MIGHT & MAGIC II. It's a charming online-only design crammed full of idiosyncrasies. You can, for example, render one of your opponent's leaders "indisposed" for the turn, leaving you free to move an occupying army into one of his minor allies' territories.

Genre: Turn-based Fantasy
Release Date: Q4 '98
Developer: Crossover Technologies
Publisher: Sony Interactive
www.fantasywar.com

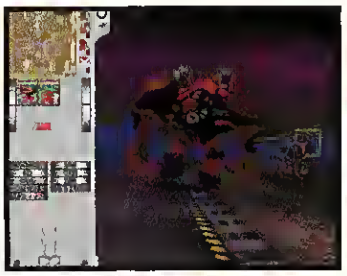
Play involves up to seven would-be conquerors issuing orders for troop movements, spell-casting, hero recruitment, and the like. Once all orders are received, the game's server at Sony processes them simultaneously, assigning initiative randomly to keep things hopping. In this way, gamers should be spared the usual turn-based tedium of having to wait several minutes for someone else to move.

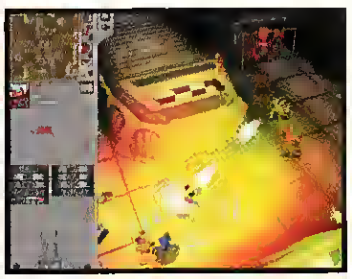
The simple mechanics encourage fast play. The designers even plan to have a blitz game in which the time limit will be about three minutes per turn: You'll have to prioritize your moves because you just won't have time to do everything once many forces are on the map. For those who like to ponder all the strategic alternatives, however, there is an epic game as well, which resembles a play-by-email game.

Combat is brisk, comprising three rounds: ranged attack, any attempts to flank the opponent, and final melee. Morale is a big part, and armies may break and run before losing all their troops—a nice change from the "fight to the last Orc" so prevalent in many recent strategy games. Economics play a big part in FANTASY WAR as well, but it doesn't seem particularly complicated during play. Even in this early stage, this is one of the most promising online games we've seen in awhile. —*Terry Coleman*

Machines

Do-It-Yourself Warfare





If the lousy pathfinding and imprecise unit response of other real-time games has just about driven you away from the genre, you may want to give MACHINES a look when it ships this spring. MACHINES lets you command your forces from both an isometric third-person perspective and a free-roaming, ground-level view, but it will also let you jump into any of your units to steer it, aim it, and fire it. Perfect for missions requiring precise maneuvering, this feature will let you guide vital units deep into enemy bases—dodging defensive fire—and actually enter enemy facilities to steal or sabotage technology. Strategists who fear they lack the twitch reflexes necessary to pull this off can rest assured that missions will be designed so that you can also win without having to personally guide your forces.

Genre: Real-time Sci-Fi
Release Date: Q2 '99
Developer: Charybdis
Publisher: Acclaim
www.acclaimnation.com

As the sentient machines slug it out across a series of planets in 30 branching missions, you will have to seek out upgrades for your forces. Hardware upgrades for the 18 basic machines should pump the unit total up to about 50; software upgrades will increase your scanner range, improve your weapons' firing distance, and make your "unmanned" machines smarter by improving their pathfinding. Night vision upgrades will be vital since the gameworld will cycle through day and night. All of this will be delivered in, what else, glorious 3D, with hardware acceleration required for the game's 3D terrain, the fully polygonal units, and the dynamic lighting and environment effects. —*Robert Coffey*

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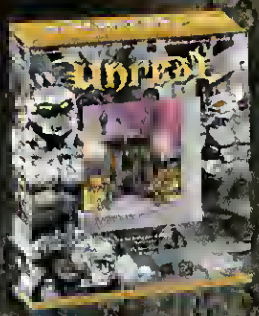

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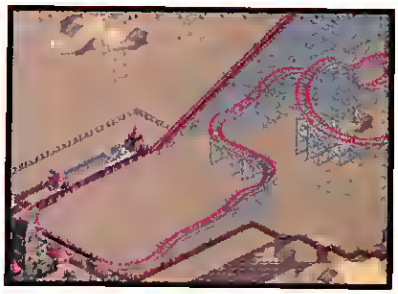

As a rule, roller coaster games put me off my feed because they tend to remind me of that horrid Disney wire-frame game of a few years ago. Really, it was more like a CAD program masquerading as a roller coaster game. Well, I'm happy to report that my appetite is quite healthy after spending time looping around in ROLLER COASTER TYCOON.

If the title reminds you of MicroProse's TRANSPORT TYCOON, it should: Both games are by designer Chris Sawyer. The difference is that ROLLER COASTER TYCOON never stops being fun. It's a lot like SIMCITY, in that you can keep designing death-defying rides without paying attention to the campaign game—which has a lot of depth—as you research and develop new rides. Simultaneously, you try to keep your customers happy and turn a profit. In fact, the game reminds me a bit of the old THEME PARK, except that it's better looking and a lot easier to play—something the producer proved to me by constructing a towering roller coaster in less than 10 minutes, complete with squealing teenagers and people staggering off the ride, tossing their cookies.

We're always asking for something different, and ROLLER COASTER TYCOON should definitely fit the bill—just bring your own cotton candy. *—Terry Coleman*

Genre: Real-time Carnival
Release Date: Q2 '99
Developer: Chris Sawyer
Publisher: Hasbro/MicroProse
www.microprose.com

Long Ago and Far Away

Remakes, Secret Projects, and Rumors

Not only are Gary Grigsby and Keith Brors frantically trying to finish up the epic BATTLE OF BRITAIN for TalonSoft (see our "Holiday Hot 100" in last month's issue), they are also underway on STEEL PANTHERS IV. Could this be the title that returns the famed series to the forefront of modern-era strategy games? From what we've seen, the gameplay will be very tactical—to the point where you can control individual tanks. But we're a bit skeptical about SSI's claims that on maximum zoom, one pixel on your screen will equal four inches of real terrain. A new, more accessible interface and point-to-point movement are welcome changes to the design, and the team insists that "unit movement is more dependent upon battlefield conditions than an artificial turn system." Sounds a lot like the initiative-based system used in ACHTUNG! SPITFIRE, which would be fine by us. In any case, don't expect STEEL PANTHERS IV until late 1999.

What's Up With, AH, Hasbro?

Well, it looks as though the absorption of Avalon Hill by the Boston Borg is turning out better than anyone had a right to hope. Bill Levay, former head of computer game development for Avalon Hill, has evidently accepted a position with Hasbro for the express purpose of determining which AH games can be easily adapted to the computer. Being a large public company, Hasbro has no official comment on which AH titles might be first in the queue. However, given the obsession of several Hasbro designers with DIPLOMACY and HISTORY OF THE WORLD, don't be surprised to see new and improved PC versions of those titles in the next 18 months—maybe sooner if Hasbro's AXIS & ALLIES is a hit (see our review on page 358).

HISTORY OF THE WORLD

On the other hand, it seems that all the AH computer projects that were in development at the time of the Hasbro acquisition are now history: The Pacific version of OVER THE REICH is in limbo, and Big Time Software has turned to COMBAT MISSION (see page 127 in this issue). GUADALCANAL is MIA as well, but designer Steve Magestro has formed his own company, Rebel Interactive. While Magestro is being somewhat sparse on details, there's a good likelihood given his history, that he's working on a Pacific-theater WWII game. You can ask him yourself at **www.reblactive.@aol.com**. FREEDOM IN THE GALAXY (which graybeards will remember as an ancient SPI board game), adapted for the PC by MicroProse veteran Jim Synofski, looks to be down for the count as well.

Other Titles on the Horizon

The acquisition of Virgin has left a lot of projects in the lurch there as well. Strategy First, however, is still working on MAN OF WAR II which sports much better 3D than the original. Expect this sequel in the spring of 1999. We can't be so sure about ROAD TO MOSCOW, saved from purgatory by Interactive Magic. The game certainly looks better (and more playable) than it did more than a year ago, but ROAD TO MOSCOW is such an ambitious project—the entire Russian Front of WWII with detailed supply and AI down to *company* level—that it could be several months before small details like play balance are ready for the marketplace.

MALKARI, another I-Magic title, tries to be a tongue-in-cheek SEVEN KINGDOMS light, complete with Aztec priests casting spells of doom on incredulous conquistadors. The big question with this real-time New World game is whether the graphics—at this point, looking very 1996—can be brought up to speed by the Eastern European developer in time for this game to compete.

The SSG folks are still busy with REACH FOR THE STARS for Microsoft, now slated for the summer of 1999. But they've also quietly begun work on WARLORDS IV for The Learning Company/SSI/Red Orb/Whomever. It's likely that this next game in the classic series will *not* be simultaneous turn-based. What's a stack of undead Orcs to do?*—Terry Coleman*

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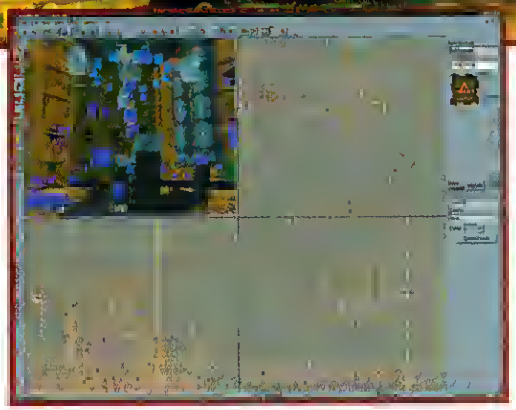
A Look at the Ins, Outs, and Dirty Secrets of Designing Computer Games

The Perfect

Much of game design seems a black art to gamers, whose involvement with the process generally starts with picking up the finished game off the shelf and ends with waiting for an inevitable series of patches. But what goes on behind the scenes? How do some teams create STARCRAFTs, LONGBOW 2s, and BATTLEZONEs, while others churn out NAMs, DOMINIONs, and SILENT THUNDERs?

As we started investigating the topic, we discovered that the process is dramatically different for each genre. While story is design king in a role-playing game, it's realism that matters in simulations and sports games. Because the process is so different for each style of game, we sent our editors on separate investigations of five major genres. So join us now as we dive into the trenches and ask the experts, "What makes a good game? And how do the bad ones happen?"

For Those Who Think Is A Good Thing.



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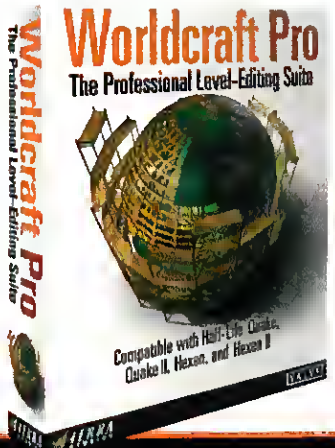

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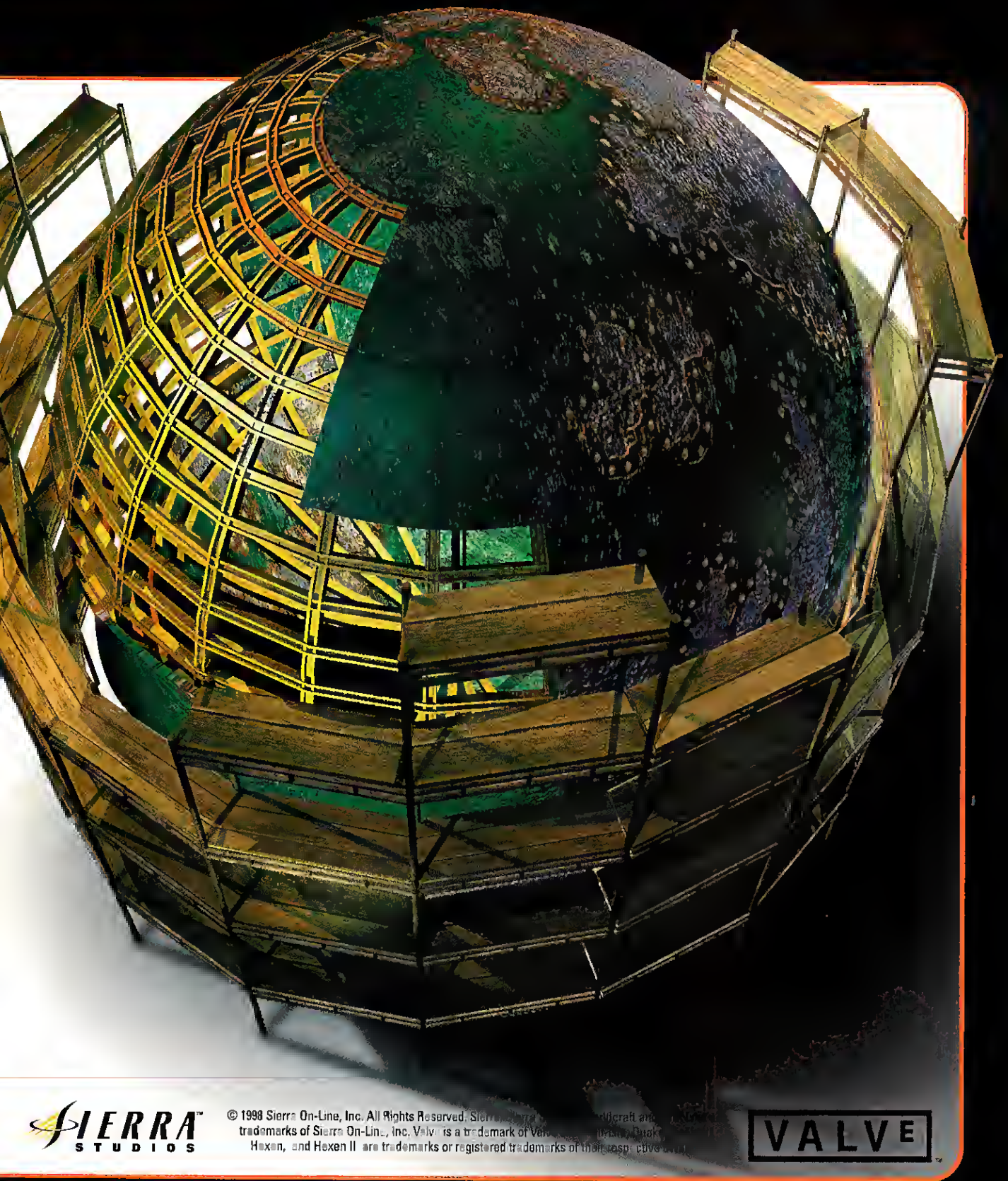

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MAKING MAYHEM

The Blood, Sweat, and Tears of Blood, Guns, and Speed

[by Robert Coffey]

Deep down inside, it's just ugly.

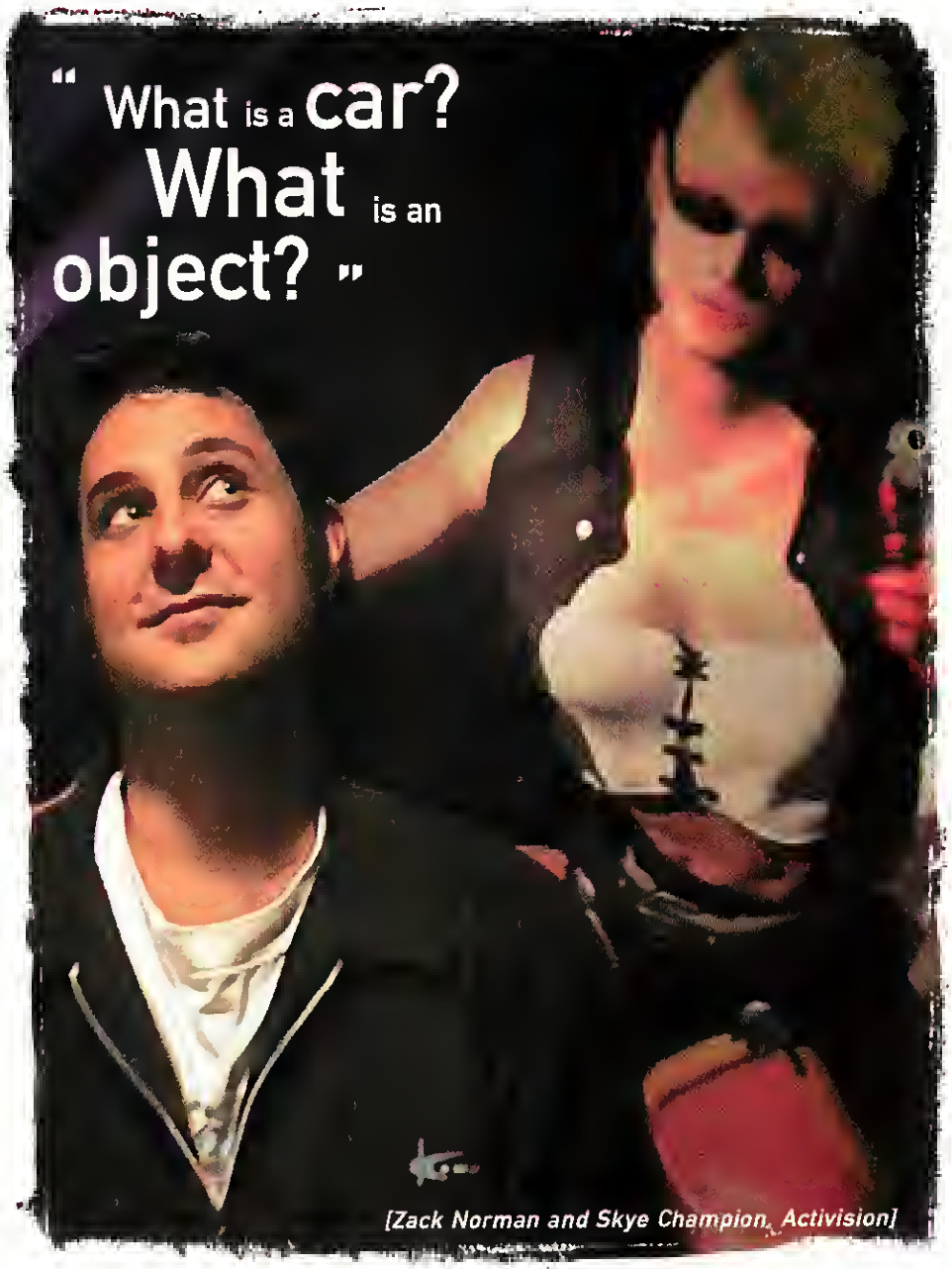
Creative constraints. Budget constraints. Time constraints. Technical constraints. While fans may see the business of making games as exciting—even glamorous—designers know that the actual process of building a thrill-a-second action game is more concerned with solving problems day after day. What will make our game unique? What engine will best suit our needs? Do we need to recode any part so it works better for us? How do we approach multiplayer? What are our competitors doing and how do we respond? Decisions, countless thousands of them. It's a long, tortuous path with stumbling blocks every step of the way.

Even an absolute, bottom-of-the-barrel game like NAM is shaped by a seemingly endless litany of decisions. Obviously, in NAM's case they were the wrong decisions, but they had to be made nonetheless. Besides, making the right decisions is no guarantee for success—witness BATTLEZONE, one of the best games of 1998, but one of the year's least impressive sellers.

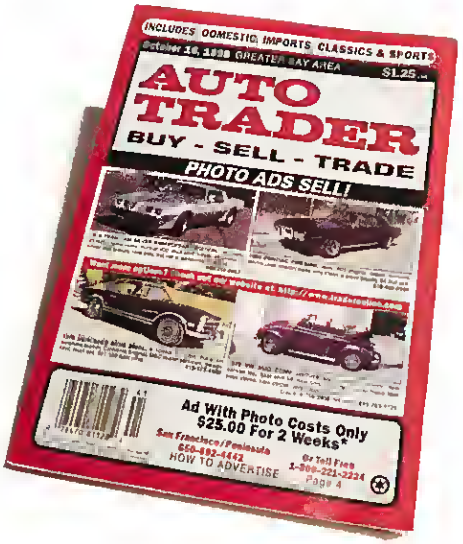
Inspiration and Perspiration

"My partner Sean and I were sitting in an Italian restaurant after deciding to use the MECHWARRIOR 2 technology for another vehicle-based action game. I was sitting there with an *Auto Trader* magazine, looking through the listings since I'd decided to get myself a bitchin' '70s Barracuda as a reward for finishing MECHWARRIOR 2 when it hit me like a bolt out of the blue—Why not?" Thus did Zack Norman come up with the idea that became INTERSTATE '76.

Before any work can be done on a game, somebody has to have an idea. Inspiration is a tricky thing to pin down and it comes to people in ways as varied as the games that evolve from it. It can come from browsing used-car ads or from a sudden flight of fancy. For Alan Patmore of Surreal Software, developers of the upcoming DRAKAN, it came from a lifelong fascination with fantasy fiction and a strong desire to work on a fantasy game. Flying through an early demo using Surreal's technology, Patmore suddenly thought, "Wouldn't it be cool if you could fly around as a dragon, frying little warriors and eating maidens?" From that point, DRAKAN evolved first as a real-time strategy game before coming together as a shooter with a



[Zack Norman and Skye Champion, Activision]



INSPIRATIDNAL READING **Dne man's used-car ads are another man's muse. Skimming the *Auto Trader* led to the creation of INTERSTATE '76 and its sequel, INTERSTATE '82.**

maiden riding the dragon instead of being eaten by it.

Dften, other forms of pop culture can trigger ideas. KLINGON HONOR GUARO was obviously born from *Star Trek*, while SHOGO: MOBILE ARMOR DIVISION emerged from the designers' desire to explore the idea of "ROBOTECH meets DOOM." That hybrid idea for SHOGO seemed just too cool to pass up, and when the designers integrated their mutual love of anime into the idea, things really took off. The result is a shooter with a unique look and feel.

Once the idea of a game is set, the real work begins. For Norman, writer and lead designer for INTERSTATE '76 and director of the upcoming INTERSTATE '82, that means getting down not just to brass tacks, but to the molecular composition of the brass in those tacks. Norman begins the exhaustive design process by crystalizing the game idea into a three-sentence kernel. After that, even the most basic concepts need to be defined. For INTERSTATE '76, Norman asked himself, "What is a car?" Finding that too broad, he narrowed his focus to the point that he felt it necessary to write page after page answering the question "What is an object?"—that is, What components make up a car? Norman likens this process to a Christmas tree: You start as generally as you can, with the trunk, then work your way up to the branches, the needles, and finally the ornaments.

CHANGING HDRSES MIDSTREAM **Changing the guts of a game by switching engines is no easy task. Driginally employing the QUAKE I engine, DAIKATANA made the switch to QUAKE II, and the designers still needed to add lots of their own code. DAIKATANA 2 will make another engine switch, changing to UNREAL.**

For Gabe Newell, managing director of Valve (makers of HALF-LIFE), it comes down to having a clear business plan to help you make choices about your objectives for gameplay, resource constraints, market requirements, and more. "You iterate on those a bunch of times as you work through the design spec, project schedule, test plan, documentation plan, and marketing materials," Newell says. "One important battle to fight is to keep people using the specification process once implementation is underway. You're really tempted to revise what you're going to do without bothering to go back and update the source documents. Madness and inefficiency lie that way."

"The only way to maintain perspective is to look at it through the eyes of first-time users."

[Andrew Goldman. Pandemic Studios]

Who's Driving This Thing?

In order to provide the speed, graphics, and unrelenting action that gamers demand, designers need a game engine that can deliver on all fronts. In the realm of first-person shooters, two big engines stand out: QUAKE II and UNREAL. While the creators of these engines are understandably biased in their opinions, it's interesting to look at who else uses each engine and why.

KLINGON HONOR GUARO uses the UNREAL engine. Producer Alex DeLucia explains his choice this way: "When we were looking at game engines, the only engine available was QUAKE, which didn't have colored lighting and was limited to 8-bit rendering. We saw an early version of the UNREAL engine and were very impressed by its graphic capabilities. Those issues and the financial aspects of the agreements made the UNREAL engine more attractive." Still, the KLINGON team had to add some of its own code, particularly to enhance the AI so that enemies would take cover while reloading and act as teammates.

Valve did much the same thing with the QUAKE engine when making HALF-LIFE, ending up with a product in which more than 70 percent of the code was its own. Changes like these can contribute to game delays, as in the case of Ion Storm's DAIKATANA. John Romero says that even after making the switch from the original QUAKE to QUAKE II in February 1998, the design team had to reimplement many of the changes it had already made to the first engine as well as add countless new ones. At this point, says Romero, "The engine is very different from the original QUAKE II engine, except the network code has minimal changes right now." It might be worth noting that Ion Storm has already committed to switching to the UNREAL engine for DAIKATANA 2.

The alternative to licensing an engine is, of course, to develop your own, as Monolith has done with the LithTech engine used in both SHOGO and BLOOD 2. Monolith originally developed LithTech as DirectEngine in conjunction with Microsoft, but the two companies had different ideas on where the product needed to

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go and parted ways. Monolith CEO Jason Hall explains his company's decision to develop its own engine this way: "In order to deliver a compelling experience with SHOGO, we needed the speed of QUAKE II, the beauty of an UNREAL renderer, and something that had never been done quite right before—an incredible debris and particle system. All this needed to be integrated into one continuous, flexible, easy-to-use system that could be expanded upon for years to come." Currently being used by more than 7,000 developers, LithTech seems to be a real contender in the engine wars. Still, Romero doubts that any one engine will ever dominate the industry because new engines are constantly on the way, with aggressive license pricing and more features. "Technology," he warns, "keeps marching on!"

Pest Control

Sloppy coding and buggy products are the bane of any gamer. Despite the assertions of a few Usenet cranks, designers care about their products and don't want to put their names on a buggy game. But according to Andrew Goldman, president and CEO of Pandemic Studios, the team behind BATTLEZONE and the upcoming BATTLEZONE 2, bugs are basically inevitable and often stem from trying to accommodate a wide range of hardware, particularly 3D cards. "Remember the dark days of sound cards?" asks Goldman. "There was always some sort of conflict that would mess with your life. Now it seems we're in the dark period of 3D cards. Every card supports different features and is constantly getting updated drivers." If you own a Voodoo Rush card, odds are you're nodding in agreement right about now.

To squash bugs before they get in the box, designers subject their games to stringent quality assurance (QA) testing as well as beta testing. Activision will have up to 100 testers during any given beta cycle, with QA testing lasting in excess of four months. At Valve, QA starts at the beginning of a project to catch bugs the moment they occur. Valve uses its beta phase principally to detect unexpected configuration problems. Id Software uses outside testers to catch bugs that its rigorous, in-house testing doesn't catch. Brandon James, an id level designer explains, "Everybody out there has a different and distinct playing style. You get enough [testers] who have a knack for going to the most unlikely places in a level and doing the most obscure things and eventually you'll have covered all the paths and areas that an average player will follow."

"You get enough testers who have a knack for going to the most unlikely places in a level."

[Brandon James, id Software]

Across the board, designers seem to take the input of their testers seriously, implementing suggestions and changes every step of the way. Goldman observes, "After spending two years on a project you're no longer able to see how new users will react to the product. The only way to maintain an appropriate perspective is to learn to look at it through the eyes of your first-time users." Those users provide invaluable feedback. The input of BATTLEZONE testers led to full-world minimaps, the refinement of the game's outstanding interface (see the "Control Issues" sidebar), and the deletion of a virtual cockpit. In the case of HALF-LIFE, implemented suggestions from testers ran the gamut from "Make this ladder more obvious" to "This monster really sucks and needs to be redesigned."

When bugs do occur in a game, every designer to a man wants to

COMPROMISING POSITION **The *Star Trek* license brings instant consumer recognition, but at a creative cost. While the KLINGON HONOR GUARD designers could persuade Paramount to allow the blood seen in this shot, the studio categorically ruled out gibs.**

THE VISION THING

To break away from the pack of copycat action games, a title needs to find a way to capture gamers' attention. One thing that makes a game stand

out is a strong, clear, conceptual identity. That's what made INTERSTATE '76 such a breath of fresh air: Its car combat came packaged in a highly stylized, funky, funny 1970s wrapper.

According to Zack Norman, "Any game design should be encapsulated in one to three sentences. Every design element should be compared against that ideal. INTERSTATE '76 was '70s muscle cars with guns: *Mad Max* meets *Shaft*. INTERSTATE '82 is *Mad Max* meets *Miami Vice*." Every creative decision is then filtered through the game's concept summary with the intention of creating a unified creative whole.

With this philosophy in place, certain design choices almost decide themselves. The widely praised funk soundtrack in INTERSTATE '76 was used because funk had the energy appropriate for an action game, even though it wasn't the most popular music of that time. The same holds true for INTERSTATE '82 and its New Wave soundtrack. Featuring elements of Madness-type ska and B-52s-style surf music, the soundtrack meets the criteria set by the game's capsule concept.

fix them. Most designers follow the procedure that Monolith used for SHOGO: Immediately trying to fix any problem and post a patch on the company's Web site. But Zack Norman sounds a cautionary note: "The harsh realities of corporate America don't necessarily mean we can issue a patch. If a game has no shelf life, if no one's buying it, it's hard to rationalize the time and expense of releasing a patch."

Hunting Licenses

To avoid a quick death on the shelves a title must stand out, and one way to accomplish that is to license a known entity. The idea is that the consumer will be more inclined to buy something they're familiar with and, hopefully, already like. Alex DeLucia, producer of MicroProse's KLINGON HONOR GUARD explains, "When you're trying to sell a game to retailers and you present them with *Star Trek* and Game XYZ, it's easier to sell the *Star Trek* game since the retailer knows what *Star Trek* is. Another big benefit of having a licensed product is cross-promotion."

Licensing a known entity does come with limitations, however. DeLucia again: "Obviously, you have to deal with the specific characters and back-story. Things like the color of a character's costume or their actions and attitude are very specific and, in most cases, must be strictly followed. Plus, your audience is intimately familiar with the subject matter and any inconsistencies will be noticed." Considering the rabid nature of some *Star Trek* fans, that's an understatement.

Forced to work inside the framework of the license, designers make concessions that would not be necessary in an original title. In the case of KLINGON HONOR GUARD, MicroProse was forbidden to use gibs and had to demonstrate the need to show blood.

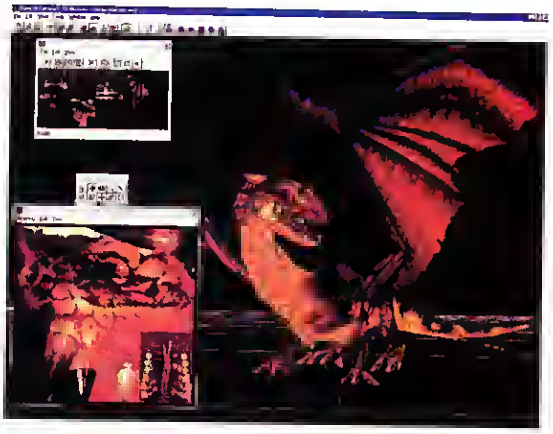
On the other hand, a license might backfire on a game. In the case of BATTLEZONE, the license helped the design team focus on some early aspects of development and helped to get out initial word about the title. But in the end—between naming the game after an 18-year-old coin-op game and putting dated vector-graphic images on the box—Goldman feels that the BATTLEZONE name just created confusion that hurt sales.

Every Bloody Picture Tells a Story

Increasingly, it seems, action games will have to tell a story to compete. Where a shooter could previously get by with a few paragraphs of generic text between chunks of levels, gamers now expect a more complete experience. And they're starting to get it.

Nowhere is this experience delivered more compellingly than in the soon-to-be-released HALF-LIFE, which found its inspiration in a Stephen King novella, *The Mist*. While almost all of the original concept has vanished from the final product, the focus on storytelling has not. Through scripted scenes that occur around the player, immersive action elements that push the plot forward while serving up a steady stream of fresh challenges, and an imaginative, almost cinematic approach to every facet of gameplay, HALF-LIFE makes its story an integral part of the game instead of the excuse for it.

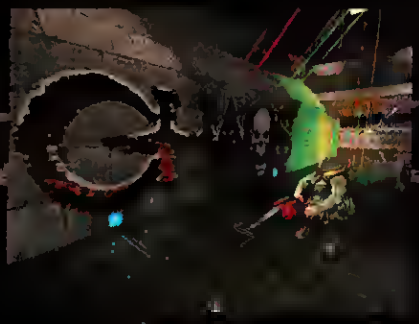
BUILDING CHARACTER



Game characters don't develop overnight. The sequence above illustrates how the body style of Rynn, the protagonist of DRAKAN, evolved. The first model, with its very low polygon count, was ideal for testing, if not for gameplay. The second Rynn served as the foundation for the later versions. She has a slightly higher polygon count but was a little too buff and unfeminine. The third one is the anorexic Rynn. Surreal was aiming for a lean athletic look, but found this version too waifish. Her legs were also far too long, which interfered with some of her fighting moves. The final model is the one used in the game. The right height, weight, and polygon count, she fits the character personality and is much more attractive than previous versions.

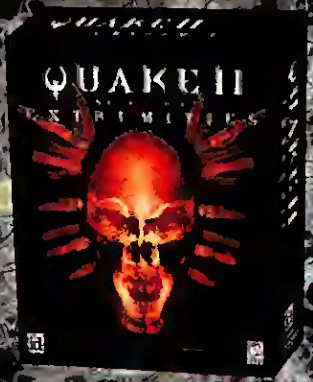
At top and left are the skins for Rynn and her dragon companion, Arokh. These skins use multiple high-quality texture maps to get higher pixel density than in other games, which generally use single-texture maps to create skins. The skins are then applied to the models using Surreal's proprietary texture-mapping tool and, voilà, a character is born.

Let's have a moment of silence for those we've left behind.



C.H.A.O.S. Deathmatch

QWar2



Let us prey. It's survival of the fittest (and the fastest). And Quake II is at the top of the food chain. No other game features tighter Deathmatches, a faster online pace, and more devoted fans than Quake II. With all this attention, we figure it's time we pay our respects. So here goes.

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In order to put the pieces together, Valve dealt with countless challenges. How do you make animations small enough that the gamer won't need 256MB of RAM to run them? How do you tell a story without taking control away from the gamer? How do you ensure that all the thousands of little details support the story you're telling? "The answer," says Gabe Newell, "is a mixture of up-front design, careful choices on the creative side to live within the envelope of what was possible from our engine...and a lot of really late nights." It's a daunting task but if it's all done right, as it is in HALF-LIFE, the results can be incredible.

You Always Kill the Ones You Love

Ever since DOOM, action titles have all but been required to provide multiplayer options. Designing for multiplayer action presents a whole different set of problems. Brandon James of id's QUAKE III: ARENA team explains, "Our biggest hurdle is to keep the game challenging while trying to give players an equal chance in the match. Balancing out the experiences, effects, pluses and minuses, as well as introducing new weapons, power-ups, and items is necessary to keep a player's interest high." With the QUAKE line moving toward a solely multiplayer game, the id team is focusing more on fighting, survival, and the hunter/hunted aspect of multiplayer gaming than the combat-driven single-player experience.

For QUAKE III, id is breaking down the DeathMatch experience and levels into distinct styles. Some arenas will accommodate larger numbers of gamers while others will suit more one-on-one combat. According to id level designer Tim Willits, "Flow, identifiable areas, freedom of movement, giving or not giving a player control of the level, and multiple entrances and exits to the main arteries or combat areas—all these elements play a role in creating a level that's fair and balanced."

While these challenges are common in designing multiplayer games for first-person shooters, other games face far different problems. In making the multiplayer components for DRAKAN, Surreal first had to deal with scale, and had to scale back the scope of its multiplayer levels in a nod to playability. The second challenge was to figure out how to enable DRAKAN's mix of projectile-based air combat and hand-to-hand ground combat. Again, the smaller levels helped, and the design team found that creating maps for specific multiplayer variations further enhanced multiplayer gameplay.

The Whole Enchilada

From the initial idea to the last patch posted on the Internet, designing action games is an almost ceaseless process of recognizing and defeating obstacles. In a sense, the design process isn't all that different from playing a shooter: See the problem, blow it away. Make the right decisions and you can wind up with a classic like QUAKE or you can revolutionize the genre, as with HALF-LIFE. Make the wrong choices, fail to balance multiplayer, or design an interface that requires a prehensile tongue to use effectively, and you'll wind up gibbed by the competition.

After playing MIGHT & MAGIC VI for what feels like the past 15 years, Robert Coffey is looking forward to playing a game where he just shoots things.

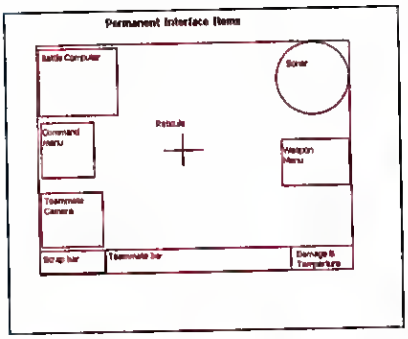
CONTROL ISSUES

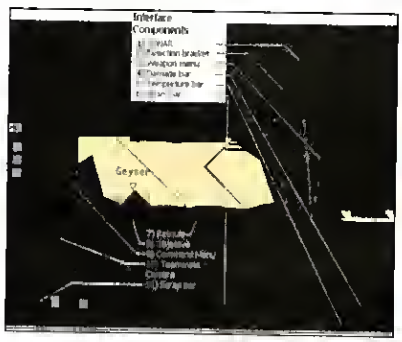
"The interface is everything in gameplay. A player needs to be able to sit down in front of the game and start to play without confusion." So says Andrew Goldman, president and CEO of Pandemic Studios, the creators of BATTLEZONE and the upcoming BATTLEZONE 2. Goldman knows how important the interface is to overall design, and his games prove it: The interface in BATTLEZONE was easily one of the design highlights of the past year. Seamless and intuitive, it let the gamer immerse himself in gameplay without wrestling with the controls. But BATTLEZONE's interface wasn't always so slick.

Initially, the game featured a split interface; you commanded from an overhead view and then fought in first-person perspective. The designers soon learned that it made BATTLEZONE feel like two different games instead of the action/strategy hybrid it was meant to be, and they set out to fix it. The integration of the topographical map and the command menus proved to be the key breakthrough. Still more changes occurred over the course of a year-long string of beta testing. As Goldman explains, "As soon as you start to make changes, everything goes out the window. The only way you'll know if new interface ideas work is by putting players in front of a working prototype."

Working on BATTLEZONE's sequel has charged the design team to make the interface even friendlier looking and less intimidating. They are focusing principally on decreasing the amount of keyboard gymnastics required to control units and letting the mouse do more of the work.

The bottom line is simple: An interface can make or break a game. If it's more of an obstacle than a tool, that game had better also be giving you back rubs and cooking you gourmet meals every night if the publisher hopes to make any profit.





MAKING TOOLS From preliminary sketch to early model to final product—the evolution of the BATTLEZONE interface.

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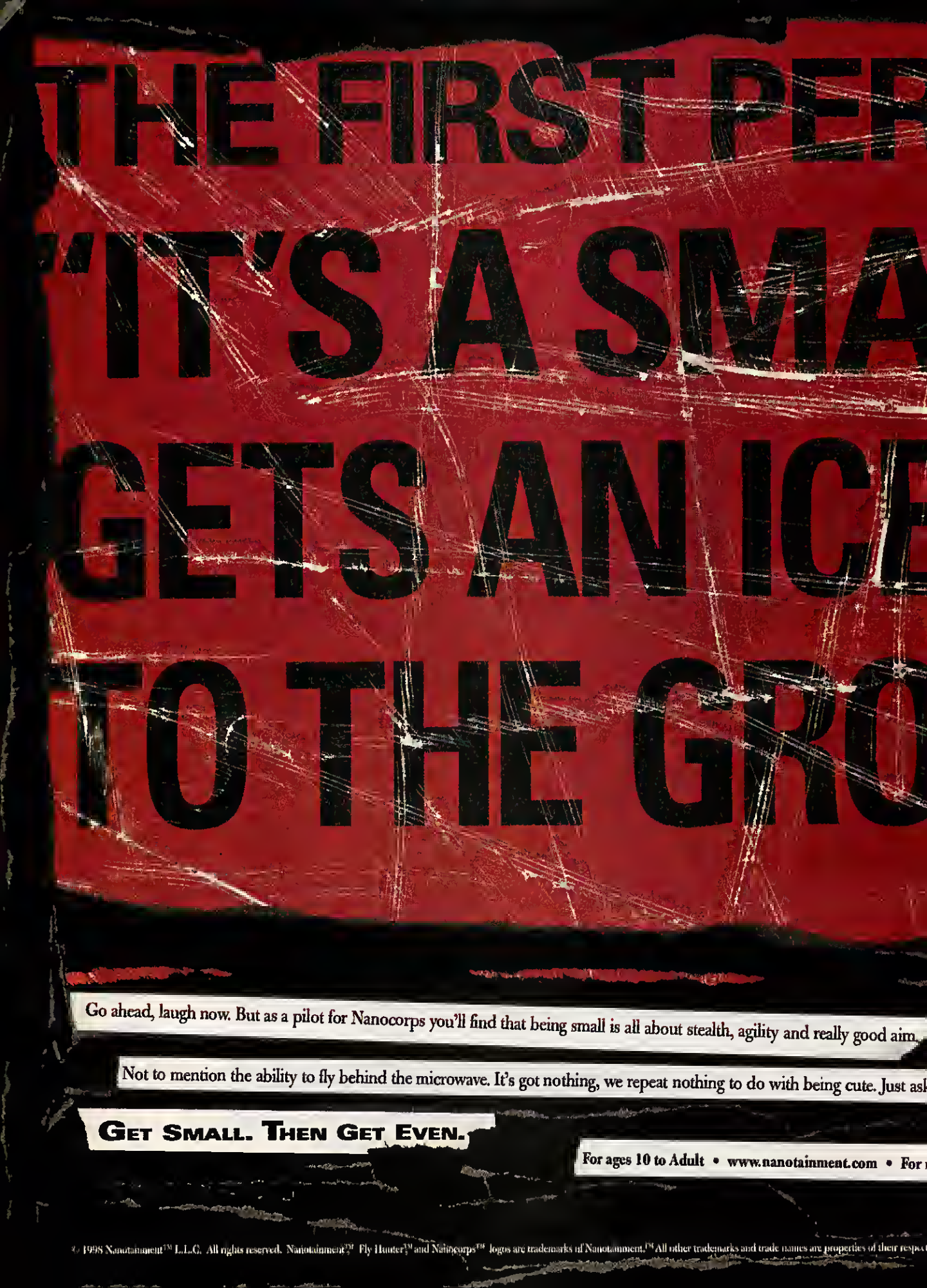
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CRASH COURSE

Building a Flight Sim Shouldn't Be So Tough: You're Just Re-creating Reality...

[by Denny Atkin]

Flight simulations are arguably the most complex of all computer games to create. Where the simple existence of gravity or momentum passes for "real physics" in some game genres, flight-sim designers face a demanding audience that knows not only how real planes fly, but also how real pilots fly them. But designing a sim isn't just about maximum realism. An authentic World War II sim might have you flying 10-hour missions and finishing a three-month career with only three kills.

While there's a niche market that would love that experience, that's not the game most sim players are looking for. And for every sim fanatic who's looking for the maximum in realism, there's a newbie sim player that game designers want to turn into a fan. This gamer needs a plane that's easy to get into without a trip to the local airport for flying lessons. So how do designers balance these demands for playability, accessibility, and realism?

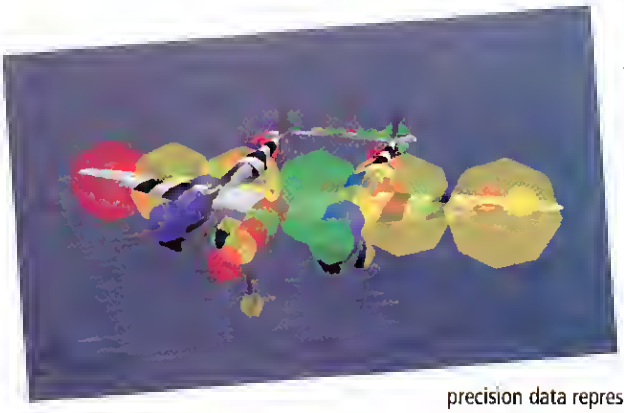
Flight Planning

"I truly believe that highly realistic sims are the most difficult of all games to build, from an engineering standpoint (with the possible exception of massively multiplayer persistent state worlds like ULTIMA ONLINE)," says Andy Hollis, who is best known for his Origin Skunkworks projects, the award-winning JANE'S LONGBOW series, and F-15. Hollis has been creating sims since the days of the Atari 800.

Hollis outlines the complexities: "First, you have to build a complete simulation of a real airplane. Geez, the Defense Department spends millions on this. And it better be right, or the customers will complain. Then, you have to build a photorealistic graphics environment in which to fly the thing. And it must work well up high from a distance, and down low and close. You just can't play the same kinds of tricks as you can in a 3D shooter. Finally, you have to make a compelling mission environment in which to play the game. Enemies that work together to defeat you, unexpected subtleties, and plausible reactions to anything the player does. Basically you have to build a commercial-grade military simulator and a great game all at once. Oh, and did I mention the challenges of Internet multiplayer gaming for a realistic combat sim?"

It's enough to make a fledgling sim designer decide that curing the common cold might be easier. Paul Grace, whose projects include CHUCK YEAGER'S AIR COMBAT, the U.S. NAVY FIGHTERS series, and JANE'S WWII FIGHTERS, concurs.

ILLUSTRATION: Dan Fitzpatrick



HIT BUBBLES This P-38 from FIGHTER DUEL 2 shows the bounding sphere system used to detect which part of an aircraft is hit by bullets.

"I have to agree with Andy," Grace says. "I don't think there is any more demanding piece of entertainment software engineering. The environment is huge, the graphics are trending toward photorealism, the frame-rates increase, the gameplay is complex, the sound multivariate, the AI needs to be flexible enough to handle the ebb and flow of combat."

Not that that's necessarily a bad thing, Grace adds. "I think that the demanding nature of the software is why the category is popular."

Matt Shaw and Ted Jump are currently working on FIGHTER DUEL 2, Infogrames' latest entry in a series of World War II games that traces its history back to the heyday of the Amiga. Jump's experience mirrors that of Hollis and Grace.

"In our opinion, flight simulators have many more difficulties than just about any other genre," Jump says. "The program has to represent everything from your cockpit instrumentation two feet in front of your eyes to a mountain range 40 miles away and everything in between. A vast database of terrain data consisting of both height and texture maps must be maintained and delivered quickly for smooth flight."

And just having the proper data doesn't mean you're going to get it right, Jump says. "Owing again to the distances that are required to be manipulated, it is easily possible to create software that causes improper behavior or rendering simply because of how floating-point data is handled. Consider two gauges in the instrument panel that may be only centimeters apart. Depending on the computations required to manipulate them in three-dimensional space, they may look and render fine when you are near 'world zero,' but once you get far away [from your starting point] they may 'grow' farther apart or closer together simply owing to how computations get processed. In some cases you can switch to a higher precision data representation; in other cases you may need to completely recode how the computations are done to prevent the problem." In other words, don't quit your day job to develop flight sims if you struggled with high school algebra.

Preflight Check

Of course, the first step in building a flight sim is choosing what you're going to simulate. Recent release trends might make the more conspiracy-minded think that a virtual trilateral commission of flight sim developers gets together and has discussions along the lines of "Okay, last year we all did F-22 simulations. This time let's all do World War II sims." But in fact, the process is a bit more scientific.

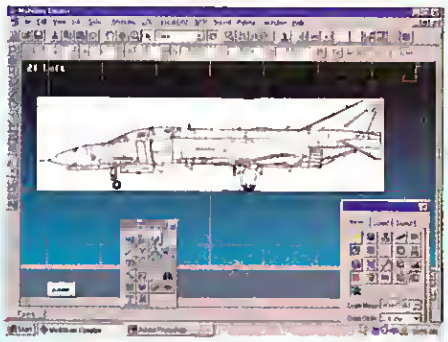
I asked Andy Hollis how Jane's chooses which platform to simulate.

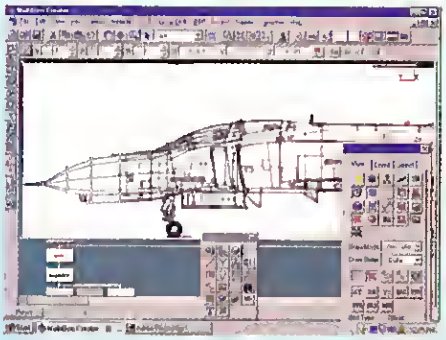
"We look at a number of factors," Hollis says. "How well-known is the subject aircraft? Clearly an F-15 is more well-known than an F-4, and Longbows are more well-known worldwide than any other attack helicopter. In order to appeal to a broad market of players, we want to choose high-profile aircraft that everyone agrees are sexy! Niche aircraft usually lose out here." So if you've been waiting for that F-105 Thunderchief or Brewster Buffalo sim, it's time to move on.

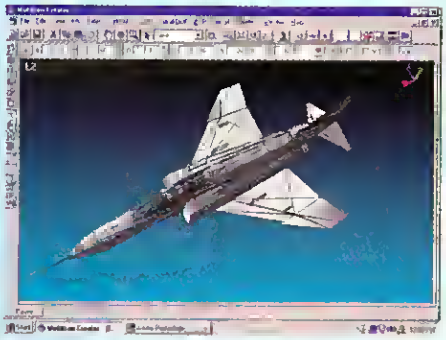
Next, Hollis says, developers ask how interesting is the role of the aircraft? Aircraft that are pure strikers or pure dogfighters provide less variety of experience for the gamer. It's better to have lots of interesting situations to play out.

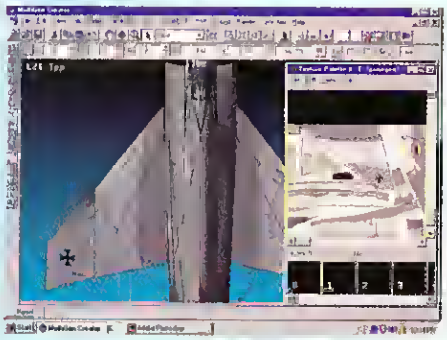
"Has the aircraft been involved in (or will it potentially be involved in) noteworthy conflicts? For some historical sims, this is the key question to ask, with the sim being focused on multiple aircraft in that conflict," Hollis adds.

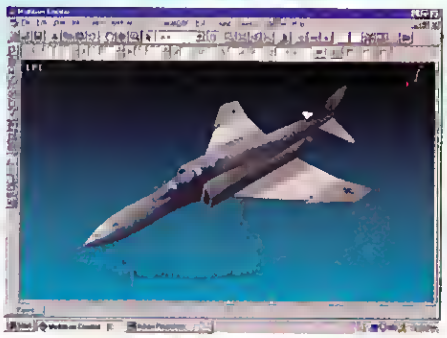
Another consideration when choosing a subject is how much real information is











A PHANTOM APPEARS This sequence shows how Origin Skunkworks turned a line drawing into a 3D F-4 Phantom.

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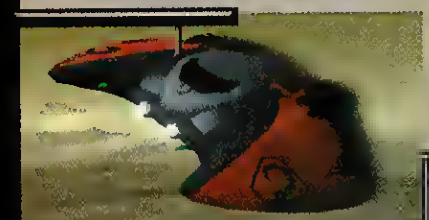

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available on the aircraft. Hollis explains, "For 'study' sims, we need to have access to enough real data on the plane to create accurate flight models, complete avionics suites, and interesting realistic mission profiles. Related to this is ready access to the aircraft themselves and the pilots that fly or flew them. Books and pictures are great, but seeing and touching the real thing, and hanging out with the people who work with them provides a much higher sense of connection."

The last thing that Jane's looks at, Hollis says, is what the other guys are creating. "What is the competitive circumstance? This one is the lowest priority, since we usually don't worry too much about what the competition is doing, but it's not usually a good idea to be building a product based on a concept that has already been beaten to death—can you say 'F-22'?"

Hollis tends to focus on "study" sims, which simulate a single aircraft in great detail. Jane's other development group, headed by Paul Grace, focuses primarily on "survey" sims, which simulate a group of aircraft. "I think there is a bit of a difference when you are building a survey product," Grace explains. "We search for the popularity, the romance, the things that seem fun about flight. We also try to pick things of personal interest, hence naval and strategy simulations, or just some concepts that we might think would work as a simulation."

Kit Planes

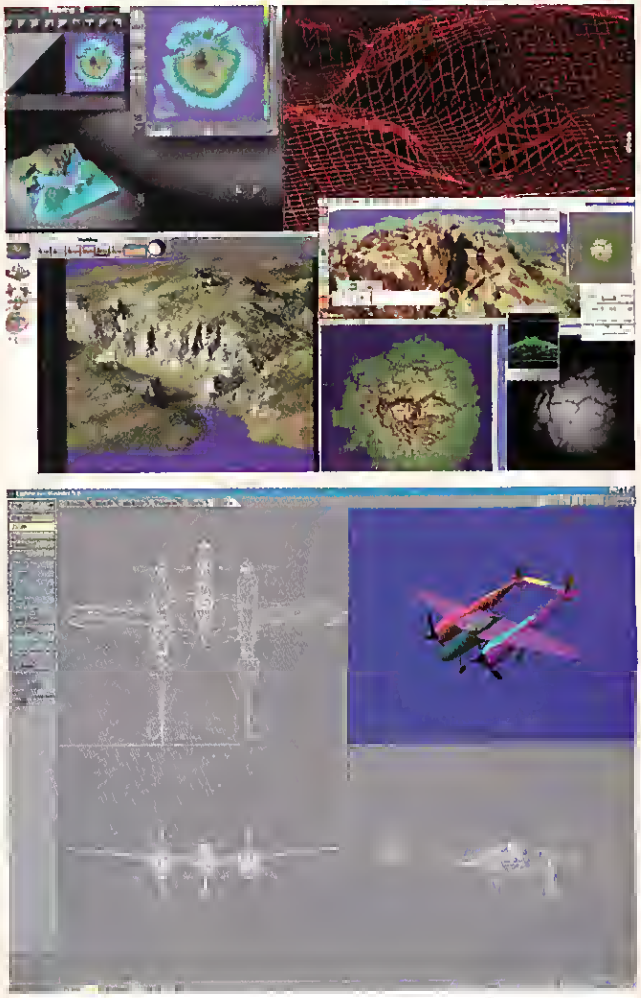
Once the topic is chosen, it's time to dive in and do the research. How were these planes flown, and more importantly, how did these planes fly? Building accurate flight models for sims is an amazingly difficult task no matter what the topic. But when the planes that you're simulating were last used in battle more than 80 years ago, just pinning down their basic performance can be quite a challenge.

Jerome Kluth of Dynamix's RED BARON 3D development team said the team had to consult a variety of sources to get a complete set of data on the World War I planes they were simulating. "Our initial source was our staff historian, John Bruning, and all of the historical literature on the subject we could find, including pilot diaries and autobiographies, as well as books on individual aircraft."

The team didn't stop after the trips to the library, though. "To help put the sometimes colorful descriptions into a more objective form, we used contemporary references, such as Jeff Ethell's pilot reports on various replicas, as well as information from pilots of flying replicas," Kluth said. "Information such as top speeds and climb rates was available for most of the planes, but things such as roll rate, turn rate, and structural limitations were mostly available only in a comparative form. Period films and still photographs of aerial combat gave us some measure of objective data, and using the comparisons as a guide, we started by adjusting the most maneuverable plane and proceeded from there."

Matt Shaw says the FIGHTER DUEL 2 team had similar challenges with some WWII planes. "Some aircraft are easy to get flight data on (for example, there are reams of data on the P-51). Some are more difficult, and for some, the flight data doesn't exist in any form (the Japanese J7W1 Shinden, for example). To get data for the physical models and flight models in FIGHTER DUEL 2, we start by utilizing the vast library of technical data we've been accumulating for the last seven years. That gives us flight performance data as well as aircraft flight idiosyncrasies. Published reports on how well a particular aircraft performs have to be evaluated, as they are often subjective and false recollections years after the fact. Furthermore, field modifications to aircraft were quite common in WWII, sometimes dramatically changing the flight characteristics of a particular aircraft model. The addition of metal ailerons to the Spitfire is a good example of this."

Sometimes, Shaw says, you've just got to hit the road. "We've



OFF THE SHELF **Sometimes developers can use off-the-shelf tools in creating sims; KPT Bryce is being used to model land areas in FIGHTER DUEL 2, while aircraft models are built in Lightwave 3D.**

DESIGNING FOR MULTIPLAYER

Once you've flown a flight sim against other humans, it's hard to go back to even the best AI opponents. But right now, designers must consider that the vast majority of flight sim pilots are flying solo against the AI. Of the number of pilots who fly sims multiplayer, Andy Hollis says, "I'd peg that as less than 20 percent. Of course, they all have Internet access and like to voice their preferences on the Usenet newsgroups."

Still, that small percentage doesn't mean multiplayer is not a concern for developers. Hollis explains, "Multiplayer hasn't been fully exploited in combat sims. The potential is huge, but there are engineering challenges to be overcome, especially for the more realistic and comprehensive sims. Jane's Combat.net has been reasonably successful, but we have much bigger plans for that."

made many trips to National Air and Space Museum Garber facility, which is local to us, as well as the Chino Planes of Fame Museum in California, and museums such as the Duxford Imperial War Museum in England."

Once a flight model is defined, it's time to put it to the test. And who better to test the planes' performance than the pilots who've flown the real things? Bruce Williams, the lead project planner for Microsoft's COMBAT FLIGHT SIMULATOR, explains some of the flight testing that went into that product. "We worked closely with pilots from the Confederate Air Force, WWII veterans, and other experts to test and fine-tune the flight models for the various aircraft," Williams says. "Using the same process that we developed for FLIGHT SIMULATOR, we took the software to the pilots, had them try it, and then refined the flight characteristics through an iterative process based on their feedback."

With historical aircraft, it's still possible to find pilots who had lots of time at the controls of a plane, but much more difficult to find pilots who are actually current in those aircraft. "Lad Doctor of the Confederate Air Force was very helpful in this process. He is one of the few people alive who is relatively current in the Spitfire, Bf-109, P-47, and P-51. He was not a WWII pilot, but his being very current and analytical was a big benefit for us," says Mike Schroeter, flight model designer for COMBAT FLIGHT SIM.

With modern planes, finding the information is a bit easier, but it's no less time-intensive. Jane's Andy Hollis says that much of the information for F-15 and Longbow came from visits to active bases and interviews with current pilots. Civilian sims are perhaps the easiest to find a group of enthusiastic, knowledgeable testers for.

Richard Harvey, the project leader for Terminal Reality's FLY!, says that most of the data for aircraft performance in that sim comes from the aircraft manufacturers and pilot training companies, but that the developers look to actual pilots for much of the testing. "Of course, one of the best ways to check the data is by having your sim looked at by someone who has actually flown the plane itself. We've been careful to build our initial beta team from a core of real pilots, each with thousands of flight hours in everything from single-prop planes to military and commercial jets.

BUILDING WORLDS

SURREALITY A view over the wing of a real aircraft compared to the same view from Sierra's PRO PILOT 99.

Part of the immersion of a flight sim is a convincing environment to fly in. Witness JANE'S F-15, where top-notch flight modeling and systems simulation are matched with 3Dfx-rendered mountains that melt like a bad acid trip. Terrain graphics have gotten dramatically better since the advent of 3D cards, but they still don't come close to the view out of a real cockpit. So when will we get truly photorealistic graphics?

FLY's Richard Harvey says, "I believe it's simply a matter of hardware catching up. Our 3D engines, designed and written by our president, Mark Randel, can already handle internal color depths of 40 bits or more. Our scenery system can handle sub-1-meter data, and our models can handle textures of any size. The biggest problem is: Does the customer have a video card that can handle true color, with a sizeable texture cache on-board, a z-buffer frame large enough for the desired resolution, fast and flexible storage, and enough RAM and processor to have a hyperdetailed elevation model and a city full of rendered buildings?

"Today we have to carefully offer detail that can scale into future generations of hardware, but still be enjoyable for the installed base that exists," Harvey says. "With hardware speeds accelerating at its current rate, you'll see steady increases in detail level, many times with minimal software modification."

But even if you have the hardware to display this detail, the other problem is the sheer amount of storage needed to store photorealistic imagery of large areas. PRO PILOT's Adam Szofran thinks it will be some time before photorealistic imagery is possible. "We need faster machines, more storage, and better compression technology first. Imagine that our goal was to cover the whole world in photorealistic detail. There are about 150 million square kilometers of land on the surface of the earth.

"It will be some time before (photo-realistic terrain) happens *[Adam Szofran, PRO PILOT]*

To cover the land area of the earth with photorealistic textures whose pixels are one meter wide would require about 150 terapixels (that's 150,000 gigapixels or 150 trillion pixels!). If you reduced the resolution of the textures to make them fit on a single 9GB DVD disc, your pixels would be about 128 meters wide, which wouldn't look very realistic."

Here's a table showing the numbers of pixels at various widths that would be required to cover the land areas of the earth, and how many CDs or DVDs you'd need to store that data:

pixel width (meters)	gigapixels	CDs	DVDs
1	150,000	238,095	16,667
2	37,500	5,524	4,167
4	9,375	14,881	1,042
8	2,344	3,720	260
16	586	930	65
32	146	233	16
64	37	58	4
128	9	15	1

[Note. One gigapixel is one billion pixels.]

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[Andy Hollis, JANE'S A-10 WARTHOG]

> "I truly believe that highly realistic sims are the most difficult of all games to build."

We are using these testers to verify the performance, feel, and accuracy of not only our flight models, but aircraft systems as well."

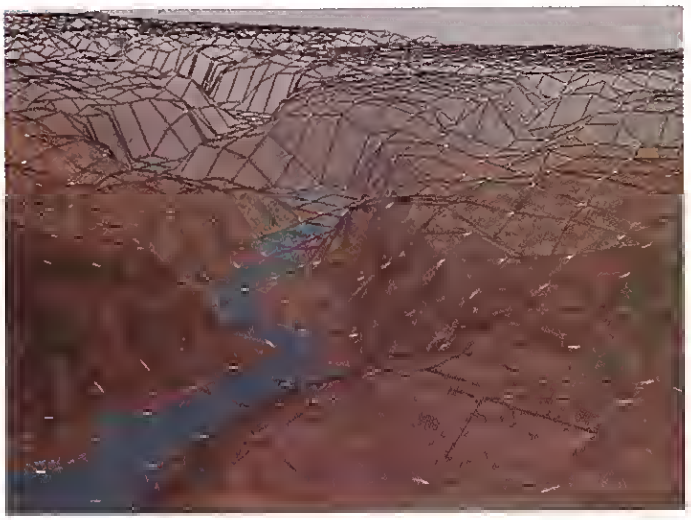
Another consideration when developing flight models is that experienced flight-sim players may have different expectations than real pilots. Harvey says, "We'll be adding sim-heavy testers later in our cycle to give us feedback on the 'feel' from a sim enthusiasts standpoint, but we want to ensure the simulation is sound and solid before then."

Mike McGrath, of the RED BARON 3D development team, says, "The AI is a fair part of the 'magic' of a simulation like RB3D. It completes the immersion of the simulation by adding other active parties into the single-player game—so along with the sensory stimulation, like the visuals and sounds, it lets your imagination run away a little with the idea of existing in the game's universe—making it a more compelling and interesting place to spend time.

"For an AI pilot," McGrath continues, "a great deal of effort must be put into making the AI 'believeable,' in the immersive sense. In addition to being an effective combatant, it has to make mistakes, and it has to be vulnerable. It doesn't have a joystick, or a throttle, but it must behave as though it does."

Jeremy Stone talks about the elements of COMBAT FLIGHT SIM's AI that were designed to make it feel "human" and alive. "AI pilots actually operate their controls, and the aircraft is run through a full physics simulation based on the control positions the AI pilots choose. This is a hard problem and very few products do it. The benefit is very realistic aircraft behavior. You'll also see humanlike behavior, such as minor course corrections to stay on course and drifting in formation.

"AI pilots have a realistic sighting model," Stone adds. "There's a definite advantage to trying to sneak up on an opponent, particularly in the heat of combat. Factors such as target fixation are also modeled—you'll have an easier time shooting someone down if he is hot on the tail of his own target and distracted. The AI pilots also have a sophisticated target selection model, which leads to effects such as great-looking furballs and bomber attack or escort missions."



INSTANT CANYON **For PRO PILOT, the Sierra team created an elevation mesh of the entire United States. The number of polygons in just this small area gives you an idea how much data is required.**

Pilot Training

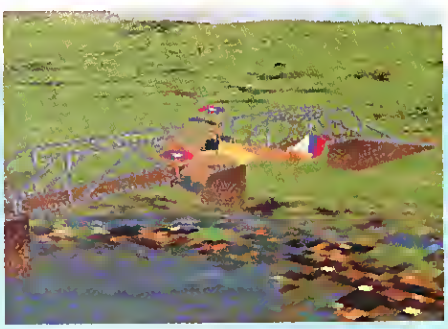
Once the planes are in place, you need someone to fly them. Unless you're getting in IFR practice for a real pilot's license, flying around alone isn't going to be much fun. So it's up to the flight sim developers to create convincing AI pilots to take the controls of enemy and allied aircraft.

Mission Critical

There are dozens of other factors that go into creating a flight simulation: building a graphics engine, mission creations, interface design, and so on. Missions are a critical aspect: Should they be scripted, branching, or part of a computer-generated dynamic campaign? The COMBAT FLIGHT SIM team chose scripted missions because they wanted to re-create historical missions, while the RED BARON 3D team wanted to re-create an unpredictable, dynamic war. Look for details on mission design in my column in next month's *CGW*.

One thing that became evident during the course of researching this article is that it would be hard to cover the development of a flight sim in great detail in 200 pages, much less the limited space of this feature. So look forward to coverage of other parts of the development process in upcoming issues of *CGW*.

Denny Atkin has been writing about computer games for 12 years, and yet he's significantly younger than Johnny Wilson. He's currently fighting the Battle of Britian in COMBAT FLIGHT SIMULATOR.



3D REBUILD **The long development curve of RED BARON II saw 3D cards rise in prominence before the sim's release. Adding 3D support isn't as easy as some would think—Dynamix spent nearly a year updating the sim to RED BARON 3D.**

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PSYGNOSIS

GOING FOR THE GOLD

Developing a Sports Game Takes Brains, Passion—and a Healthy Dose of Masochism

[by Jeff Green]

"The simple truth is that obsessions just aren't funny, and that obsessives don't laugh."

—Author Nick Hornby, from the book Fever Pitch, *explaining why, as a boy, he had no sense of humor about his soccer fanaticism.*

What makes someone a great sports game developer?

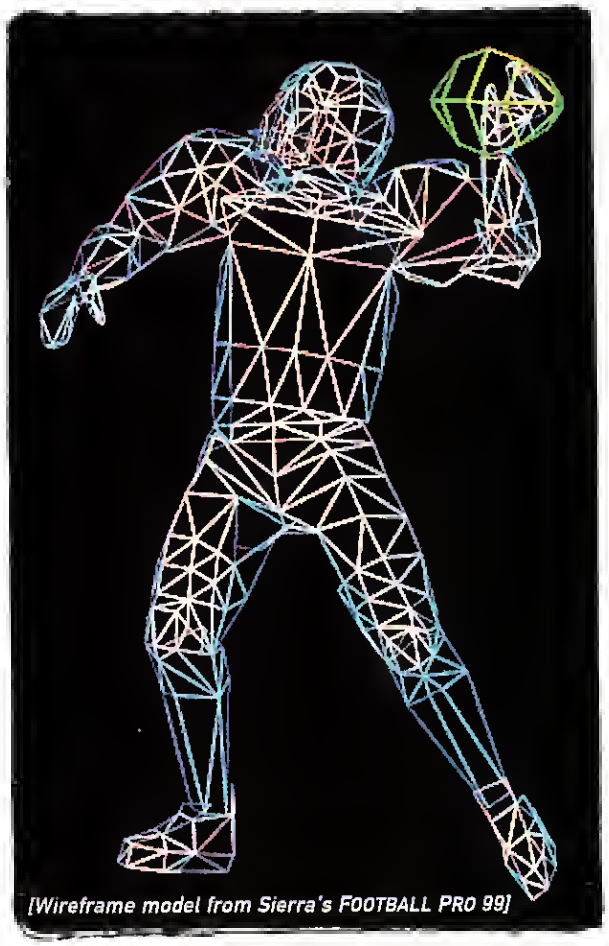
A knowledge and love of sports, of course. A savvy brain for computer game design. And, maybe most important of all, a serious case of masochism. Why? Because of all the computer game genres, with the possible exception of simulations, sports puts you in the unenviable position of trying to please the world's toughest customer: the know-it-all sports fan.

You think we're kidding? Spend a morning listening to sports talk radio. Call up and proclaim, "Brett Favre is an overrated sissy in a weak division." See what kind of response you get. Sports, like politics and religion, engenders a gut-level, intractable set of emotions, opinions, biases, and theories in those who care—and woe be to the person who messes with someone else's sports reality.

So imagine being a game developer. It's your job to create an illusion of sports reality—say, a football game—for hundreds of thousands of football fans (and gaming journalists), all of whom think they understand the game better than you do. You want your game to be as realistic as possible, but you also want it to be fun. You want it to be the most comprehensive, definitive game ever on the sport—but your company has given you less than a year in which to make it.

No wonder that the great majority of sports games get mediocre-to-bad reviews. No wonder that, if you judge by Usenet posts, there's never been a truly great sports game ever. No wonder that company after company thinks it's getting into the sports gaming business, only to give up some time before or after its first product is released. Even Microsoft, with all its resources, is having trouble getting sports games developed right now.

How do sports developers cope with it all? We caught up with some of the biggest names in sports gaming, including the folks behind MADDEN, NASCAR RACING, and JACK NICKLAUS, to share with us the joys and headaches of their jobs, and spill some of the secrets of game design.



[Wireframe model from Sierra's FOOTBALL PRO 99]

A Never-Ending Design Process

"It's déjà vu all over again."

—Yogi Berra

Designing any computer game is hard work, but sports developers have a unique set of problems. For the most part, sports games aren't one-time products, but yearly ones that are constantly in development, and constantly being shoved out the door to correspond with real-life sporting seasons. Unlike a game like PREY, for example, the makers of football, baseball, basketball, and hockey games have just one year to design, produce, and hone their product. They can't just finish it "when it's done."

For Ric Neil, producer of EA Sports' MADDEN 99, the process is thus simultaneously fast and never-ending. "We never stop working on the game," says Neil. "In reality, as soon as we finish the current game we start working on next year's version. Because we have to get the product done every year, we do not have the luxury of starting from scratch."

Think of the process, then, as less like a straight line and more like a circle—perhaps even a race track—with the game constantly spinning around, trying to stay ahead of its competitors, checking in regularly into the pit for updates, technological improvements, bug fixes, and, in some cases, wholesale rewrites.

Mike Branham, director of Sierra Sports NFL FOOTBALL PRO 99, describes the process this way: "We start each version with the previous product's design spec as an alpha spec. Then input for changes and new features get kicked around and tossed in. Then we do a time analysis on the new spec with the changes and new features. Some get killed, but for the rest, we staff the project and get to work."

Working on an existing product can be seen as both an advantage (especially if the game is already a good one) and a disadvantage,

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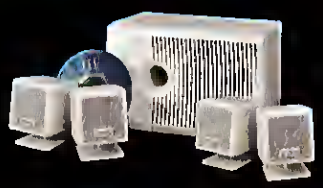

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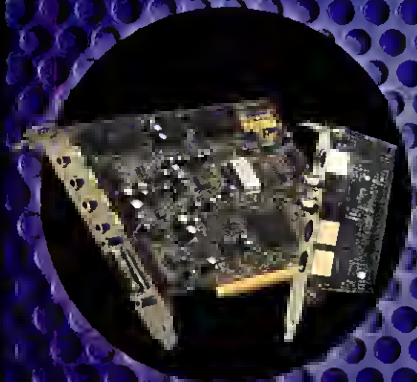

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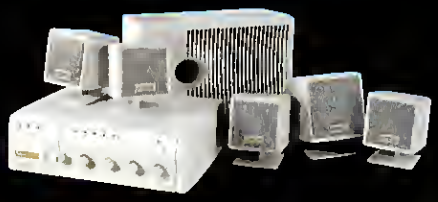

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UNDER THE HOOD No, it's not a shot of FIFA 82. Just a "test-bed" shot from the designers of FIFA 99. Before that game you're playing gets all gussied up, it looks something like this underneath.

GETTING THERE Another test-bed shot from FIFA 99, this one actually showing some rendered players and a ball.

AH, THAT'S MORE LIKE IT A work-in-progress shot from FIFA 99, showing players' heads tilting up to watch a ball in flight.

because, given the time constraints, you're largely stuck with what you have. The good thing, of course, is that it gives you a base from which to start, and it allows you to keep refining your vision.

Mike Franco, the executive producer of JACK NICKLAUS: GOLDEN BEAR CHALLENGE (formerly published by Accolade, now by Activision), puts it like this: "Whenever you finish a game, there is always an 'I-wish-we-had-time-to-put-X-in' lament. With a franchise like JACK NICKLAUS GOLF, those items are always the first to go into the design for the next product. Since we have a version out there that computer golfers are playing, we listen to what they like and what they wish they had."

Most designers seemed to agree, however, that no matter how tight the schedule, it's crucial to always keep a fresh perspective. "It is important to start with a blank page," said Marc Aubanel, producer of EA Sports' FIFA 99, "because you carry the baggage of a year's worth of development. We start [each year] by taking a fresh look at the gaming market in general to look for trends and design improvements in other genres."

Franco agreed. "I actually think the attitude toward a sequel is between refining and starting from scratch. We can't ignore existing users, so we don't start from scratch. However, simply refining last year's product will never do in a highly competitive environment like computer golf."

But no matter how lofty your goals, there is the grim reality of the ticking clock, and the fact that missing a few weeks off the schedule probably means that your game will *never* ship. This is why the game the consumer ends up with usually isn't quite as ambitious, and doesn't have quite as many features, as the product first described in those glowing sneak previews written six months before the game's completion.

"There are a lot of people in the process," said Sierra's Branham. "Development, art, marketing, PR, and management. Various items in the 'wish list' are more or less important to different groups, and a lot of culling and adding happen when these groups get together. In the end, the time and schedule analysis will lock the feature set."

Ric Neil at EA perhaps put it best. "The programmers and artists get frustrated with us because we always want more in the game than they can do in a single year. The wish list is a constantly changing document and it grows as every version ships."

> "We learned the hard way that a game must be designed and developed with multiplayer in mind"
>
> *[Vance Cook, PGA CHAMPIONSHIP GOLF]*

The Big Dilemma: Realism Versus Gameplay

> "My initial response was to sue her for defamation of character, but then I realized that I had no character."
>
> *—Charles Barkley*

A 350-pound lineman running like the wind for 80 yards. Greg Ostertag doing a 360-degree

BODY IN MOTION Rendering human motion accurately and believably is one of the toughest jobs of the sports game designer. Here's a shot from Sierra Sports' PGA CHAMPIONSHIP GOLF, as the team works on the motion of a female golfer.

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GLUG GLUG Converting TROPHY BASS to a 3D engine has proved to be a tough task for Sierra Sports' fishing group.

reverse jam through 4 defenders. Orel Hershiser launching a grand slam off Greg Maddux. Anyone who's ever played any sports game has experienced a moment, if not a million moments, of total disbelief. As you read this, there's a sports gamer out there right now pounding on his keyboard, screaming, "Yeah, right!"

The most crucial design decision in any sports game is just how realistic to make the game. The big rub—the one that often trips up developers—is that the more realistic you *say* your game is and the more real-life rules you *say* you're going to incorporate, the harder the fans are gonna treat your game if it doesn't *feel* realistic (remember Accolade's disastrous LEGENDS FOOTBALL?). If you opt for greater fantasy, as did NFL BLITZ or an arcade racer like NEED FOR SPEED, gamers will cut you much more slack, but you risk turning off the more "serious" fans of the sport.

Somewhere between a hard-core simulation and a pure arcade game is where most sports developers try to place their products these days. But finding that balance is a very tricky business.

"This is the hardest part of the job," said FIFA's Aubanel. "We are constantly weighing gameplay considerations against realism. We have always biased FIFA playability over realism. In fact, if you look at most sports games, the scores are unrealistically high and the physics models are all accelerated."

Most sports game producers tend to agree with Aubanel that there can actually be such a thing as "too much realism." As Steve Letsom, director of Sierra Sports' fishing games put it, "Imagine yourself sitting at the computer for hours on end, not being able to catch a fish. That is like the real world, and it sucks! I try to make the user have fun, but be challenging at the same time. It's definitely a hard line to straddle."

Straddling that line is where most designers expend the bulk of their conceptual energy—trying to figure out where to implement a sport's rules to the letter, and where to cut corners in order to improve gameplay.

"Too much realism can cause some problems," said MADDEN's Neil. "For example, in the NFL, there are usually about one-and-a-half to three minutes in between plays as the players get back to the huddle, and back to action; it would be kinda boring if we put that in the game. We try to keep the fun factor as high as possible without losing too much realism. That is one of the things that makes MADDEN, MADDEN."

Vance Cook, the designer of Sierra Sports' PGA CHAMPIONSHIP GOLF 1999 EDITION, concurs: "I think there is such a point as 'too much realism,' but it is a long ways down the line. Customers tend to look for a product that mimics reality. I think you take it too far when you simulate all the bad, but realistic, elements of a game. In golf, it would be a mistake to make you go find your ball."

Again, however, the problem is that what one sports fan thinks is important may not be what another fan thinks—and this is what leads to the smashed keyboards, bad reviews, and harsh Usenet posts. It's especially true of the more hard-core sports games. As Dave Matson, director of Papyrus' NASCAR RACING 1999 EDITION puts it: "For our fan base, realism *is* gameplay to a very large extent. Any time the gameplay on the

SIMON SAYS PUT YOUR HANDS DOWN You might not actually stand this way while playing golf, but game designers need to study every aspect of their characters' physical structure and movement, as this shot from Activision's JACK NICKLAUS: GOLDEN BEAR CHALLENGE shows.

DREAM PRODUCTS

We asked each designer we interviewed to describe to us the "dream" version of their product. Here are some of the responses.

NASCAR RACING

"Localized track conditions and grip levels down do the centimeter (or finer) that are constantly changing due to rubber buildup and weather changes, and a full field of 43 cars running a dynamic AI based on the same complex physics model as the player."
[Dave Matson, Product Director]

MADDEN NFL

"How about polygonal collision modeling (eliminate motion capture) so every tackle and hit is different, or maybe a 3D-glasses version, so when you look left and right you see what a player would see. Or maybe an impact suit, so when you get hit hard, you feel it!
[Ric Neil, Producer]

FIFA

"In a perfect world our gameplay logic would have 22 individual players 'thinking' strategically, and we would have generated motion. This way we could control all aspects of the movement of a player in a seamless animated environment."
[Marc Aubanel, Producer]

TROPHY BASS

"Ideally, TROPHY BASS would have the lake exactly so that when you went to the real lake, you'd recognize it. We'd also like it to have force-feedback fishing poles for every player."
[Steve Letsom, Producer]

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CUT NO CORNERS **Sports game designers are constantly trying to find the right balance between realism and gameplay. The folks at Papyrus Design Group lean heavily on the side of realism in games like GRAND PRIX LEGENDS, shown here.**

screen seems different than what they see on TV, users complain."

The answer, then, is to match the game's scope to the targeted demographic. Go ahead and let the cars bounce off the walls in NEED FOR SPEED, but cut corners on NASCAR and prepare for an avalanche of flames. Matson again: "By and large, the difficulty and depth of the game is what gives it tremendous legs. You'd be amazed at how many NASCAR sim fanatics will only race at full 100 percent distances, which can be over four hours long, without a break. But, hey, that's what the real guys do every week."

And for many sports gamers, being the "real guy" is the only acceptable way to play—regardless of the sport.

Perfecting the Product

> "Par is whatever I say it is. I've got one hole that's a par 23 and yesterday I damn near birdied the sucker."
>
> —*Willie Nelson*

Once the developers have their feature set down and have decided on the proper focus, they have to make the game, again with a host of constraints conspiring against them, especially the deadline.

This is where good, existing products have the advantage. Marc Aubanel says the process of producing FIFA is much more streamlined now, with a few seasons under the design team's belt. "We have approached the development of the game with a more sophisticated philosophy. We are getting much better at reusing code that should be reused. We leverage off a lot of common code that works on all three platforms [PC, N64, and PlayStation]. This allows the more than 70 people on FIFA to focus and really become specialists in their areas of responsibility."

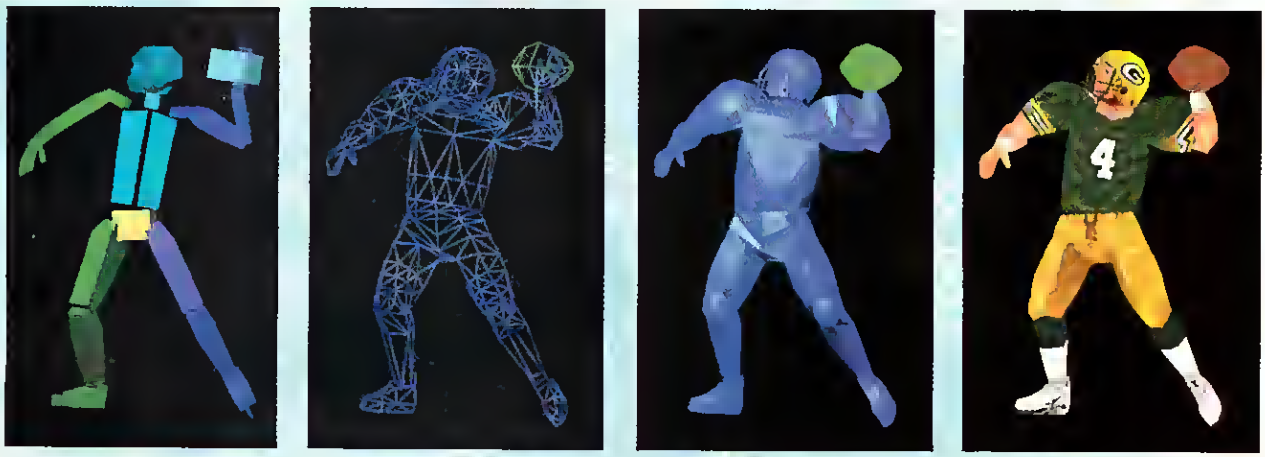
When a product makes a big technological leap—like the big switch from 2D to 3D that most sports games have gone through the past couple years—the process can bog down, as Sierra Sports' fishing group is discovering this year. "TROPHY BASS 3D and TROPHY MARLIN are longer projects," said Steve Letsom, "because they are 3D and because the technology issues are still very fragile and very new to the fishing group. When we tweak the engines, sometimes we break things, and then we have to find out what happened. It's a much slower process."

Licensing can be another thing that bogs down the process. Gamers are increasingly dissatisfied with a sports game that does not include real player names, real team logos, real schedules, and so on. This licensing costs a lot of money, and it also means that you have to play by the licensee's rules. Sports developers thus don't just have their bosses and the fans breathing down their necks; they have a large governing body, like the NFL or Major League Baseball, hovering over their work and making sure that they're getting everything right.

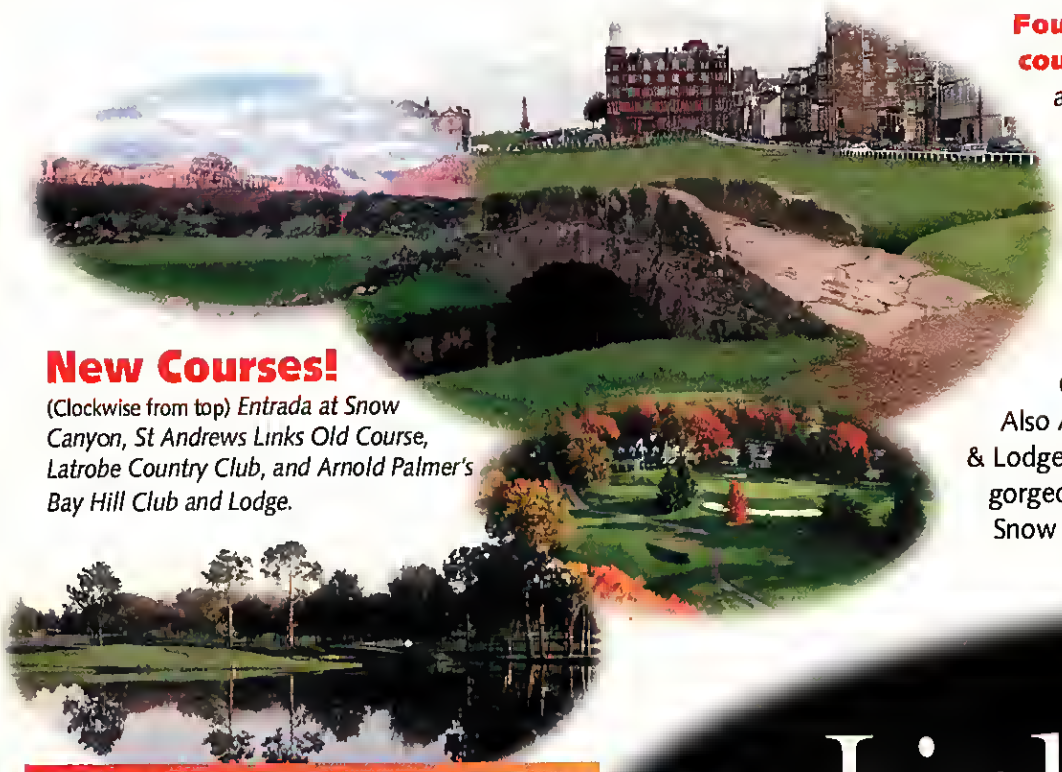
"The NFL approves every version of the game as we finish them," said Ric Neil. "They could deny us approval if they want to."

Licensees vary in their degree of involvement, according to Mike Branham at Sierra. "Some want to be there from start to finish, with approval and veto all along the way. Others care only that the licensed logo information is correctly displayed. The rest are somewhere in between."

Multiplayer considerations, once an afterthought, are now part of the process from Day 1 with every



ANATOMY OF A QUARTERBACK **Green Bay Packers quarterback Brett Favre goes through quite a transformation as the artists on Sierra's FOOTBALL PRO 99 piece him together.**



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(Clockwise from top) *Entrada at Snow Canyon, St Andrews Links Old Course, Latrobe Country Club, and Arnold Palmer's Bay Hill Club and Lodge.*

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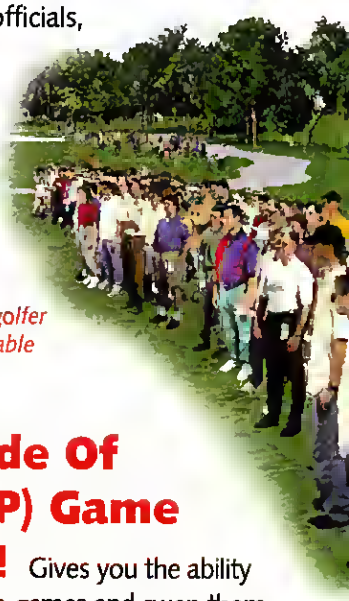

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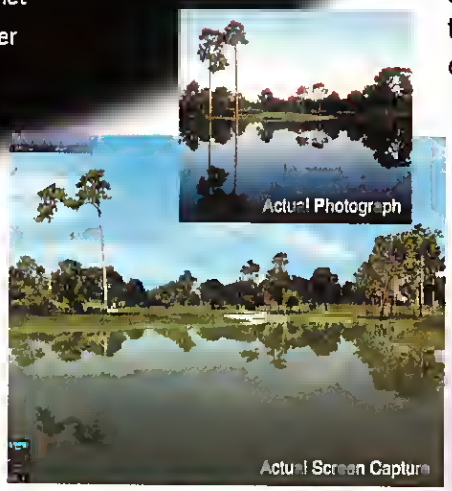

Is It Real Or Is It Links LS '99?
Compare the difference between the screen capture and the actual photo taken at the Bay Hill Club and Lodge.

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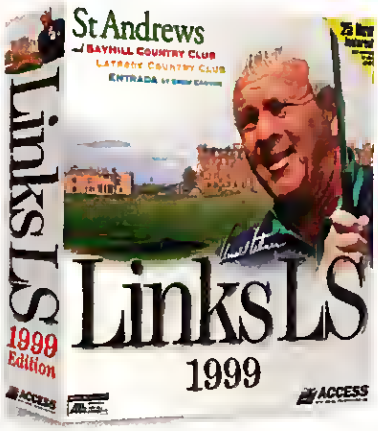

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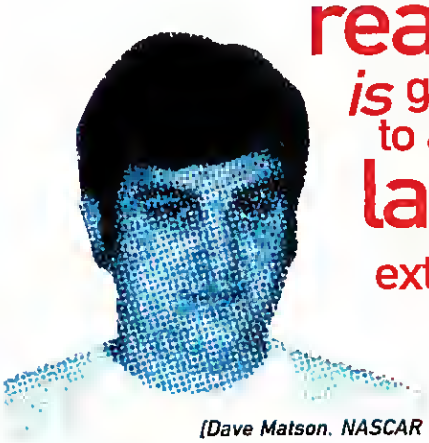
YOUR WIRES ARE SHOWING If you don't get all the details right, the sports fanatic will know. Even the stadiums themselves must be accurately rendered. Here's a work-in-progress shot from Sierra's FOOTBALL PRO 99.

person we talked with—because they have to be. Those who decide to add it later usually pay a price.

"In products I've been involved with in the past, multiplayer has sometimes been added in after the product is pretty much done," said Mike Branham. "We all learn from our mistakes. The multiplayer option is now something that is designed in from the very start."

Vance Cook agrees. "We learned the hard way that a game must be designed and developed with multiplayer in mind," Cook said. "FPS: GOLF added multiplayer capabilities much later in the development process. It was more work and less stable than PGA CHAMPIONSHIP GOLF." The end result of working with multiplayer issues from the beginning, according to Cook, is that "the development is easier, the product is better, and it is more stable."

Still, it's hard not to get the feeling that, given everything else they have to deal with, some developers wish that multiplayer would just go away. "Multiplayer games over the Internet are dicey at best," said Steve Letsom. "This has been the largest problem for me over the last few years. You have to design a very fault-tolerant game, and be able to recover from all sorts of issues. Each game has been improved, but we've got a long way to go."



"For our fan base, realism *is* gameplay to a very large extent."

[Dave Matson, NASCAR RACING 1999 EDITION]

Getting It Out the Door

"If you aren't fired with enthusiasm, you will be fired with enthusiasm."

—Vince Lombardi

You read all the previews. You waited and waited. You plunked down your money. You took the game home—and within five minutes you found two horrendous bugs. What's up with this? Did they even look at the game before they shipped it?

The answer, of course, is yes—but as with everything else in sports game development, the process is fast and frenetic, and not 100 percent guaranteed. Different companies start testing their games at different times, but everyone we talked to agreed that QA (quality assurance) was critical to their game's ultimate success.

On FIFA, Aubanel said "we have a test group of more than 30 testers. We test it from Day 1 when we start the design process. QA takes a critical role throughout development. We take beta testers' comments very seriously." TROPHY BASS had "around 100 beta testers," according to Steve Letsom, to make sure the game works properly, but "the real reason I like it is to verify it runs on many different configurations."

It all sounds great, but the harsh reality is, it's an imperfect process.

"As we get close to final," said Ric Neil, "a fix might break something that has been fine for a long time, and since we are short on time it is hard to test every facet of the game."

Marc Aubanel, the producer of FIFA, has a more brutally fatalistic response: "The demands put on the development community to make games that do things on the platform that were never thought possible cause a lot of engineering difficulties. Since this is not the control mechanism of a plane, no lives are at stake—so we are allowed a certain amount of freedom. On FIFA, we never feel that we have shipped with bugs that were serious and would impede anyone's enjoyment of the game."

Nevertheless, designers *hate*, just as you do, when their games ship with bugs, and everyone concerned agreed that serious bugs must be addressed with a patch on the Internet now. Any bugs deemed less important can always be fixed in next year's version—a process that, as you know, begins as soon as the previous version goes out the door.

End Game

"It's just a job. Grass grows, birds fly, waves pound the sand. I just beat people up."

—Muhammad Ali

Endurance, strength, conviction, and a will to succeed against impossible odds. These are the qualities found in the best athletes, and they're also the ones that distinguish the best sports game designers. Every force is conspired against them: their employers, their budgets, their deadlines, their fans' high expectations.

This is not to say that you should feel guilty. This is not to say that you have no right to complain if that football game you just bought is an unplayable piece of crud. Go ahead and complain. Go ahead and complain even if the game is great. That's what being a sports fan is all about. We all have our opinions, and we all think we're right. Those spending their professional lives showing us *their* versions of the sports we love, well—they might just be the biggest, loudest, craziest fans of them all.

Jeff Green, pathetically, is a Golden State Warriors fan. When he's not crying about that, he can be found playing NEED FOR SPEED III, MIGHT AND MAGIC VI, and AGE OF EMPIRES.

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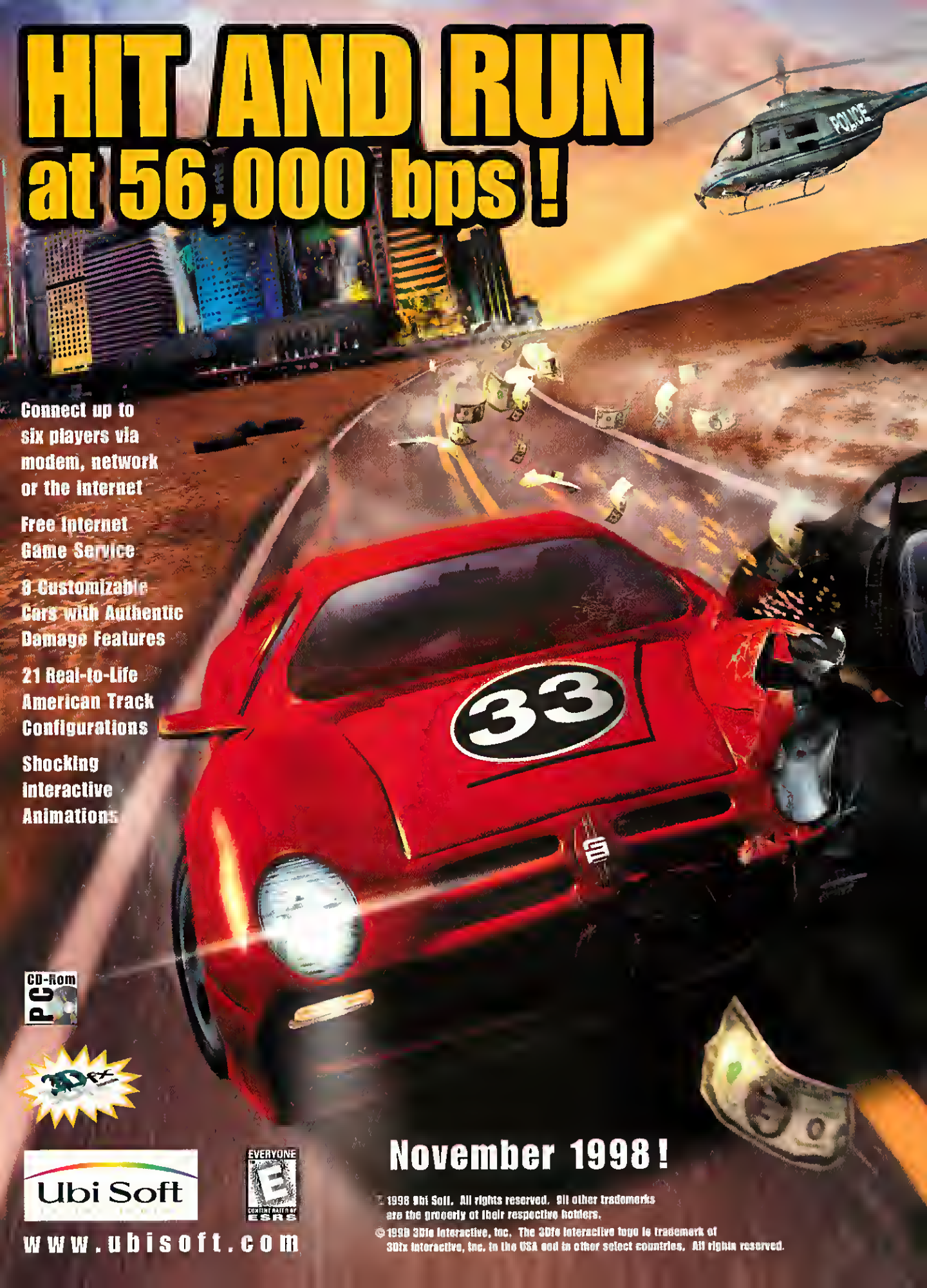

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STRATEGIC MANEUVERS

Making a Strategy/War Game That Isn't a CivClone & Conquer

[by Terry Coleman]

At the recent Milia Conference in France, game design legends Peter Molyneaux and Sid Meier—in between bouts of sampling French wine and cuisine for research purposes—each spoke at one of those you-had-to-be-somebody-to-get-standing-room-only-tickets keynotes. Molyneaux began the festivities by going on at length about the trials and tribulations of crafting a piece of interactive entertainment, complete with lots of suffering for your art and giving up years of your life. When it was Meier's turn to speak, he looked up and down the row of dignitaries and remarked, "I don't know what business Peter's in, but I'm perfectly happy to be designing games for a living. It's a pretty good life, and after you reach a certain point they feed you pretty well."

The irony, of course, is that both men are right. When you consider the number of strategy/war games released each year—more in 1998 than the total number of games, of all genres, released in 1993—you have to go the extra mile, or parsec, or real-time micrometer, to have a chance at a hit. And gaming legends are not excepted.

The Best of Both Worlds

When a strategy game comes out, the first question asked is always the same: Is it turn-based or real-time? This black-and-white view totally ignores the fact that there are multiple shades of each. For instance, FANTASY GENERAL, HEROES OF MIGHT AND MAGIC II, and WARLORDS III are all, in a technical sense, turn-based fantasy strategy games (and each was rated five stars by *CGW*). Yet these three games play quite differently from each other; they require you to master a variety of tactics to succeed, and they offer much more replayability than most of the real-time strategy clones released in the past 18 months.

On the flip side, the best of the real-time strategy games have pushed the envelope further in terms of multiplay (the online and network gaming explosion generated by COMMAND & CONQUER and WARCRAFT) and technical innovation (MYTH and TOTAL ANNIHILATION's use of 3D terrain).

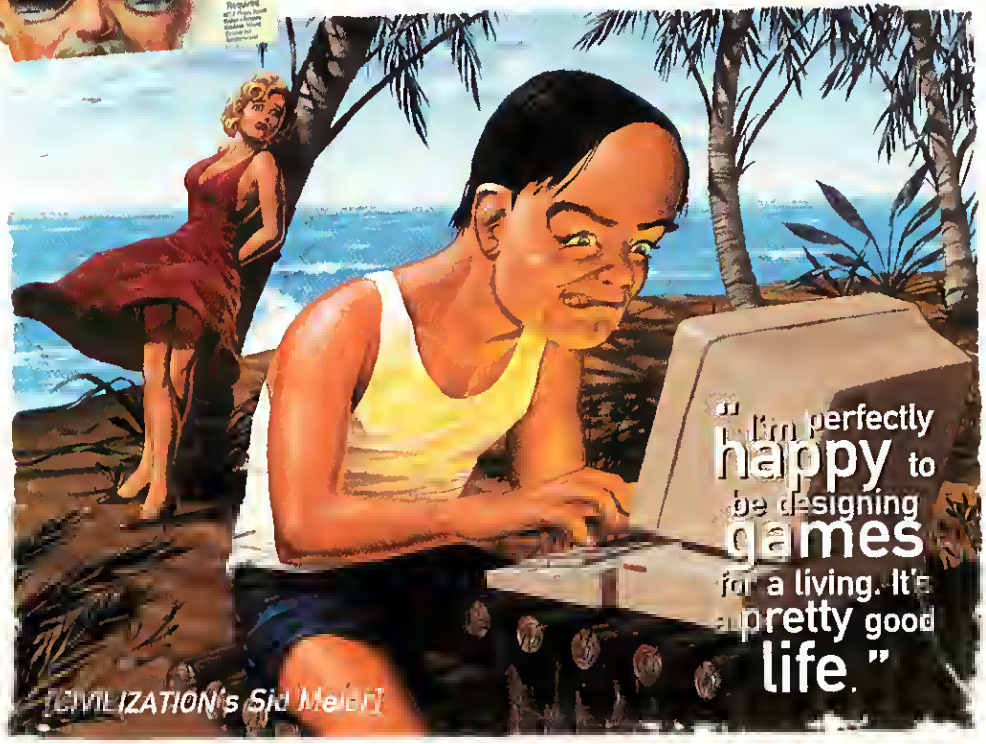
According to Greg Borrud, director of Pandemic Studios and designer of DARK REIGN II, the difference is all in how you design a game: "Our goals are always to make a game that you can pick up and play, and DARK REIGN II will be relatively simple to understand. As you play a game more and more, we want to you uncover the layers of complexity that present themselves as you become a better player."

Rick Martinez, who has designed turn-based strategy/war games—PANZER GENERAL II, among others—and real-time combat simulations (PANZER COMMANDER), thinks the whole turn-based versus real-time game debate is blown out of proportion.

"There are situations in which realtime works well—for instance, if you're trying to simulate WWII squad-level combat—but you could make an argument that games such as X-COM or CHAOS GATE do just as good a job. What's important is that your design approach has the proper feel—

"I love the turn-based tabletop game, but HARPOON is a much better real-time game on the computer than it ever could have been as turn-based."

[Carl Norman, currently producing HARPOON 4]



historical, sci-fi, or whatever—for re-creating the atmosphere you're striving for, and that you don't get distracted from that focus."

Even Meier has struggled with the real-time/turn-based dilemma, half-joking about how he "almost ruined CIVILIZATION." Meier had come down with a terrible case of gamelock playing Will Wright's SIMCITY. "I wanted to design the same thing, but with more competitive gameplay," Meier says. "Eventually, I had this game where you were managing multiple cities in a real-time environment. It was really interesting for a little while. Then you'd get stuck in one city, and by the time you got back to the strategic level, you had no idea where you were in the overall game. Once I made the CIV design turn-based, I was able to keep the level of detail and the depth of decision-making to where it was challenging, but still manageable enough to be fun."

In trying to solve the problem of designing real-time or turn-based games, SSG's Ian Trout (CARRIERS AT WAR, WARLORDS III, REACH FOR THE STARS, and others) offers a solution—at least, one that seems to work for a small developer: "We don't like having all our eggs in one basket. And so, now that we're no longer self-publishing, we tend to develop games for a number of publishers—all of which have different criteria for judging a game. As a result, even though we do mainly strategy/war games, we have enough variety in the styles of games we design to keep our publishers happy—and us interested. And if we're interested, our customers will be."

GETTYSBURG is Sid Meier's idea of what a real-time strategy game should be, complete with great multiplay and excellent tutorials.

Everything's Under Control

In his classic work, *The Complete Wargames Handbook*, Jim Dunnigan—designer of more than 100 board and computer games—offers some sage advice: "The key to designing a game is thorough knowledge of all the design techniques used in the past. The most common way of getting that knowledge is studying and playing a lot of games." While it's obvious from the number of strategy/war clones that migrate quickly to the bargain bins each year that a lot of "borrowing" goes on, it's even more apparent that too many designers never get past reinventing the wheel. You wonder, in fact, if they ever leave their coding cube.

Almost every successful strategy game designer I interviewed kept referring to focus: the importance of having a solid game design concept before the first line of code is written. Watching Steve Barcia work with his team at Simtex, for example, was like revisiting boardgame design sessions at Avalon Hill or SPI in years past. Engineers hashed out algorithms on paper, jotting down formulae on chalkboards, arguing over which would work better with character design or firepower modifiers or whatnot—while Barcia acted as master of ceremonies for the creative circus.

"For me, as a gamer, it has to be challenging and addictive," Barcia says. "But as a programmer, I can also step in and come up with an algorithm to model whatever idea we discuss. You have to avoid the temptation to get so complicated that the user doesn't know what's going on. The gamer has to feel he's in control of the situation."

Or, as Dunnigan used to say in his game-design seminars, "The game must have the illusion of movement—of something happening—even if the overall situation remains relatively at equilibrium."

Game designers increasingly try to give more bang for the buck with more scenarios, bigger and better units, more editing tools, and optional rules out the wazoo. Who can forget Brian Reynolds' above-the-call-of-duty support of CIV II, crafting one new version of the game after another, even after he left MicroProse for Firaxis? And I can't help mentioning one of my favorites, TOTAL ANNIHILATION, which brought the concept of free downloadable add-on units and maps almost to an art form.

Still, more is not always better. PEOPLE'S GENERAL, for example, has

"What's **important** is that your design **approach** has the **proper feel**, and that you don't get **distracted** from that **focus**."

[Rick Martinez, PANZER GENERAL II designer]

CELEBRATE
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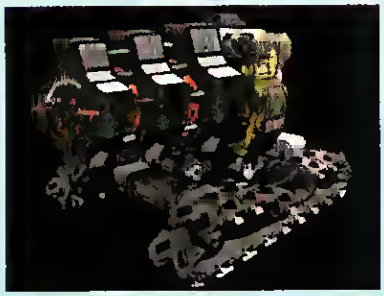

Even though DARK REIGN was long in the making, you can see here that the art team had a good idea of where it was going in terms of unit design.

a superior game system wrapped around mostly mediocre scenarios, a handicap that all the editing functions in the world can't overcome.

Sometimes, according to Carl Norman, putting the power in the gamer's hands can spring from less-than-altruistic motives: "After listening to gamers complain about different options they'd like to have seen in this game or that, we finally decided in STEEL PANTHERS II to let 'em toggle every damn thing. Of course, some guys complained anyway, but you could tell their heart wasn't in it."

Time Flies When You're Having Fun

Ask a game designer about the importance of realism, especially in the context of this genre, and you might expect to hear rhapsodizing about technical brilliance, but everyone I talked with focused on gameplay and on making the game a fun and, it's hoped, replayable experience. One designer who preferred to remain anonymous said, "Nothing annoys me more than a game engine masquerading as a game. There's nothing wrong with being an engineer and developing a cool technical concept, but you have to be a gamer, too—or else nobody's going to care about your game when the next cool technotoy comes out."

Sid Meier, the king of playability, is almost as notorious as id Software for saying, "The game will be done when it's done." The really bizarre thing is that Meier also claims to be able to have a working prototype in just a few weeks. Then he tweaks for more than a year. Go figure.

Other games come about in a far different way. "DARK REIGN had one of the most bizarre development cycles of any project I have been on," says Greg Borrud. "When we first started working on the game, our mandate was to create a fun game and have it out by Christmas. Josh and I quickly assembled a team of designers and we set down to create an RTS game. Because time was not on our side, we worked around the clock and designed the entire game—including all the features, units, story, and missions—in about two weeks. We also started work on cut-scene movies and game music. By the end of that period we took a step back and started to get real excited about the potential of the game. After about five weeks of production, we showed our first public demo at a press day that Activision held in Los Angeles. The game was received incredibly well, and we were able to get a few months' extension to make sure we could get all the cool things into the game that we had designed in these first few weeks. As the game got more recognition, we could ask for more extensions. In the end, the game took a year to make, but most of the final design elements were hatched in those first few frantic weeks of development."

While wargames in particular have a small crowd of fans who crave realism above all else, most gamers I know are more interested in historical *feel*. It's not terribly important whether the Iron Brigade had 997 men or 1,007, so long as the unit *plays* like the Iron Brigade, and not like some generic American Civil War unit.

In 1989, Ali Atabek (center) discusses game design with a svelte pair: *CGW* founder Russell Sipe and Johnny Wilson (right).

"Gamers like to think they can be Napoleon, so you let them," says CAMPAIGNS OF

"Interface is critically important to making a successful game. You can put the greatest features in the world into a game, but if you are unable to easily access these features they'll be lost."

[Greg Borrud, DARK REIGN]

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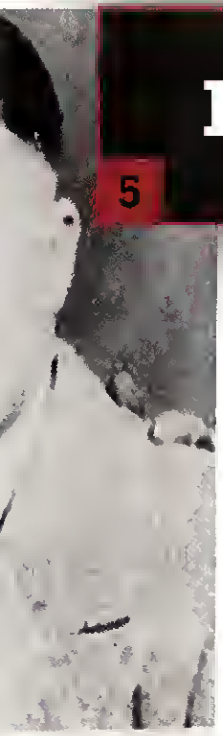

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NAPOLEON designer David Landrey. "The research must be solid, of course. Never forget, though, that the game must be playable above all else. What good does it do to have a game that is praised for its realism but collects dust on the shelf? Awards are great, but I listen more to my customers. From a technical standpoint, I've always focused on the operational-level game, because it shows you things you don't get from the purely tactical or strategic viewpoints."

The value of knowing your audience is just as relevant for fun, fast-paced real-time strategy games from Blizzard and Westwood as it is for realistic turn-based wargames from TalonSoft and HPS Simulations. A lot of the success of these companies comes from the fact that they not only finish cooking their games before they ship them, they also have incredible follow-up. TalonSoft routinely retrofits enhancements onto earlier games in its BATTLEGROUND series, a practice that other companies would do well to emulate.

"Modem play should be included because the audience expects it. But that doesn't mean you can neglect the AI."
[Mark Baldwin, EMPIRE DELUXE]

"I feel sorry for anyone who can't, after a little practice, beat 640K of memory in a strategy game."
[Mark Herman, Great Battles]

It may have been a while since he had a hit, but Crawford could pack more AI in 4K than most current programmers can with hundreds more K of memory at their disposal.

All for One and One for All

The more check marks there are on the back of the box, the more comfortable marketing folks feel—which generally means that they want real-time designs, because that implies multiplayer. Brian Reynolds was very aware of this when working on SID MEIER'S CIVILIZATION II two years ago, and so he put multiplayer hooks in the code. "At the time," Reynolds says, "we really wanted to focus on the single-player design, since that's how everyone thought of CIV. But I have to admit it was a lot of fun testing the multiplayer against Sid in his own game. To this day, I wish we'd had the time to get [multiplay] in and working for CIV II before we both left MicroProse." (After more than two years, we'll soon find out if multiplay in CIVILIZATION II is still relevant. See our "Take Command" feature for more on CIV II MULTIPLAYER GOLD.)

Meier concurs: "I'd always thought that multiplayer was more hype than anything else ..until I played WARCRAFT II with my son (he always enjoys beating Dad) and it occurred to me that you could balance a real-time Civil War game between novices and veterans much the same way."

When Meier started working on GETTYSBURG, therefore, he integrated multiplay into the design from the ground up, complete with randomly generated scenarios to give gamers who wouldn't know Little Round Top from Rocky Top a fighting chance against armchair Civil War historians. And it's hardly a coincidence that Reynolds and Meier's next game, SID MEIER'S ALPHA CENTAURI, will also include multiplay—even though it's a classic turn-based design.

Then there are the games that try to be everything to all gamers. Interplay's Ali Atabek reminisced recently about MAX and MAX 2, but his comments apply to a number of strategy games: "We tried to bridge the gap between turn-based and real-time in MAX, and I thought it worked pretty well. But for multiplayer, things have to move quickly, and if you aren't careful you design a game that doesn't satisfy either the solitary gamer or the multiplayer fanatic." Unfortunately, that's exactly what happened with MAX 2.

Flat Cat, Atabek's development group at Interplay, has apparently learned some lessons, switching to a more cerebral real-time approach for its next strategy game, STAR FLEET COMMAND (see the "Take Command" feature in this issue), which seems to work quite well for both solo and multiplay. In any case, Atabek was designing real-time strategy games such as SIEGE long before they were popular, so we're not terribly worried.

Is multiplay here to stay? Undoubtedly it is, but a recent

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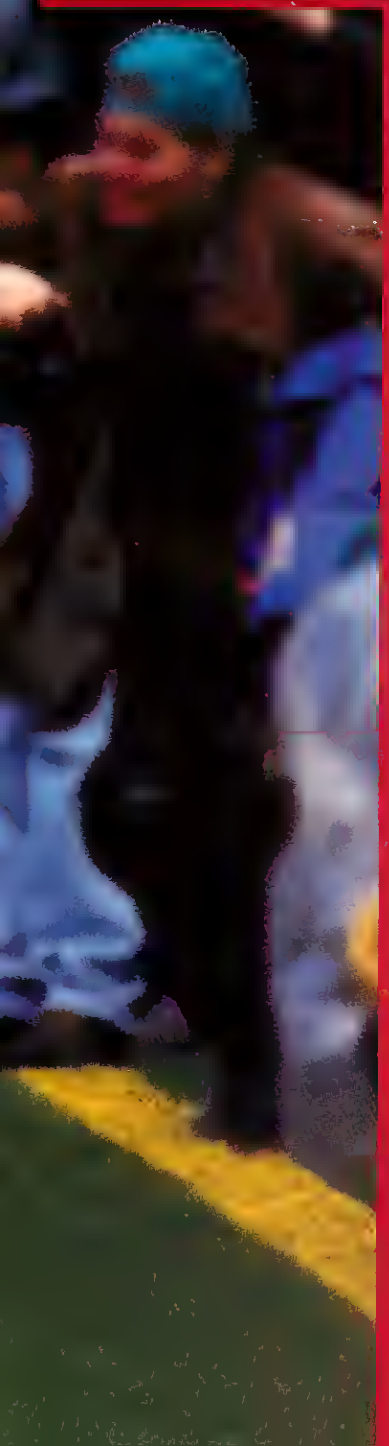

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CGW survey showed that, despite what the vocal Usenet minority might have you believe, more than 70 percent of gamers spend upwards of 90 percent of their gaming time playing solo. Until every strategy/war game has its own battle.net, it's a good thing that tough computer opponents are making a comeback.

Deus ex Machina

We could fill a book with discussions about AI, but we won't. Still, it's hard to talk about strategy/war design without asking, "What exactly is AI?" First and foremost, it's the computer opponent, which may or may not obviously cheat. Secondly, it's the code that directs the "wingman" routines for those units you don't directly micromanage every second of the game. Finally, AI also covers such mundane routines as pathfinding—like for those ships in AGE OF EMPIRES that can't figure out how to sail out of port to the good fishing spots and back.

Jim Dunnigan states it flatly: "AI routines are not quite as complicated as they might appear, and they need not take up a lot of space in the program." While some programmers can write tight AI code, methinks that too many designers are taking Dunnigan's words much more to heart than they should. Graphics are nice, but after a while, you get tired of seeing your Orcs slam into trees time and again.

A few programmers were mentioned by their peers for writing elegant algorithms and having strong computer opponents, such as Sid Meier (for the AI in CIVILIZATION) and Steve Barcia (for the diplomatic routines in the original MASTER OF ORION). Most programmers, however, are not that impressed by the majority of the AI work they see.

"There is nothing more obvious and frustrating" says Greg Borrud, "than bad AI in an RTS game. I can't tell you how many times we have yelled and screamed at 'stupid' units. That's why we made AI—and specifically player orders—one of the key features of DARK REIGN. We wanted players to be able to give their units orders and modify the way they were reacting to the situation. Do you want them to be more cautious or aggressive? Should they retreat when injured? Should they go out and explore the map without you having to constantly micromanage their every action? These are all things we put into DARK REIGN to give the player a lot more control."

When he designed EMPIRE DELUXE, Mark Baldwin had no illusions about his AI being able to defeat a human on a regular basis. His goal was simply to craft an opponent that could be unpredictable over a reasonably long period of time.

In the old Atari days, Chris Crawford and Dave Menconi had to tweak the AI for EASTERN FRONT—written in *4K* of memory—to make it competitive, a huge task. During playtesting, they found that a bug in the retreat routines for the Russian units actually made them advance after losing. Since the bug made the game tougher, they left it in! This is an example of a "good cheat," because it not only added fun to the game, it was also as close as you could get in EASTERN FRONT to re-creating the "pockets" historically caused by the rapid advance of the *Wehrmacht*.

The lesson for game designers, then, is to worry less about fuzzy logic, neural networking, or other trendy programming, and to show more imagination and passion. The best strategy games—whether turn-based fantasy, cerebral real-time historical, or hybrid grand strategic sci-fi—are made by these famed designers for one main reason: In every case, it was a game that *they* wanted to play. Marketing folks, take heed.

Terry Coleman is currently trying to duplicate the 1972 Dolphins' undefeated season in MADDEN '99.

BATTLEGROUND HERO NAPOLEON IN RUSSIA, **like all of the games in TalonSoft's** BATTLEGROUND **series, gave a miniatures feel on the computer, while maintaining the beloved micromanagement.**

Before he became famous as a Gulf War commentator on Nightline, James Dunnigan designed more than 100 games, including the epic HUNDREDS YEARS WAR on Genie.

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UNEQUAL OPPORTUNITY EMPLOYER

Creating Worlds for Adventure/Role-Playing Games

[by Johnny L. Wilson]

Both adventure games and role-playing games are essentially "gated" stories. They are like the old days at Disneyland when you needed separate tickets to ride various attractions. If you only wanted to ride the horse-drawn trolley on Main Street, you needed an "A" ticket (originally valued at approximately 10 cents). If you wanted to ride the Matterhorn, you needed an "E" ticket (originally valued at approximately 75 cents). Without the ticket, you missed the attraction or had to buy supplementary tickets at the face value.

In adventure games and role-playing games, you need "tickets" to move the story forward—to get through the "gates" the designers put up. In both types of games, the tickets to more of the story can be either crucial objects in your inventory (keys, clues, and "McGuffins"—the powerful or desirable objects obtained by the protagonist in successful quests) or "must-do" activities completed (puzzles solved, rooms explored, characters met, and conversations held). In role-playing, you can add successful combat and character development to the tickets you'll need in order for your characters to get through the designer's turnstile and into more of the story.

The design issues in adventure and role-playing games are basically the same. The problem of world creation, character creation and development, story development, and the tickets that gate the story are largely the same. Role-playing games simply use more tickets by having combat and character development to rely upon. So, we talked to four prominent role-playing designers, believing that their insights to RPG design would apply to both adventure and role-playing games.

The World and They That Dwell Therein

My preconception in looking at role-playing design was that designers would begin with the universe. Yet, I quickly discovered that technological concerns and psychological concerns outweighed the creation of the game world. Zeb Cook, formerly an *Advanced Dungeons & Dragons* designer at TSR and now working on a secret project at Interplay, says that he'll work in any universe that sounds interesting to him. "If it isn't interesting to you, why would you want to design a game around it?" Since Cook was the demented mind behind TSR's Planescape environment for *AD&D*

[Jon van Caneghem, designer of the MIGHT & MAGIC series for New World Computing/3DO]

PLOT ROAST **One key to world-building is deciding the psychological effect you want to create for your gamers. PLANESCAPE: TORMENT, from Interplay, strives for an ominous, unsettling afterlife in a very hostile world.**

(imagine every real or imagined religion and philosophy competing on a series of planes with an eclectic mix of avatars and incarnations from each), that philosophy is evident within his work.

Brian Fargo, the founder and original role-playing mentor at Interplay, feels that designers are tied to the twin paradigms of medieval and science-fiction adventures. "Our industry often gets criticized for not being creative, but whenever anyone strays too far from medieval and science-fiction games, they get hammered." So, assuming that fantasy or science-fiction is a given, Fargo says that the Interplay approach is to start with the psychology of what the game is supposed to accomplish. "With STONEKEEP, for example, the original philosophy was to go back to the roots of what made role-playing accessible and enjoyable. As much as we object to artificiality, there's still a great deal of satisfaction in finding a +2 sword. In WASTELAND, we wanted the gamer to make decisions that didn't have black and white answers—moral dilemmas. Each case has been different."

Richard Garriott, a.k.a. Lord British, has undergone a transformation in this process. As he observes, "My first works didn't have much world-scope thought in them, but I quickly arrived after two or three attempts to a process that works." Lord British complains about the ton of bad fantasy in which the climax involves the hero discovering a magical McGuffin with superpowerful characteristics.

"That," he protests, "is cheating." He believes that one of the most important aspects of role-playing design is having an internal self-consistency and internal depth that will be expressed in the storyline of the universe. "If you're going to develop plot elements or characters or activities, you have to start off with the vision for the reality of the world. That's why I start off with the geographical flora and fauna as well as politics and philosophy. When I start to tell the story of an ULTIMA, I often start by talking about the social dynamic taking place around the story along with the fundamental politics that set up the story. In my opinion, it's really hard work. The hardest place to start is doing this universe reality backdrop. It may be hardest to start, but it makes it easier to complete with high-quality results. I've seen people start off the other way and they get very quick results, but you run out of clever ideas after several situations or circumstances, and they tend to be random ideas."

As a positive example, Lord British commended a new dungeon designer on ULTIMA: ASCENSION named Craig Bolin. Prior to trying to do any particular dungeon features, Bolin would write a two-page background story. The richness of the approach was incredibly rewarding, according to Lord British, and it paid huge dividends in the final design. Bolin isn't unique in the industry, but he may be relatively rare in putting the background first.

Jon van Caneghem believes in Clint Eastwood fashion that a man's gotta know his limitations. According to the pioneering designer of the MIGHT & MAGIC (as well as the HEROES OF MIGHT & MAGIC) series, "Technology is first—what the game can do. Once I know what the new engine can do, I start to flush out the gameplay and what you can do in the game. From that, I build the storyline and the characters—what they're going to be and who they're going to be. Then, we architect the overall story. It may be the opposite of what you expect, but anytime I've gone the other way, it's never quite fit."

Of course, one way to get a rich universe in a hurry is to license a well-established book, film, or paper game universe. Fargo has tried them all at Interplay. He has licensed Tolkien, William Gibson, bad movies, and *AD&D* worlds over the years. He states that the writing is much easier in licensed properties because you already know the world and the characters. "As an industry, we haven't done a very good job of creating our own universes. Someday, I'd really like us to set up bibles and universe documents that enable us to do something really rich like Tolkien's Middle Earth."

Of course, Fargo also speaks of the limitations of using licensed properties. "The key to any entertainment medium is to surprise people. If the licenser is locking you down too much, you can't surprise anyone. In general, you can't be as edgy with a licensed property."

In short, most adventure/role-playing designers expect the universe to be a means to an end. They use the universe to shape the gamer's expectations of the world and their possible actions in that world. Some designers want a rich background to the world and, like

PUZZLING REALITY

"I think puzzles have a place and I've always liked them. We're going to put more in, but we don't like the kind where the whole screen disappears and a chess board appears. Puzzles must stay in the game engine."

[Jon van Caneghem]

"A puzzle can never rely on outside information. It has to be discovered within that universe. I also believe that puzzles should have more than one solution.

"My main advice is to make puzzles intuitive. Listen to your testers. Designers often get so close to their products that they think everybody is stupid. You just have to go with it."

[Brian Fargo]

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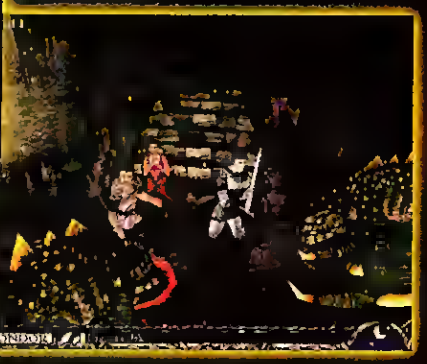

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Lord British, keep striving to create richer, deeper worlds. Other designers develop the world merely as a stage setting. All want to immerse the gamer in the game.

Know Thyself

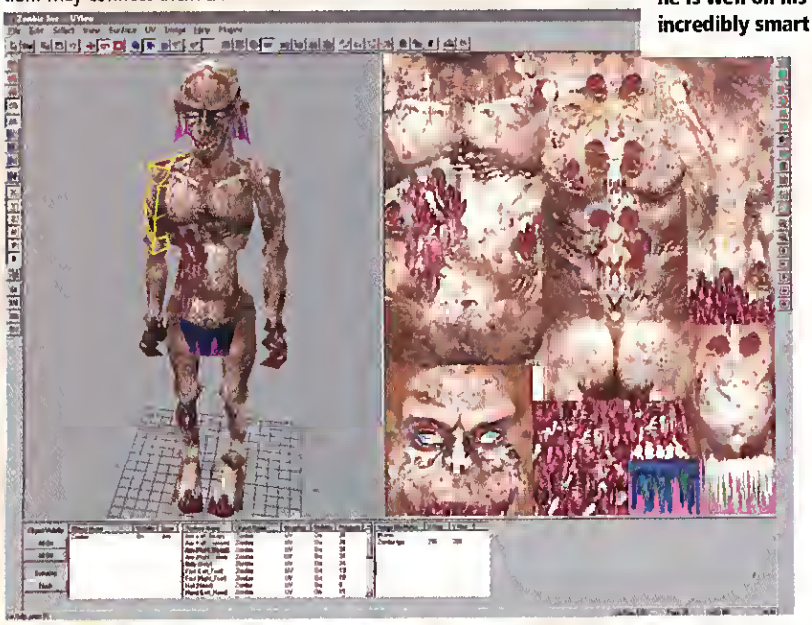
To immerse the gamer in a world, however, requires a populated world. To create the characters for the world requires two systems—one to design the player character(s) and one to design the nonplayer characters. Naturally, the philosophies run the gamut from detail to outline in this part of the process, as well.

In the world of MIGHT & MAGIC, the possibilities for attributes, skills, talents, races, and social status are all based on what they can do in the game engine. Jon van Caneghem believes that none of factors is going to make a difference to the gamer unless it can be depicted onscreen. He does express one cardinal rule, though. "The [character] name has to be pronounceable. I have a mental block that if I can't pronounce it, I lose track of who the character is and where he/she fits." In general, the M&M teams build a map-based flowchart which shows how the characters relate to each other on the basis of their start and motivation. They connect them all on a big whiteboard in the conference room or JVC's office. Later, they write it down and transfer the details to spreadsheets or Word documents. Then, they erase it and go on to the next detail level.

Brian Fargo agrees with van Caneghem. "I like to think about the situations I want to put the character in, and then back up from there. There are a lot of products that have all of these skills and attributes that have such a minimal effect on the universe that they might as well not be there. To me, the attributes and skill sets are the means to the end, my tool for getting there. I'd rather have an RPG with four attributes used incredibly cleverly than 50 attributes not used very much at all."

Lord British believes that it is necessary to do background character studies of each principal character in the game. Today, he brings in professional writers to flesh out the characters and dialogue. Raymond Benson (author of the James Bond novel *Zero Minus Ten*) did this in ULTIMA VII, and Kim Krizan, coauthor of the screenplay to *Before Sunrise* (the Ethan Hawke/Julie Delpy film), is doing this for ULTIMA: ASCENSION. Lord British laughs as he recalls Krizan's first observation about the character of Raven, a female character who assists the avatar in the new game. "She said it was like adolescent boys writing about a female character."

VP OF GNOMES? Interplay's BALDUR'S GATE uses character studies like this portrait and description of Quayle to flesh out game designs. For example, "When asked about his past, Quayle talks for a good hour about his worship of Baravar Cloakshadow, how he is well on his way to mastering sorcery, and just generally how incredibly smart he is compared to everyone else in the party."



ULTIMATE UNDEAD An artist adds ghoulish textures to the 3D wire-frame of a zombie for ULTIMA: ASCENSION.

"I didn't have to do this in the early days of ULTIMA because I was lucky enough to know people in the Society for Creative Anachronism who *were* the characters I wanted to write about. I already knew Dupre' and was able to write about the aspects of the real person. My knowledge of the person served me as the backdrop. After a few years, I began to see the results of creating them by choice instead of accident."

Zeb Cook sees the character design and the market as part of a continuum. "The world and the market determine the character design. If it's going to hardcore role-players, I'm gonna use numbers. If you want broad-based appeal, you have to figure a way to reduce the numbers as much as possible."

Like the others, Cook sees the system as being determined by style of play. "All systems are built in order to create the style of play I want. If it's going to have a rich story and background, you want to spend

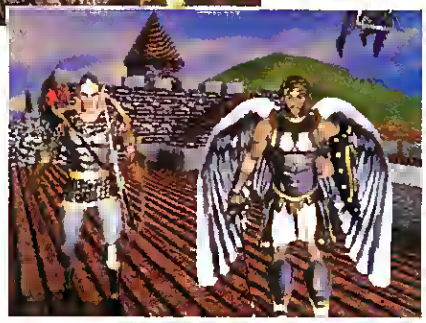
more time in character creation and letting gamers fiddle around with lots of attributes, skills, etc."

Characters have to develop. The simple answer as to what levels, skills, knowledge increments, and promotions to give the character is: Whatever works. Fargo observes, "NEUROMANCER could only work with knowledge additions. Password-oriented stuff and obtaining new software was much more interesting than level development or attribute increases."

Zeb Cook agrees, but points out that it is better to let the gamer make up his/her own mind as to where the character improves. "The preferred method of character development is to go out and get some general experience and spend it as you will, as opposed to go out to do stuff and blink, you go up a level." A cardinal rule for Cook is to make sure the balance is such that everyone can't be good at everything. "Everyone will end up being like Conan. I *did* the Conan role-playing game for TSR. It wasn't fun. It had an interesting character development system, but nobody wanted to play the sidekicks."

Unfashionable Is What Other People Wear

Another problem for both adventure and role-playing designers is how detailed to program the nonplayer characters. Lord British indicates that his philosophy on this has changed. "In the earlier days, we tried to mechanically simulate every possible reaction—getting exponentially harder and harder with less success. The more we tried, the more mechanical they seemed. Also, we were doing work that wouldn't be appreciated. Now, we only try to simulate what is appropriate to a character. For example, a farmer by the field is there for richness. All we would do today is have that farmer wave to you and make the world come to life." Lord British points out that this approach allows designers to concentrate on enriching the principal characters of the story and placing the emphasis on their character development.



SPRY & SPLASHY MIGHT & MAGIC VII will feature hundreds of NPCs, who will look something like this.

Lord British does hint, however, at the future of NPC interaction. He talks about intelligent databases and successful tests with this technology in order to suggest a strategy for having rich, intelligent NPC conversations in the future. He doesn't know when this might enter into the world of ULTIMA, but he does have his dream.

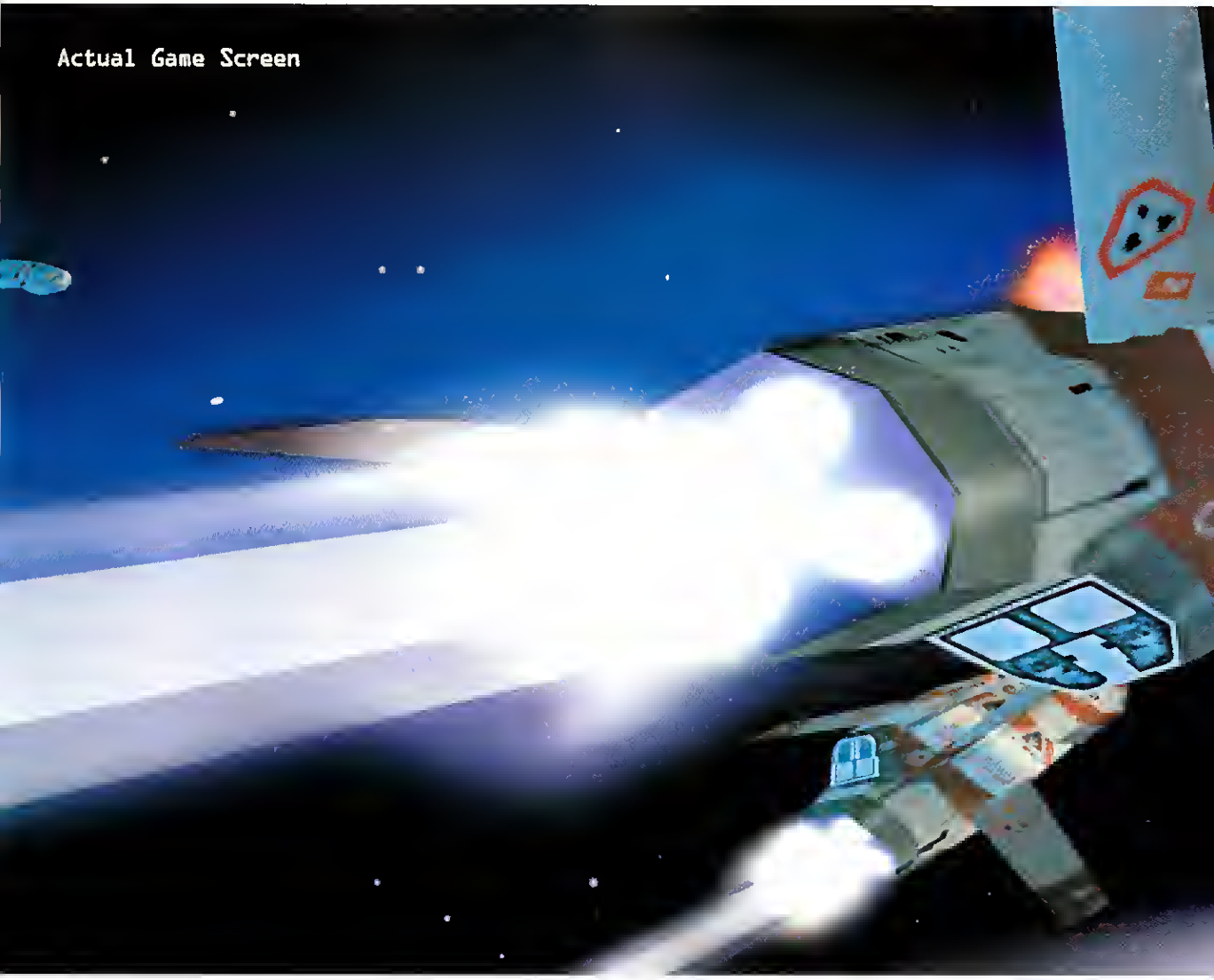
Van Caneghem agrees that you shouldn't try to make the NPC systems too detailed. "Since computers don't do personalities and attitudes that well, it doesn't make sense to expect them to do what they're not good with." Hence, you see more reaction than evolution in the NPC characters in M&M.

Van Caneghem even tries to keep the game's dialogue simple. "M&M has the one-key spew. Hit one key and he spills everything he knows. The other extreme is to go through lots of layers. I go with the easy one as a rule because you're going to have to deal with hundreds of characters and huge dialogue trees

"In the earlier days, we tried to mechanically simulate every possible reaction—getting exponentially harder and harder with less success."

[Lord British, designer of the ULTIMA series and founder of Origin Systems

ASCENSION ROLL-CALL At Origin, artists like to put character tests of the NPCs onscreen en-masse to get an idea of the quality and consistency of the artwork.



Game of the Show E3 1998 -CGW / Winner of UGO's Best Real-Time Strategy Game of E3

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```
if (range < gunstatic->bulletrange*bonus)
if (gunCanShoot(ship, gun))
switch (gunstatic->guntype)
case GUN_MissileLauncher:
if (gunHasMissiles(gun))
matGetVectFromMatrixCol3(shipheading,ship->rotinfo.coordsys);
vecDotProduct(*trajectory,shipheading);
shotguns = TRUE;
if (dotprod >= triggerHappy)
missileShoot(ship,gun,target);
case GUN_MineLauncher:
if (gunHasMissiles(gun))
matGetVectFromMatrixCol3(shipheading,ship->rotinfo.coordsys);
vecDotProduct(*trajectory,shipheading);
if (dotprod >= triggerHappy)
missileShoot(ship,gun,target);
```

ALL GAME

that provide too many hours of digging through conversation without adding to play. The constant debate is realism versus fun. In real life, you could guide the gamer through the conversation, but with the computer, it's a pain."

Fargo also opts for the belief that NPC programming should focus on the effect rather than try to be too elaborate. "The secret is to get NPCs to do things in the game that will cause you to remember them. So, if an NPC steals something and runs away, you'll never forget that NPC. You have to do things to people in a product that has meaning. I'd rather do four or five things really well than insert elaborate learning systems or anything else in there."

Enemy Mine: Combat AI

Combat is important to the role-playing game, but rare in pure adventure games. Lord British has designed a matrix system for ULTIMA: ASCENSION that should add a terrific tactical flavor to the game, but the gamer doesn't deal with the numbers.

Van Caneghem loves the details of combat and all of its permutations. "For me, combat has been a critical part of role-playing in M&M because I've found that it's what the computer does best. Even when I played the paper games, combat was the most math-taxing in terms of looking at charts, rolling dice, etc. On the computer, you can take it much further than you ever could on paper. The cardinal rule is that if the gamer can't see the effect of the calculation, there is no sense going through the calculation. For example, I have the random 1–6 factor. As far as the player is concerned, it might be no different than a D6 die roll."

Cook agrees to some extent, but warns against having combat calculations be too intricate. "Combat AI is where all of the effort needs to be placed. How is this guy going to fight and how are his buddies going to react? That's where the world comes to life. Suddenly, you're fighting a guy and he does something damn sneaky. That's when it becomes real to the player. Guys should be hiding and running away and returning with reinforcements."

As for the actual technique in accomplishing this, Cook wants the AI to be as unscripted as possible. "Things break down very quickly if you didn't think about all the possibilities of what can happen in advance. The best combat AI considers the world-state or finite state and chooses best response from the parameters of the situation. I'm not talking about a neural network here—those big fuzzy black boxes where I can't figure out what's happening. If we can just create a way for someone to yell "Help" and others to hear and come to his rescue, that would be great."

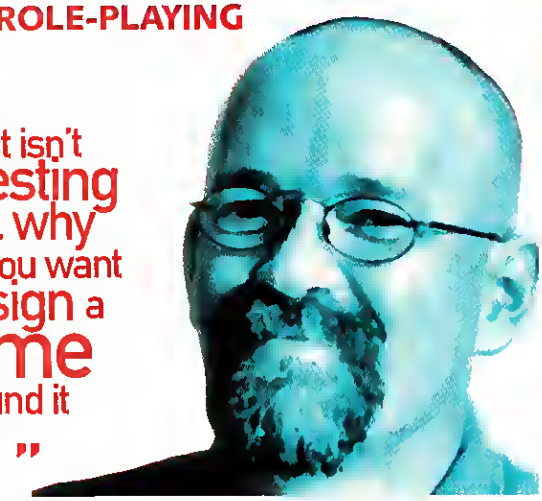
A tremendous amount of effort is spent in creating combat AI in role-playing games, but van Caneghem believes it's worth the effort. "Exploration, character enhancement, and combat all form a circle that continually cycles upward. That little loop of three elements is very mentally compelling. It keeps you going: one more turn, one more map, one more creature. That's the magic that makes computer games addicting, when you connect the circle."

Everybody's Talkin'

Finally, the designer must determine the general ways in which the player will interact with the world. For van Caneghem, the interface considerations are the first considerations. He doesn't care about the art, font type, or menu structure in general. He just wants to make sure it's good for gameplay. "You have to make the decision as to *when* in the game they're going to need the information. That's why we have the hit-point and spell-point sliders at the bottom of the screen in M&MVI. You could need that info at any time. The other stuff is hidden until you want to access them. On that basis, you make the decisions about interface design."

Cook agrees, "The interface is essentially the rules set for the game. Everything the gamer knows about the world is tied up in the interface. In paper games, you want clean simple rules, so the goal of the interface is to have a clean simple way of interacting with the game. The interface must be figured out right away. You can't say, 'Wow! This is all the stuff you're going to do in the game' and then ask, 'How are we gonna do that?' I always believe you must start by asking how the player is going to do something. Is there going to be a way for the player to do that without confusing him/her with regard to other things? Knowing what you can and can't do with your interface shapes the way you build your game. Basic game design is about finding all the limits, so you have to choose what you're gonna throw out."

"If it isn't interesting to you, why would you want to design a game around it?"



[Zeb Cook, designer of AD&D PLANESCAPE at TSR, Inc. and Interplay RPG guru.]

The World's a Stage

The goal of every gated story, of course, is to give gamers the sense of having experienced another world. More importantly, the goal of every gated story is to give gamers the sense that they have affected, changed, and transformed that other world. To succeed, there must be a credible world to change, personalities with which to interact, dynamic tension to resolve (whether by conversation or combat), and a story to be told. Each puzzle, encounter, conversation, discovery, or deed opens more and more of the story. Nothing happens by chance. Designers have to figure out the right places to construct the turnstiles and the right tickets to collect in order to keep us moving through the story. Now that you've had a glimpse at how four prominent role-playing designers undertake that process, may it increase your chances of success.

Johnny L. Wilson has been writing about computer games for 17 years. He started playing NHL 99 upon completion of this assignment.

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2471

Sentinel Cybertronix unveils Prometheus.

2602

The Fire. *The Cybrids turn on humanity and destroy the Age of Hope. Earthsiege begins.*

2605

A series of defeats forces Earth's people to withdraw support for the fledgling colonies on Luna, Mars, Venus, and outlying mining stations. The colonists suffer massive casualties.

2627

End of The Fire. *The daring destruction of Prometheus's moon base fails to uncover signs of the Dark Intellect* ITSELF.

Inception of the Great Human Empire. Petresun I crowned Emperor.

2652

2800

The Empire and the Cybrids have amassed huge armadas, but no one really knows the extent of the buildup.

Martian rebels discover advanced alien technology which shifts the balance of power. Rebels become a legitimate challenge to the Empire.

2826

2829

Hostilities break out on Mars and Venus. The Emperor unleashes the Imperial Fleet to crush the rebellion. The Cybrids seize the opportunity and launch a massive invasion armada. STARSIEGE begins.

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2832

STARSIEGE ends.

3350

Meta-jumpgate discovered to be part of a network of interstellar gates The Diaspora begins. Humanity begins to spread throughout the galaxy. "Those Who Jumped," the first people travelling through the jumpgate, forsake the security of the Great Human Empire to journey into the unknown.

3400

Settlers refer to themselves as a "tribe," the Children of the Phoenix They claim to follow the teachings of the renowned warrior Harabec Weathers, hero of the Cybrid Wars

3450

A powerful force of Imperial Knights, the Blood Eagle, appear in tribe space to subdue the Children of the Phoenix for the Great Human Empire The conflict fractures the Children, as groups break away to form new tribes This event becomes known as The Splintering.

3455

The Starwolf tribe forms, supposedly founded by renegades from the Children of the Phoenix and Blood Eagle.

Tribal culture is now in a perpetual state of war. The Blood Eagle, far from their homes for decades, have come to consider themselves a "tribe." Finding HERCs impossible to maintain, they adopt the flexible armors used by the many tribes

3480

3530

Formation of the Diamond Sword tribe under the tutelage of the Enlightened Master. Using innovative strategies and striking with precision and economy, the Diamond Sword rapidly carve out a large holding for themselves.

Blood Eagle forces prevail in the Hepta Ourubis system following use of ecocidal weapons. Starwolf losses are high.

3932

3940

Rough census by the Children of the Phoenix shows that of the hundreds of smaller, independent tribes, an "alarming number" have either allied with or agreed to non-aggression pacts with either the Starwolf or Blood Eagle. Already the skirmishes have increased, and bloodfeuds grow more common

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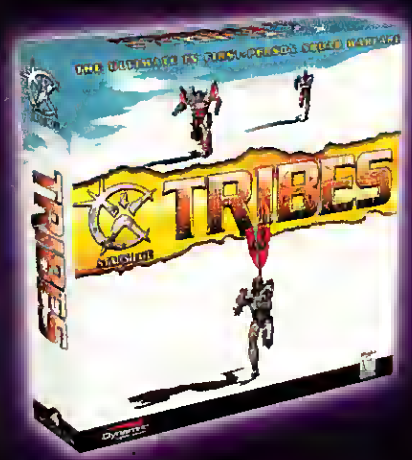

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PROTECTING YOUR IDEA

What You Should Know About Intellectual Property Rights

[by Michael Hawash]

Okay, you've read the stuff on game design, you've got a killer idea, and you're confident you can be the next John Romero. You're sure that if you pitch your idea to the right publisher, they'll cough up an advance to develop it. But how can you keep your brainchild from getting stolen?

ONLINE

See an expanded version of this article on www.computergaming.com

The first thing you need to understand is the concept of a trade secret. Laws vary by state, but all states have two basic requirements for trade secret protection. First, the information must be something that gives the holder a business advantage in the marketplace. Second, reasonable steps must be taken to ensure that the information remains confidential. Typical trade secrets involve not only the specific game idea, but also the means, methods, and techniques the developer will use to make the game a commercially viable venture.

Trade secrets arise automatically if the above two requirements are met. The trick is not to waive trade-secret protection. One simple way for game developers to make sure they maintain trade-secret protection is to use confidentiality and nondisclosure agreements. Developers should make sure that anyone to whom trade secrets are disclosed has signed such an agreement. By using confidentiality and nondisclosure agreements, developers avail themselves of a host of legal remedies if an employee, independent contractor, investor, or some other signatory to the agreement misappropriates proprietary information.

You can find examples—both good and bad—of confidentiality and nondisclosure agreements on the Web; simply search for "nondisclosure agreement" or "confidentiality agreement." Many bookstores also carry books with examples of simple confidentiality and nondisclosure agreements. One word of caution: Before you use any agreement obtained from a Web site or book, make sure that a lawyer reviews it. If it turns out the agreement is poorly worded or is otherwise unenforceable, it could end up costing you thousands of dollars in the long run.

Some publishers may refuse to sign confidentiality and nondisclosure agreements. In fact, the typical submission agreement is the complete opposite of a confidentiality and nondisclosure agreement. Unfortunately for developers, publishers look at so many gaming ideas that if they signed confidentiality and nondisclosure agreements, they would expose themselves to numerous lawsuits if they rejected one submission and published another based on a similar idea. This is a harsh reality for budding developers, but it must be accepted if you want to try to get a publishing contract.

ILLUSTRATION: JOE VALLINA

Perhaps the best way to protect yourself from publishers is to make sure your game is far enough along that you can complete it before they can.

If your demo shows gameplay features, the publisher will think more about buying the game than stealing your ideas. But be wary of showing your coolest graphics or features until a publisher commits. And limit the number of people you show it to—be selective about approaching publishers.

There are three other aspects of intellectual property law that game developers should know about: copyright law, trademark law, and patents. Once a game is in development, everything that is created can be copyright protected. Basically, copyright protection arises automatically once an "original effort has been started and some aspect of it has been fixed in a tangible medium." This means that not only is the finished product protected by copyright, but also the various components of the game, including the code, graphics, movies, sounds, icons, documentation, and even the box art. Game developers should keep in mind that copyright protection extends only to the expression of ideas, not the ideas themselves.

While copyright covers existing works, trademark seeks to secure a developers' rights in future works by protecting product, line, or company name recognition. Basically, trademarks allow game developers to identify their games with names, logos, or "service marks" and prevent their competitors from distributing games that have confusingly similar characteristics.

Patents also protect intellectual property, but it is unlikely that patent issues will arise in the context of basic game development. To obtain a patent, you must be the original inventor of a "new and useful process, machine, or improvement."

I can't stress enough that this information is no substitute for a lawyer's advice and protection. Even if you are going it alone on a shoestring, you must retain a lawyer who is experienced in software contracts and intellectual property rights. On its Web site, the Gathering of Developers (GoD) has posted its Ten Developer Commandments of inside information that all game developers need to know. Commandment Ten is "Get a good attorney."

Michael Hawash is an attorney with the Houston, Texas, law firm of Meyer, Orlando & Evans. Write him at mhawash@meyerorlando.com.

LEGAL RESOURCES

- ***Multimedia Contracts***
- ***Multimedia Law and Business Handbook***

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www2.viaweb.com/laderapress/index.html

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GROW YOUR OWN

Legal Issues in Forming Your Own Development Company

[by Michael Hawash]

Have you ever talked with your gaming buddies about starting your own studio? Well, you're not alone. Many development companies have been created informally by a few guys in their den or college dorm room. When a company is formed in this manner, a general partnership has usually been created. More often than not, no consideration is given to basic partnership issues like who owns company assets (including intellectual property), what will happen if a founder leaves, how much say each founder has in partnership decisions, or how the company is going to go about designing games. This is a mistake. If some of these basic questions are not answered when the company is founded, a serious disagreement could destroy the company before its first game ships.

ONLINE

For advice on getting your first publishing contract, see the author's expanded article at www.gamespot.com.

I haven't started my own game company, but as an attorney I've helped plenty of clients form new companies. I've also represented clients who wish they'd been more careful when they founded a company without knowing all the issues. In this article I'll outline the four basic entities you might consider if you decide to grow your own studio, and some of the issues you'll need to think about if you take the plunge. I'll also describe the roles of developers and publishers, and explain the difference between self-publishing and signing a deal with a publisher. This article is by no means comprehensive, but will give you the basics of how to start making your own games.

Basic Business Types

There are four basic types of business entities to consider when forming your own development studio: a sole proprietorship, general partnership, limited partnership, or corporation. Each entity has its own advantages and disadvantages. The main difference between all of these entities is the amount of personal liability you will have, as an owner of the company, if something goes wrong.

Sole Proprietorship

The simplest entity is a sole proprietorship. Under a sole proprietorship, a single individual operates the company under his or her name or a fictitious name. If you operate the company under your own name, no state filings are required. If you operate the company under a fictitious name, you will need to file a d/b/a (Doing Business As) disclosure in your state of residence. Once this is done, you are officially in business. By forming a sole proprietorship, you can deduct your business expenses from your annual taxes. The main disadvantage of a sole proprietorship is that you are personally liable for all your business' financial obligations, including loans, leases, other contracts, and tort liability (i.e. liability for intentional or negligent acts or omissions that cause harm to another individual or entity). The second main disadvantage to a sole proprietorship is that it is difficult to get investors to put money in your business because you generally cannot give them any equity in the company. Since most gaming ventures are started by more than one person, successful sole proprietorships are something of a rarity in the gaming business

General Partnership

The second most basic business entity is a general partnership. A general partnership is basically a sole proprietorship with more than one proprietor. It is very easy to form a general partnership. In fact, you do not have to file any documents or even formally state that you are creating a general partnership, it can just happen! This is because under the law of most states, whenever two or more people band together for a business venture, it is presumed that a general partnership has been created unless the partners go through the formalities of creating another type of entity. The practical significance of this is very serious. Whereas you and your partner(s) get to split all profits, you are also personally liable for all of the financial obligations of the partnership. This means that if your venture is unsuccessful, anyone to whom the partnership owes money can hold you personally liable for not just your share of the debt, but the entire partnership obligation.

Limited Partnership

A limited partnership is a type of partnership that, as the name suggests, limits the liability of the limited partners. Limited partnerships are designed to allow individuals to invest in partnerships. The liability of a limited partner is restricted to each partner's interest in the partnership (i.e. a limited partner cannot be held personally liable for all of the partnership's debts). However, there must always

ILLUSTRATIONS: JOE VALLINA

be at least one general partner who is responsible for the entire venture. If a limited partner behaves like a general partner and plays an active role in the business, such involvement can trigger full general partnership liability. Therefore, whereas a limited partnership may be a means of getting your Uncle Bob to help you get started by giving him an equity stake, it is not a vehicle to limit liability for those partners who are going to play an active role in the business.

Corporations

The other basic business entity that you may want to consider is a corporation. There are several different types of corporations. The main difference between the various types is how the owners of the corporation (shareholders) are taxed. One specific corporate entity, called an "S Corporation," is particularly attractive to small game-development companies because this type of corporation pays no tax at the corporate level. Instead, each shareholder reports any profit (or loss) on his individual tax return. The disadvantage of S Corps is that they are limited to 75 shareholders. However, this restriction usually does not pose a problem to a start-up game development company that only has a few founders.

Although the requirements for forming a corporation vary from state to state, the process is not as complicated as you might think. Basically, all that you have to do is file articles of incorporation with the Secretary of State in the state you want to incorporate. Depending on the state, you may have to pay a corporate tax to stay in business. There are many books and online resources that can assist you in forming a corporation. However, should you decide to go the corporate route, make sure that you have all formal documents and filings reviewed by your accountant or lawyer.

Keep in mind that once a corporation is formed, it must behave like a corporation. This means that certain corporate formalities must be followed, including: corporate record keeping, no commingling of corporate and personal funds, annual meetings for shareholders and directors, and the observation of shareholder voting rights. If you fail to follow any of these formalities, creditors and others may be able to "pierce the corporate veil" and reach the personal assets of the shareholders to discharge alleged corporate liabilities.

There are other types of business entities. However, these four are the basic ones from which all others derive. A lawyer or accountant can tell you about other types of business entities that are available in your state.

Have an Agreement

Okay, you've read the summaries of each business entity, and you think you know which one works best for you. What do you do next? The first rule of company formation is leave nothing to chance. In other words, draw up an agreement that addresses all of the basic issues. It isn't easy to have pointed business discussions with friends, but a few ruffled feathers early on is better than having a misunderstanding kill the company after months of hard work. At a minimum, have a written agreement that defines the roles of the individual founders and what is expected of them. More often than not, these initial roles will change over time. Therefore, create a mechanism by which the roles of founders can be assessed and modified on a periodic basis. Make sure that all intellectual property rights are owned by the company (see the related article on Protecting Your Idea). This way, no one founder can prevent the project from moving forward if he disagrees with how the company should operate.

It is also a good idea to include some provision that will allow the founders to "buy out" a founder who becomes disgruntled or leaves. If profits, risks, and responsibilities are going to be shared unevenly by the partners, make sure such arrangements are specifically spelled out in the agreement. Any partnership agreement must be signed by everyone who is going to have an equity interest (ownership) in the new company. Your failure to do so will require all profits to be split evenly between the partners, regardless of who provided seed capital, labor, or partnership assets.

We've covered some—but by no means all—of the issues faced by new game development companies. If you do decide to form your own company, make sure that a lawyer reviews all the documents you intend to be legally binding. Similarly, hire an accountant to advise you on proper business record-keeping procedures. A mistake made in the business formation stage could have devastating results down the road. Have fun and good luck.

"The first rule of company formation is leave nothing to chance."

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"...the Caesar series is a classic that's only getting better with age."
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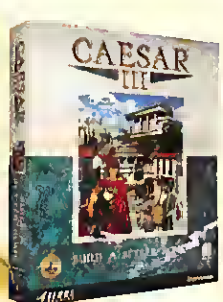

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RESOURCES

Computer Game Developers Association
The CGDA offers legal information to members.
www.cgda.org

Computer Game Developers' Conference
The largest conference for game developers.
www.gdconf.com

Gamasutra
Information and techniques for game developers.
www.gamasutra.com.

Game Developer
A magazine for computer game developers.
www.gdmag.com

Game Developer's Resourcium
Information and resources, including programming and design.
www.resourcium.com

Game Industry Overview

Once you have formed your company, you are in the business of making games. If you are going to sell your games, you need to have a basic understanding of how the gaming industry works. In other words, you must know how games go from an idea to production, publishing, distribution, and into the hands of the consumer. You must also understand how money flows from the consumer back to you, the developer.

There are several types of players in the industry. First are the game-development companies that actually make games. These should not be confused with software publishers. Generally, start-up game developers do not publish their own games. Most developers try to strike a deal with a publisher. Under the typical publishing agreement, developers concentrate on making games; publishers fund development, see to production, arrange marketing/advertising, and set up channels of distribution. Once the games are sold, either online, at a retail outlet, or by some other medium, the publisher usually shares a percentage of the profits with the developer, commonly known as a "royalty."

Not all game developers are independent. Some publishers have in-house development studios. For example, TOTAL ANNIHILATION's developer, Cavedog, is an in-house development studio owned by publisher GT Interactive. On the other hand, ENSEMBLE, the developer of AGE OF EMPIRES, is an independent studio that has a publishing contract with publishing behemoth Microsoft. Likewise, not all game developers seek publishing contracts. Some developers, like Bungie Software, the developer of *CGW*'s 1997 Strategy Game of the Year, MYTH, publish their own games.

There are advantages and disadvantages to self-publishing. One of the main advantages to self-publishing is developers get to keep more of the revenue from the sale of their games. The main disadvantages are the developer has to deal with a host of production and marketing chores that are normally handled by a publisher, such as development costs, advertising, packaging, and, most importantly, distribution.

The decision to self-publish or to seek a publisher is usually determined by one thing: money. If the developer has enough money to produce, publish, and market a game, with a reasonable expectation of recovering those costs through sales, then self-publishing could be the best way to go. However, the truth is that most developers rarely have enough cash to do all of these things. For many developers, it's either find a publisher or some other source of money, such as a venture capitalist (very rare these days), or perish for lack of funds.

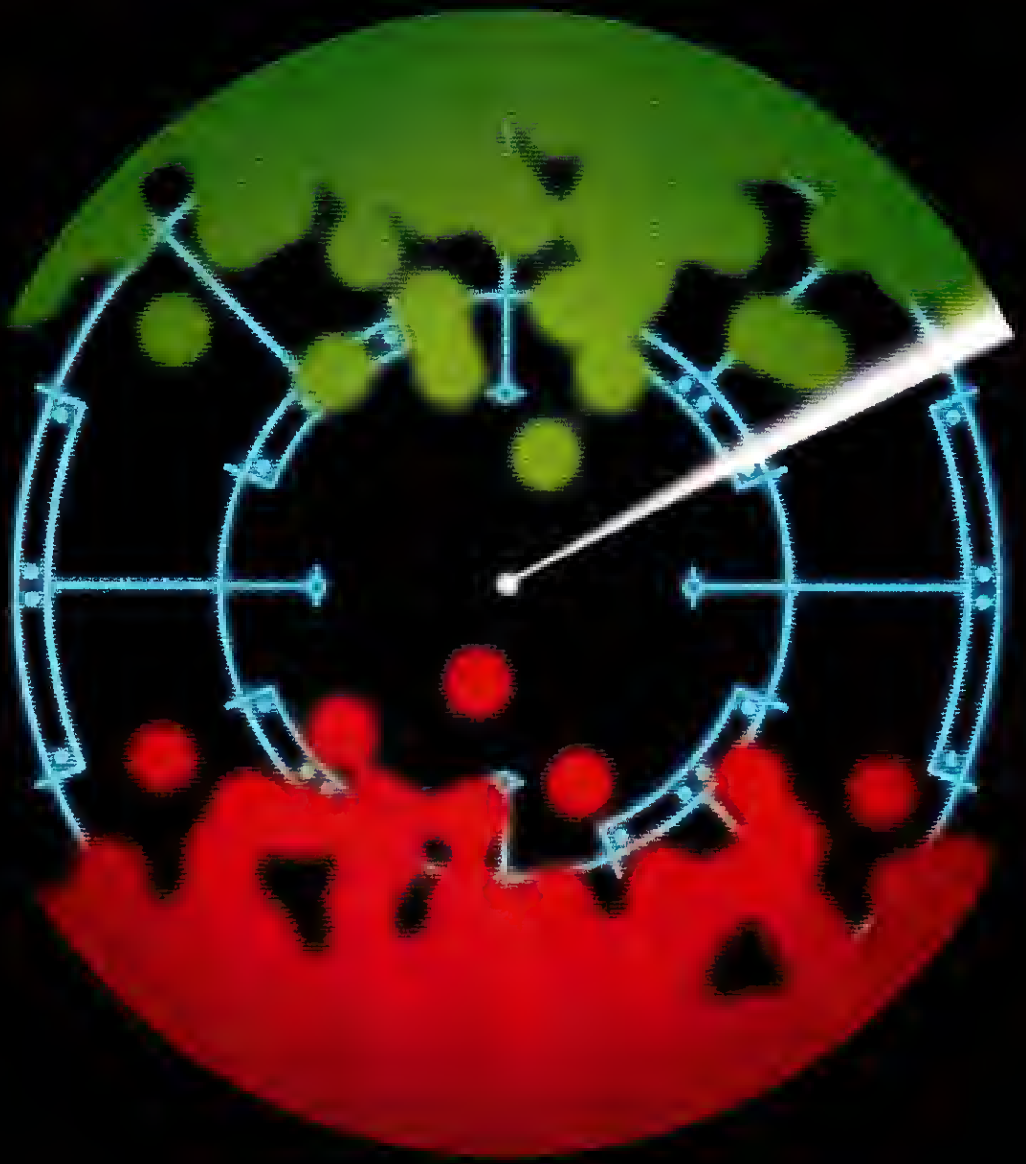
Even if developers have enough money to make a simple game, the realities of distribution often make a publishing contract the most attractive option. This is because a developer simply cannot create a "hit" game in today's market without adequate distribution. Since key industry publishers, such as Electronic Arts, Activision, and a few others, control or influence most of the industry's distribution networks, getting a major publisher to back a game is generally cause for joy. Many developers are surprised to find out that developing a great game is no guarantee that a major retailer, such as Wal-Mart, Best Buy, and Toys-R-Us, is going to stock the title. Retailers have relationships with specific publishers and independent distributors. If a developer does not have a link to a publisher or distributor, the developer generally has no means of getting games to a major retail outlet. Hence, the chances of selling 200,000+ copies of a game (i.e., "a hit") are virtually nil.

Self-Publishing vs. Doing a Deal

Here's an example of how the developer-publisher-distributor-retailer relationship works: Let's say you create a first-person shooter based on Norse mythology called LORDS OF VALHALLA. If you self-publish, you may be able to sell 15,000 copies (not as easy as it sounds) through your Web site or through the few retailers with whom you are able to form a relationship. Since you have self-published, you get to keep all or most of the revenue from sales (say, 80 percent).

However, if you sign a publishing contract, you may be able to sell 100,000 units (a near hit) just because you reach a wider market and have a much greater advertising budget via your publisher. On the downside, by going with a publisher, you may only receive a 10–20 percent royalty based on the wholesale price of all units sold. Although you sold 100,000 units with your publisher, depending on the terms of your publishing contract and the price per unit, you may have been able to make more money selling a smaller number of copies as a self-publisher. But this is a very simple example. There are far more factors that go into the decision to self-publish than are mentioned here, such as who pays production costs, the publisher or developer? Nevertheless, the above should give you a general ideal of the various considerations. The bottom line is, before you sign a publishing contract, know your options and what you are giving up by foregoing the opportunity to self-publish. CGW

Michael Hawash is an attorney with Meyer, Orlando and Evans in Houston, Texas, but he says he doesn't just play games in court.



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THE ULTIMATE
Full Thr

Latest Systems Kick It Into High Gear

by Loyd Case & Dave Salvator

Beware of the rig that boasts a laundry list of killer components. That's the lesson learned from this year's off-the-shelf portion of our ongoing quest for the Ultimate Game Machine (UGM). We encountered several boxes that seemed to have the right stuff on paper, but were marred by rough edges—and even downright instability in some cases. The key to really doing a slam-dunk UGM box is not only having the right stuff, but integrating all of those killer ingredients so that they combine to make a greater whole.

In this year's off-the-shelf UGM roundup, we've got the Burn, Baby Burn (cost is no issue) and Bang for the Buck (if your wallet can't take a big hit). In previous UGM roundups packed into a single issue so you can do a side-by-side comparison of the two classes of systems. Because memory prices have stayed down and Intel has been aggressively driving down Pentium II prices, both system classes have the same chipset (440BX) and the same processor type (Pentium II). As a result, the performance gap has narrowed quite a bit between the two types of systems. To make the Bang for the Buck roundup a little more interesting, we lowered the price limbo bar from $2,500 to $2,000, and we still got in a well-equipped Pentium II/400MHz system with 64MB of memory.

A really top-flight gaming rig delivers not only solid performance, but stable drivers all around and the ability to hit on all cylinders right out of the box. In past UGM roundups, Falcon Northwest's mighty Mach V has been one of the very few boxes to consistently deliver on all fronts. But this year, several challengers have drawn a bead on Falcon, and are aiming their boxes squarely at gamers. So who's got the goods? Is Falcon still the way to go? Who will be this year's king of the hill? To find out, read on.

Aberdeen Inverness D49G

★★★½★

A new UGM entrant, Aberdeen is a Web-direct system maker whose Inverness D49G system is designed to be the gamer's dream box. Aberdeen has a great looking rig on paper, but in testing, we came across some rough edges, including a nonfunctioning mouse and a faulty graphics driver But despite these glitches, the Inverness' twin Pure3D IIs do turn in the fastest 3D GameGauge score for secondary 3D graphics

In setting up the box we encountered several gotchas, including a cluster of patch cables held together with a tie-lock that connects the 2D/3D board, DVD decoder, and Voodoo² boards together; it also connects the primary sound card to the DVD decoder. It's not a bad idea to group them together, but they were not labeled nor color-coded. The USB Logitech mouse's driver that ships with the box wasn't installed, so there was no mouse functionality early on.

Installing the driver fixed the problem, but it was annoying to initially boot without a mouse. Also curious is Aberdeen's selection of Acer's Future keyboard, an ergonomic split keyboard whose key mapping for cursor movement and insert/delete/pagedown/pageup/home/end keys is one of the most unusable layouts for gaming we've ever seen. Inverness' SuperMicro 7S0a case is somewhat confusing to get into initially, but after popping off the front panel, the case features twin swing-out doors that make all of the box's innards readily accessible. Inverness' AMI BIOS allows for many low-level tweaks and is easily navigated.

Good notables include a Viewsonic PT775 17-inch monitor with a Trinitron tube that features a four-port USB hub. Also, the Aztec Vortex 2 audio board's mixer has a 10-band graphic EQ that allows for more delicate tonal adjustments of the sound coming out of the Cambridge Microworks speakers. One oddity we found was Aberdeen's having a DVD-ROM drive and Kenwood's new CD-ROM drive using Zen Research's seven-beam laser technology. This combination would allow for DVD functionality coupled with very fast game installs, but neither device can write to CD-R or CD-RW. Aberdeen's was the only box to arrive with two read-only ROM drives.

Inverness' performance is a little mixed. While it turned in the best secondary graphics 3D GameGauge score, it delivered the second slowest primary graphics 3D GameGauge score, owing to the fact that it uses Matrox's adequate, but already dated, Millennium G200. In fact, the initial G200 driver that arrived with the system wouldn't complete either the 3D WinBench 99 or 3D GameGauge tests. A driver update fixed these problems, but even with this new driver, Aberdeen's 2D/3D card choice also hurt it in the Fill Rate Torture Test in which it finished last of the systems that completed the test. This card's 3Dfx performance is plenty fast, but a 2D card swap would improve its system, as would a better array of game controllers.

Aberdeen's offering has most of the right ingredients, but its rough edges and odd 2D/3D choice keep it out of the winner's circle.

Aberdeen Inverness D49G. *$5,699. Aberdeen, Inc., Santa Fe Springs, CA. (888) 300-5545.* ***www.aberdeeninc.com***

PROS: *Secondary 3D graphics performance; easy-access case*

CONS: *Slow 2D/3D graphics board; some setup glitches; so-so controller choices; 17-inch monitor.*

Speeds & Feeds

CPU	Pentium II/450MHz
RAM	256MB SDRAM
Motherboard	Supermicro
BIOS	AMI WinBIOS
2D graphics	Millennium G200
Graphics RAM	8MB
3D graphics	Pure3D II SLI
Monitor	Viewsonic P775 17-inch
Hard drive	Seagate Cheetah 18GB
CD-ROM	Kenwood TrueX
DVD-ROM	Toshiba SDM-1102
Removable storage	Zip IDE
Primary audio	Diamond Monster Sound MX200
Secondary audio	N/A
Speakers	Cambridge Microworks
Game controller 1	Logitech Wingman Extreme Digital
Game controller 2	ThrustMaster Rage 3D
Keyboard	Acer
Mouse	Logitech USB
Modem	USR USB
Misc.	10/100-Base-T Ethernet card

PHOTOS BY MICHAEL FALCONER

Alienware Majestic Binary

★★★½★

Alienware burst onto the scene as one of the few system makers doing game boxes that give Falcon Northwest a run for its money. The first Area 51 box we saw impressed us with its solid performance, and its being ready to rock out of the box. This time around, the Area S1 proved an able performer, but because several of its components were just shipping at press time, we did see some rough drivers, both on its 2D/3D graphics board and on its sound card. The bottom line on the Majestic Binary is that it's a well-performing box with some stability issues.

This rig is certainly not lacking for amenities, including Emminent Technologies' LFT-11 magnetic planar speakers with an NAD amplifier, ThrustMaster's high-end F-22 joystick and TQS throttle, and a Diamond modem featuring that company's Shotgun technology, which bonds two S6K modem connections together for a total throughput of 112Kbits/sec. The Majestic features the SuperMicro case (also found on the Aberdeen box), and once you pull the front panel, dual swing-out doors make the box very accessible. The Area S1's Award BIDS allows for many low-level tweaks; it even reports both CPU and compartment temperature in real-time. It also lets you set an alarm threshold in case things really heat up. Not likely, given Area S1's six, yes six, cooling fans. Strap a pair of wings on this sucker, and it might actually get airborne.

In a first for the UGM series, the Majestic arrived with Promise Technology's EIDE RAID (Redundant Array of Inexpensive Disks) controller and two EIDE hard-drives. EIDE RAID arrays are a relatively recent arrival, whereas SCSI RAID arrays have been around for years. The idea is pretty simple: Two (or more) drives are faster than one, and Alienware runs this array at what's called Level 0, meaning data is "striped" between the two drives to increase performance. So, two 9GB drives actually appear to Windows 98 as a single 18GB volume. And while having two drives doesn't translate into double the performance, it does provide for a bounce over the traditional single-drive setup. Of course, there is a dark side: You're now twice as vulnerable to hard-drive failure. If one of the two drives gives up the ghost, the array is toast. For a desktop system, even a high-end killer gaming box, RAID arrays are something of an overkill. What's worse, we left all the systems on for over 24 hours, and when we "woke up" the Majestic, the EIDE RAID array's utility had crashed, necessitating a reboot. This problem went from vexing to downright infuriating during a heated race in NEED FOR SPEED III when this utility crashed again, taking the unsaved race down with it. Duch.

The Majestic arrived with the CPU clocked at 464MHz. Alienware is taking advantage of the 440BX chipset having a "burn-in" memory speed of 103MHz. By setting the system memory bus to this speed, it ups the CPU's clock speed from 450MHz to 464MHz, a 3 percent overclock. The slight bump in speed allows both boxes to be a little more competitive on CPU benchmarks, although it has little effect on 3D GameGauge scores. The Area S1's numbers were very competitive, and its overall performance was impressive.

In the Area S1 you'll find a great lineup of parts and a box that performs well. But this performance is marred by glitches ranging from minor (shaky drivers) to inexcusable (EIDE RAID utility crashes). Once Alienware works the kinks out of these components, the Majestic will be a contender. Until then, it's a solid box with a couple of gotchas to consider.

Alienware Majestic Binary. *$6,599. Alienware, Miami, FL. (800) 494-3382.* ***www.alienware.com***

PROS: *Solid overall performance; easy-access case, great speakers.*

CONS: *Minor driver glitches; unstable EIDE RAID array; monitor sync problem at 512x384.*

Speeds & Feeds

CPU	Pentium II/450MHz (clocked at 464MHz)
RAM	256MB
Motherboard	Soyo
BIOS	Award 4.51PG
2D graphics	Canopus Spectra 2500
Graphics RAM	16MB
3D graphics	Pure3D II SLI
Monitor	Nokia 445XPro 21-inch
Hard drive	Deskstar 14 IDE RAID
CD-ROM	Mitsumi CD-R
DVD-ROM	Toshiba SDM-1202
Removable storage	Zip IDE
Primary audio	Xitel Storm Platinum
Secondary audio	N/A
Speakers	Eminent Technologies LFT-11
Game controller 1	F-22Pro/TQS
Game controller 2	NASCAR Pro Wheel
Keyboard	IBM
Mouse	Microsoft Intellimouse Pro
Modem	Diamond Shotgun
Misc.	Promise IDE RAID controller, 10/100 Base-T Ethernet Card, NAD amplifier

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Performance Benchmarks

	WinBench 99 Graphics	Hard Disk	CPU32	FPUMark	CD-ROM
Aberdeen Inveness D49G	115	4050	1150	2320	1000
Alienware Majestic Binary	154	4390	1120	2300	1180
Compaq Presario 5600	140	3390	1050	2260	1150
Dell Dimension XPS R450	162	4130	1090	2270	1430
Falcon Northwest Mach V	150	4040	1180	2380	1440
Gateway G450XL	147	3600	1210	2310	1300
IDDT Pro Gamer2	54	3470	1050	2250	1380
Micron Millennia	173	2960	1090	2270	1450
Alienware Hangar 18	83.2	2220	929	1800	1610
Dell Dimension XPS400	152	3490	984	2048	1650
Gateway G6-350	72.9	4960	877	1760	1220
	BETTER	BETTER	BETTER	BETTER	BETTER

	CD-ROM CPU Usage	CD-ROM Access Time	3D WinBench 99 Primary	3D WinBench 99 Secondary	Fill-Rate Torture Test
Aberdeen Inveness D49G	2.84	107.0	350	552	20.3
Alienware Majestic Binary	4.74	96.6	490	539	30.7
Compaq Presario 5600	3.50	121.0	499	N/A	27.3
Dell Dimension XPS R450	3.20	90.6	503	N/A	27.3
Falcon Northwest Mach V	3.22	88.0	505	554	26.2
Gateway G450XL	3.54	106.0	402	N/A	27.4
IDDT Pro Gamer2	4.49	93.8	224	Did Not Run (DNR)	DNR
Micron Millennia	3.06	95.0	496	N/A	27.3
Alienware Hangar 1B	3.82	76.0	379	DNR	35.6
Dell Dimension XPS400	3.68	76.7	499	N/A	27.2
Gateway G6-350	4.00	125.0	429	DNR	DNR
	BETTER	BETTER	BETTER	BETTER	BETTER

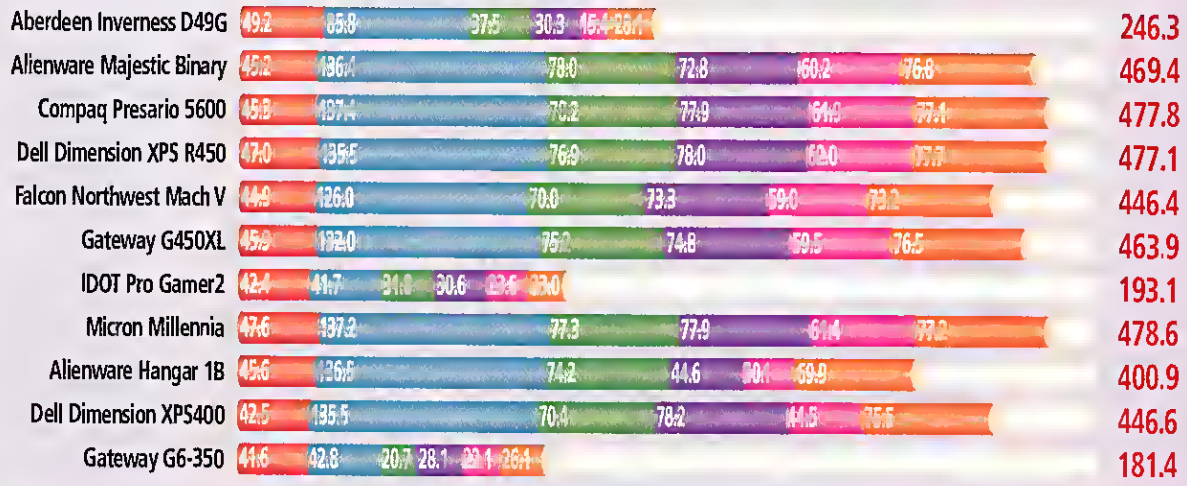
NA = Secondary 3D Not Present DNR = Did Not Run

How We Tested

Testing a raft of PCs is a real challenge, but this year we have a great suite of tests that really exercise the systems. Our lead test suite is *Computer Gaming World*'s own 3D GameGauge, which tests 3D game performance using a variety of real games. Also debuting in this issue are the 1999 editions of Ziff-Davis' synthetic benchmarks. Leading the pack is the heavily revamped 3D WinBench 99, which now adds full support for DirectX6, including multitexturing. There are a number of new scenes that are more representative of 3D gameplay as well. Also new is WinBench 99, which we use to test standard Windows performance, disk performance, and raw CPU performance. WinBench 99 now splits out the CD tests to a new CD WinBench 99, which now plays back actual CD accesses from real applications, including QUAKE II, and is a more robust test of CD-ROM performance.

We ran 3D GameGauge at 800x600x16-bit color and 3D WinBench 99 at 1024x768x16, triple-buffered. Triple buffering removes some of the concerns of past versions by allowing a score to be collected that

3D GameGauge: Primary Score (2D/3D Card)



3D GameGauge: Secondary Score (3Dfx Voodoo² Card)

NA = Secondary 3D Not Present

includes the performance of the memory-buffer flip. Note that single Voodoo² cards cannot run 3D WinBench 99's default resolution, though SLI configurations can. However, Voodoo² SLI wouldn't run in triple-buffer mode due to driver constraints, so we had to run the SLI cards in double-buffer mode. We've been told by 3Dfx that the DirectX6 drivers for Voodoo² will support triple buffering. If the primary card could support it, we also ran Rage Software's INCOMING at 1024x768, true color (24-or-32 bit color) as a "Fill-Rate Torture Test." We ran at this resolution to pound on the 3D accelerators, and to simulate settings that 1999 3D titles will most likely be using.

We tested 2D graphics performance by running WinBench 99's business graphics WinMark at 1024x768x32-bit color (24-bit color if the card didn't support 32-bit color). Disk performance was tested using the Business Disk WinMark, while CD-ROM and DVD performance testing was conducted with the CD WinBench 99.

Audio testing was done by running a variety of music and game audio through the audio subsystem. Finally, we ran the movie *Contact* and the DVD version of JOURNEYMAN PROJECT 3 to see how well the DVD players fared.

Compaq Presario 5600

★★★★★

Despite being the worldwide number one PC maker, Compaq hasn't paid much attention to gamers—although with its latest Presario 5600, that may be changing. Because it wants to achieve a unique look to its boxes, Compaq is in the bad habit of over-engineering them, which for a gamer can cause headaches ranging from annoying to show-stopping. There have been reports of users being unable to get certain upgrade graphics boards to run in Compaqs, and in some of its boxes, Compaq has put the AGP accelerator down on the motherboard without an AGP slot, allowing for no upgrade at all.

It would seem as though Compaq has been listening. Its latest high-end offering still sports a case with that unique look, which makes accessibility more difficult than other units, but this unit's innards have a cleaner, more standard layout, and the only motherboard-down component is the Presario's ESS Maestro2 PCI audio chip. And unlike Presarios past, this unit has leading-edge graphics in the form of a RIVA TNT-based AGP board, which, coupled with 128MB of RAM and a Pentium II/450MHz CPU, makes for impressive overall gaming performance.

This Compaq unit is unique in several features: It's the only rig in the roundup to feature a 1394 (FireWire) controller, and it's the only one to have front-mounted USB ports as well as a single 1394 connector placed behind a flip-up cover. This is a great design idea, though it's not quite completely thought through. Because of the box's mini-tower shape, it'll most likely live on the floor, but these front-mounted ports are toward the bottom of the front-panel (hence, near the floor), and aren't as easy to access as they could be. Other lowlights include what is, hands down, the worst mouse to arrive with any box in this roundup.

Compaq seems to want every piece of hardware—from motherboard to mouse—to be Compaq's own. Not necessarily a bad idea, but since there are so many good mice on the market now, it seems silly to cling to this notion, especially when the mouse design it's still using is kludgey and hopelessly outdated. Another bothersome design blunder is that Compaq's case still uses Torx screws, which require you to use a special screwdriver to remove them. Is Phillips-head really so bad?

The news does get better once you get inside the box, though, since Compaq has done away with its dreaded mezzanine bus configuration wherein all expansion cards live on this board. Its removal was annoying at best, and a knuckle-buster at worst. The Compaq motherboard's layout is actually pretty clean, with a RIVA TNT-based Diamond Viper 550 adorning the AGP slot, and ESS' Maestro2 PCI audio accelerator down on the motherboard. This time around, Compaq's BIOS allows for a few more tweaks than in past boxes, but it's still pretty rudimentary.

This Presario's performance is actually pretty impressive, placing in the middle across most ZD Benchmarks, the two exceptions being WinBench 99's CPU benchmarks, in which it was about the slowest unit tested. However, it was near the top of the class running 3D GameGauge, thanks by and large to its RIVA TNT-powered graphics card. Its Maestro2 audio chip can accelerate Aureal's A3D API, and we encountered no compatibility glitches during testing.

Compaq certainly deserves the award for most improved gaming box, but this Presario doesn't ship with game controllers, nor does it include a Voodoo² board. With the addition of these items and a competent mouse, Compaq may well have a winner on its hands.

Compaq Presario 5600. *$2,799. Compaq, Houston, TX (800) 888-0220.* ***www.compaq.com***

PROS: *3D GameGauge performance, cleaner motherboard layout; front-mounted USB/1394 ports.*

CONS: *Case innards hard to access; doesn't include game controllers*

Speeds & Feeds

CPU	Pentium II/450MHz
RAM	128MB
Motherboard	Compaq
BIOS	Compaq
2D graphics	Diamond Viper 550
Graphics RAM	16MB
3D graphics	N/A
Monitor	Compaq 19-inch with speakers
Hard drive	IBM Deskstar 14GB
CD-ROM	N/A
DVD-ROM	Compaq DVD 2500
Removable storage	N/A
Primary audio	ESS Maestro-2 (motherboard-down)
Secondary audio	N/A
Speakers	JBl (monitor-mounted)
Game controller 1	N/A
Game controller 2	N/A
Keyboard	Compaq
Mouse	Compaq
Modem	HCF (PCI 56k)
Misc.	Ethernet, 1394; front-mounted ports

Dell Dimension XPS R450

★★★★★

In a recent meeting with some of the Dell crew, we told them, "Don't take this the wrong way, but one of the best things you do for gamers is that you don't get in the way." In fact, that's one of most remarkable things about Dell's machines is that they are such clean implementations, that what they may lack in flash, they make up for in solid performance and easy upgradability. The new Dimension R450 is no exception. This box arrived ready to rumble, never hiccuped during testing, and performed well.

The R450 features a sculpted case that's easily accessed by removing a single thumb-screw. Once inside, all the important plumbing is easy to get to, and the unit's Phoenix BIOS allows for basic system tweaking. This is a well-designed case, be it ever so plain. Other noteworthy components are STB's RIVA TNT-based Velocity 4400 graphics board, an internal EIDE Iomega Zip drive, and Turtle Beach's PCI Montego II sound card, based on Aureal Semiconductor's Vortex2 chip (which means that A3D support is present and accounted for). Dell uses Altec-Lansing's ADA-70 speakers, which are adequate, but not outstanding.

In terms of performance, the Dimension was solid across the board. In ZD benchmark testing, the Dell rig fared pretty well. The one notable score is its Business Disk WinMark score, which is unusually high for an EIDE drive. This is a result of Dell's disk-controller driver, which locks down a large chunk of system memory to use as a disk cache during testing. However, when a game's running, this amount of memory for disk caching wouldn't be available, so actual disk performance will most likely be less than this score would indicate. This isn't cheating per se, but it does skirt the line. Dell's CPU scores were toward the bottom of the pack—though you'd never know it to look at its 3D GameGauge score, which was just about top of the class. We saw no image quality problems during testing, and STB's control panel for Direct3D and OpenGL settings allows for some handy tweaks, though you first have to enable the extra settings by editing a registry key.

All told, Dell brings a lot together, though a Voodoo² board and game controllers of any stripe are missing (both are available for custom ordering via Dell's online store). That aside, Dell delivers a great baseline box that you can customize to your liking.

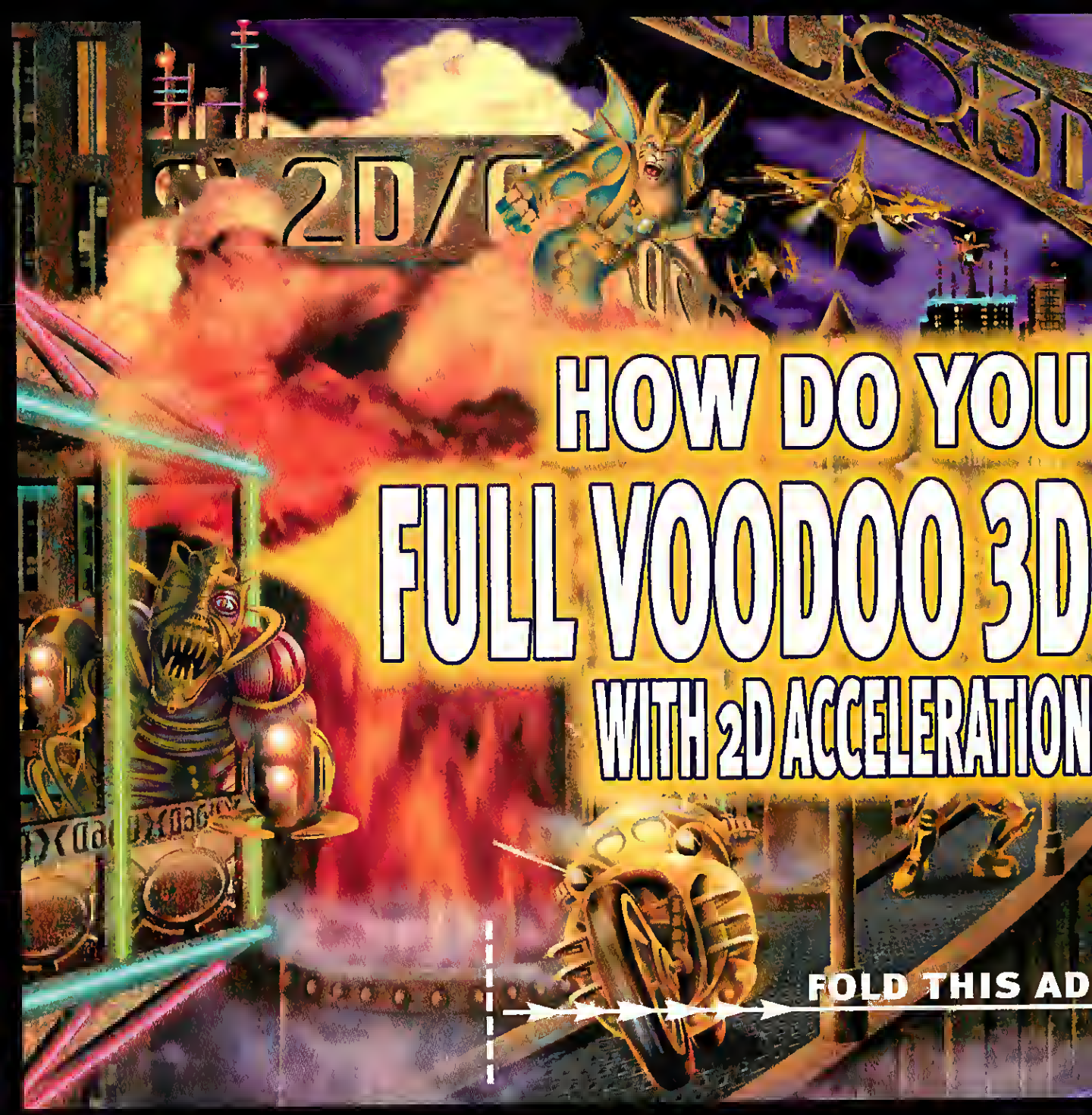
Dell Dimension XPS R450. *$2,499. Dell Computer, Round Rock, TX (800) 999-3355.*
www.dell.com

PROS: *Solid performer; clean implementation; no hiccups.*

CONS: *Kind of plain-jane; lacks game controllers or Voodoo² board.*

Speeds & Feeds

CPU	Pentium II/450
RAM	128MB SDRAM
Motherboard	Intel
BIOS	Phoenix
2D graphics	STB RIVA TNT
Graphics RAM	16MB
3D graphics	N/A
Monitor	Dell 19-inch (Trinitron)
Hard drive	13.4GB EIDE
CD-RDM	N/A
DVD-RDM	Toshiba SD-M1202
Removable storage	EIDE Zip
Primary audio	TBS Montego II
Secondary audio	N/A
Speakers	Altec-Lansing ADA-70
Game controller 1	N/A
Game controller 2	N/A
Keyboard	Dell Standard 101-key
Mouse	Logitech MouseMan+
Modem	USR 56K Voice-Win
Misc.	N/A



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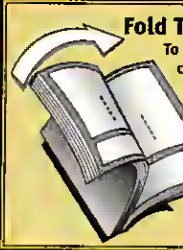

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Falcon Northwest Mach V

★★★★½

Falcon Northwest is probably the granddaddy of all the boutique PC companies. It was the first to offer complete systems tuned to the needs of PC gamers, and every year it seems to get a little better.

Falcon Northwest consistently scores well in UGM year after year, and this year is no exception. It's not just the benchmarks, either. In fact, Falcon Northwest placed second overall in 3D GameGauge scores, edged out only by the Aberdeen rig. Of all the "gamer" rigs we tested, the Falcon Northwest system gave us the least trouble. The only real issue we had was carving up the speaker cable for the over-the-top audio system Falcon sent us. But the company supplied us with a reel of premium speaker wire and a wire stripping tool, a testament to the level of detail demonstrated by the Falcon Northwest crew.

The Falcon rig posted stellar mass storage benchmarks across the board, aided by the capabilities of the Ultra2 SCSI controller built onto the ASUS motherboard. The Falcon system also posted the highest 3D WinBench 99 scores we've seen.

Falcon Northwest also wins the "out-of-the-box" award. After unpacking it and plugging it in, it ran without a hitch. All the DOS drivers were there, DirectX6 was up and running, and we had no serious crashes during all our testing. About the only odd configuration item was the USB version of the CH F16 Combatstick. I mention this only in irony, as Falcon Northwest supplied a dedicated CH dual port gamecard along with the game port on the Diamond Monster Sound MX200. About the only thing they left out was a DVD drive and hardware decoder.

The Mach V uses Falcon Northwest's standard midtower case, is quite easy to work inside, and comes configured with two additional cooling fans. It's a good thing, since the Obsidian X-24 can run pretty hot. In addition, Falcon overclocks the system bus slightly, running it at 103MHz instead of 100MHz. Still, we noticed no stability problems during testing.

As a final note, Falcon Northwest definitely wins the eviction notice award. The AR Cutting Edge is a full Dolby Prologic setup, complete with 200 watts-per-channel amplifier. Since it requires a TV display in order for you to configure it, the Mach V comes with a TV tuner card. The speakers not only sounded clean but easily rocked the rafters with a variety of musical and game material.

The bottom line is that everything about the Falcon Northwest Mach V works. Despite the complexity of Voodoo² SLI, the Cutting Edge speaker setup, and Ultra2 SCSI, the Falcon system just goes and goes. And the performance is no slouch, either.

Falcon Northwest Mach V. *$5,999. Falcon Northwest, Coos Bay, OR. (888) 325-2661.* ***www.falcon-nw.com***

PROS: *It's fast, it works out of the box, and it's stable.*

CONS: *AR speaker system a nuisance to set up.*

Speeds & Feeds

CPU	Pentium II/450 (clocked at 464MHz)
RAM	128MB
Motherboard	Asus P2B-S
BIOS	Award 4.51PG
2D graphics	STB Velocity 4400
Graphics RAM	16MB
3D graphics	Obsidian X-24
Monitor	Viewsonic MB11S 21-inch
Hard drive	Seagate Cheetah 9lp
CD-ROM	Plextor Ultraplex
DVD-ROM	N/A
Removable storage	EIOE Zip
Primary audio	Diamond Monster Sound MX200
Secondary audio	N/A
Speakers	Advent Edge Prologic System
Game controller 1	Jane's F16 Combat Stick USB
Game controller 2	N/A
Keyboard	Microsoft Natural Elite
Mouse	Microsoft Intellimouse
Modem	Optional
Misc.	N/A

Speeds & Feeds

CPU	Pentium II/450MHz
RAM	128MB
Motherboard	Intel
BIOS	Phoenix
2D graphics	Diamond Viper 550
Graphics RAM	16MB
3D graphics	N/A
Monitor	19-inch Micron
Hard drive	14.4GB ATA-33 hard-drive
CD-ROM	N/A
DVD-ROM	Toshiba SD-M1202
Removable storage	Iomega EIDE Zip
Primary audio	Sound Blaster PCI 128
Secondary audio	N/A
Speakers	Altec Lansing ACS-495
Game controller 1	N/A
Game controller 2	N/A
Keyboard	Micron Standard 101
Mouse	Microsoft with wheel
Modem	U5R 56K Win Internal

IDOT Pro Gamer2

★★★★★

IDOT has made a splash in the direct sales scene by positioning itself as the first "Internet-only PC company." Despite this hype, you can order over the phone.

Despite its moniker, the Pro Gamer2 is a mainstream system with a single Voodoo² card thrown in for gamers. The Altec-Lansing speakers are a cut above most mainstream systems, but the rest of the system is pretty unremarkable. The Intel i740-based primary graphics card posted some of the lowest scores in the roundup, conceding last place only in 3D GameGauge and 3D WinBench 99 to the RIVA 128zx on the much slower 350MHz Gateway Bang for the Buck system. The Best Data Voodoo² card also posted the lowest secondary card 3D GameGauge scores as well, again trailing the Gateway's Voodoo² scores. We had to check twice to make sure there was a 450MHz CPU in the box.

The Pro Gamer2 comes in a fairly typical mid-tower case that's slightly bigger than the Dell XPS tower. In many ways the IDOT system feels like a classic "screwdriver shop" system. It's built from a reasonable laundry list of components, but little effort has been made in integrating the parts into a whole system. For example, despite the presence of the IBM Deskstar 14GB hard drive, the IDOT posted one of the lower Business Disk WinMark scores in the roundup. Another example is the presence of the Altec Lansing speakers that come with very handy USB controls. But when we booted the IDOT system, the USB speakers' driver wasn't properly installed, so we got the dreaded "yellow circle" in Device Manager. DirectX6 was also MIA. A knowledgeable user could get everything up and running over time, but we have to question whether it's worth the effort.

IDOT needs to go back to the drawing board and do a better job of understanding gamers' needs and the performance requirements to compete against the big boys.

IDOT Pro Gamer2. *$3,499. IDOT, Austin, TX. (888) 388-4368* ***www.idot.com***

PROS: *Good speakers, decent audio, no serious glitches.*

CONS: *Slow, not well tuned, mediocre primary graphics*

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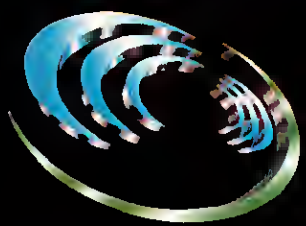

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Micron Millennia

★★★★½

Micron is a company that's flirted with doing serious gaming boxes before. Its original Fusion 3D package featured a 3Dfx Voodoo-based board, along with basic game controllers. But the company hasn't quite gotten the message across about its offerings to gamers. And with the arrival of nVidia's RIVA TNT chip (which finds a home in this Millennia), putting in a 3Dfx board has become less of an imperative, and is now more important for Glide support. Still, Micron produces a box with a simple, clean implementation that doesn't get in the way of whatever else you want to put in it. The rig features strong components, including Diamond's Viper SSO graphics card, an Intel motherboard, and 128MB of memory.

In some ways, this box and the Dell Dimension are becoming indistinguishable: They both use the same case, the same CPU, the same graphics board, and the same keyboard. But Micron uses different audio components, including the Sound Blaster PCI 128 and, more notably, Monsoon Multimedia's new MM-1000 magnetic planar speakers. For gamers, these choices present a curious trade-off. On the one hand, you've got a sound card that won't support A3D, and only has limited support for Creative's own EAX 3D audio standard. But this sound card talks to a good-sounding pair of speakers that can render two-speaker 3D audio very well. Because Micron and Dell have found the same case maker, both systems' innards are easily accessed, and because they use the same motherboard, system components are well laid out and easily reached.

The case has a pop-off panel that hides the system's internal EIDE Zip drive, and once you pop the case open, you'll probably never put it back on. Both systems use Intel's standard Phoenix BIOS, which allows for basic system tweaks, but which lacks the detailed settings of an Award BIOS.

Staying true to form, the Micron performs well in most of our tests, with the one exception of its slow Business Disk WinMark score, which was the slowest of the lot. But Micron turned in the fastest 3D GameGauge score by a nose, just edging out Compaq and Dell. The Micron fired right up and gave us no headaches during testing.

For gamers, Micron's Sound Blaster 128 gives it something of a disadvantage when compared to Dell, which uses Turtle Beach's Vortex2-based Montego II card. If you changed the sound card, say, to a Vortex2-based board or Creative's Sound Blaster Live!, the choice between the Millennia and the Dell Dimension would become almost a coin toss (although the Dell Millennia is cheaper).

Micron Millennia. *$3,049*
Micron, Nampa, ID. (800) 209-9686
www.micronpc.com

PROS: *Excellent 3D GameGauge performance; clean design; easy access.*

CONS: *Sound Blaster 128; no Voodoo² ; no bundled game controllers*

Speeds & Feeds

CPU	Pentium II/450MHz
RAM	128MB
Motherboard	Intel
BIOS	Phoenix
2D graphics	Intel 740
Graphics RAM	BMB
3D graphics	Best Data Voodoo²
Monitor	Digital Research 21-inch
Hard drive	IBM Deskstar 14GB
CD-ROM	N/A
DVD-RDM	Toshiba SD-M1202
Removable storage	N/A
Primary audio	Aztech PCI-338 A3D
Secondary audio	N/A
Speakers	Altec Lansing ADA-305
Game controller 1	N/A
Game controller 2	N/A
Keyboard	Standard 103
Mouse	Microsoft with Wheel
Modem	56.6
Misc.	N/A

Gateway G450XL

★★★½★

Gateway has long been the supplier of value PCs direct to the customer. The G450XL continues that tradition, offering a Pentium II Xeon system for home users.

You would think that a system using Intel's high-end CPU, the 450MHz Xeon, would outpace the other systems. You would be wrong. The key difference between the Xeon and the standard Pentium II is that the Xeon's Level 2 (L2) cache runs at full clock speed (450MHz), whereas the Pentium II's L2 cache runs at half speed (225MHz). The Gateway actually placed third in 3D GameGauge testing. The Dell system, with the identical video card, but a "mere" Pentium II, ran a tad faster, and even the more limited Compaq fared better. It's true that the raw CPUMark 32 score was somewhat higher, but it's also true that raw CPU performance doesn't always mean higher frame-rates.

The Gateway was an odd mix of high-end and low-ball parts. The huge Xeon CPU, plus the big cooling duct, took up a vast amount of room inside the spacious full tower case. The Velocity 4400's 2D and 3D performance kept up with the other system's graphics performance. But the AudioPCI sound chip is a mediocre one, though the Boston Acoustics speakers are top-notch. The lack of a Voodoo² card was an odd omission for something that's ostensibly a high-end gamer's rig. Even Gateway's budget system had Voodoo² on board. Still, the Velocity 4400 should do quite well for all but Glide-only titles.

The G450XL is well positioned for future expansion. There are two free PCI slots, room for memory expansion, and several free drive bays. In addition, the beefy power supply should provide ample power for even Voodoo² SLI should you want to add it. It's easy to work inside the case, even with the gigantic Slot 2 CPU installed. The BIOS is a typical Phoenix BIOS, which means you really can't tweak it much.

If you have a solid reason to have a Xeon-based system, such as computer-aided design work or manipulating big databases—but want to do some gaming on the side, the G450XL might be a good bet. But don't get Xeon just for gaming; it won't give you any added punch in game performance.

Gateway G450XL. *$3,700. Gateway Computers, North Sioux City, SD. (800) 846-4208.*
www.gateway.com

PROS: *Fast, reasonably stable.*

CONS: *Mediocre audio; no Voodoo²; Xeon no real benefit for gaming.*

Speeds & Feeds

CPU	Pentium II Xeon/450MHz w/512KB L2 cache
RAM	128MB
Motherboard	Intel Spearfish
BIDS	Phoenix
2D graphics	STB Velocity 128
Graphics RAM	16MB
3D graphics	N/A
Monitor	Gateway 19-inch VX900
Hard drive	IBM Deskstar 14GB
CD-RDM	Philips CDD3610 CD/RW
DVD-RDM	Toshiba SD-M1202
Removable	N/A
Primary audio	Sound Blaster Audio PCI
Secondary audio	N/A
Speakers	Boston Acoustics Digital Mediatheater
Game controller 1	N/A
Game controller 2	N/A
Keyboard	Gateway Smart Keyboard
Mouse	Microsoft Intellimouse
Modem	Telepath 56.6
Misc.	N/A

Bang for the Buck

Let's face it, there are a lot of us who'd love to drive a Ferarri, but we wind up making our peace with driving a Ford. Usually, a gaming system with a $6,000 price tag and an intact marriage are mutually exclusive. This year the news on the Bang for the Buck front is very good, indeed. Instead of that "Ford" gaming rig being an Escort, it's a Mustang. Thanks to cheaper memory and CPU prices, we have lowered the price limit on these systems from $2,500 to $2,000 and still, the slowest CPU was a Pentium II/350MHz, which ain't too shabby. But the real stand-out here was Dell, whose Pentium II/400MHz with a 16MB STB RIVA TNT board took top honors, and even nipped at the heels of the big boys. These boxes do cut a few corners, such as smaller monitors, less memory (64MB in lieu of 12BMB), or smaller hard drives. The bottom line is that you can get yourself a very competent gaming box—minus some amenities—that won't leave you wearing a barrel.

Alienware Hangar 18

★★★★★

In contrast to their well-hung Majestic Binary, Alienware's Hangar 18 offers good value at a reasonable price.

If it weren't for the headaches we encountered trying the get the S3 Savage3D-based primary graphics card to work, we'd have liked the Hangar 1B a lot better.

On paper, the Hangar 1B seems like a great system: It has a reasonably fast CPU, leading-edge primary graphics, Voodoo², and a compelling audio solution. But the Hercules Terminator Beast AGP graphics card, which uses S3's Savage3D accelerator chip, proved to be an enormous headache.

One set of drivers wouldn't run the benchmarks. The next set ran the benchmarks, but wouldn't run the games. The set after that crashed the benchmarks again. We finally got it to run, but even then, we saw dropped triangles in 3D WinBench 99. All in all, it's not an auspicious start for a system.

The rest of the system seems pretty solid. The Hercules Stingray/2 Voodoo² card fared better, posting the highest score for a single Voodoo² of all the systems in 3D GameGauge. The Elan Vital T10-AB case has been modified with an additional cooling fan to keep the system humming along. As an aside, this is a great case that's very easy to get inside when you want to add new peripherals. The audio is certainly among the best of the low-end boxes: Cambridge's four-speaker PC Works setup ties in perfectly with the Sound Blaster Live card.

The hard drive and CD-ROM seem a little light next to the 12GB/DVD equipped Dell system, though. But then, tradeoffs are what it's all about in a $2,000 computer, and Alienware's set of choices seems pretty reasonable—except for its primary graphics card.

In fact, I'd say that the choice of primary graphics is what really hurt the Hangar 1B's scores. On the surface, the Savage3D seems to be a fast 3D performer. (Its 2D performance is lacking, however.) We had so many headaches trying to get the Beast—an apt name if there ever was one—running, that we suggest Alienware find another primary card. Only then would this be a compelling system.

Alienware Hangar 18. *$1,999. Alienware, Miami, FL. (800) 494-3382.* ***www.alienware-pc.com***

PROS: *Strong audio, Voodoo².*

CONS: *Poor primary graphics; modest mass storage.*

Speeds & Feeds

CPU	Pentium II/350MHz
RAM	64MB
Motherboard	Soyo
BIOS	Award
2D graphics	Hercules Terminator Beast
Graphics RAM	8MB
3D graphics	Hercules Stingray/2
Monitor	Nokia 17-inch
Hard drive	EIDE 6.5GB
CD-RDM	Toshiba 6302-B CD-ROM
DVD-ROM	N/A
Removable storage	N/A
Primary audio	SB Live Value
Secondary audio	N/A
Speakers	Cambridge 4-channel PC Works
Game controller 1	MS SideWinder Gamepad
Game controller 2	MS SideWinder Joystick
Keyboard	IBM Standard 101-key
Mouse	MS Mouse w/Wheel
Modem	USR Sportster 56K Internal

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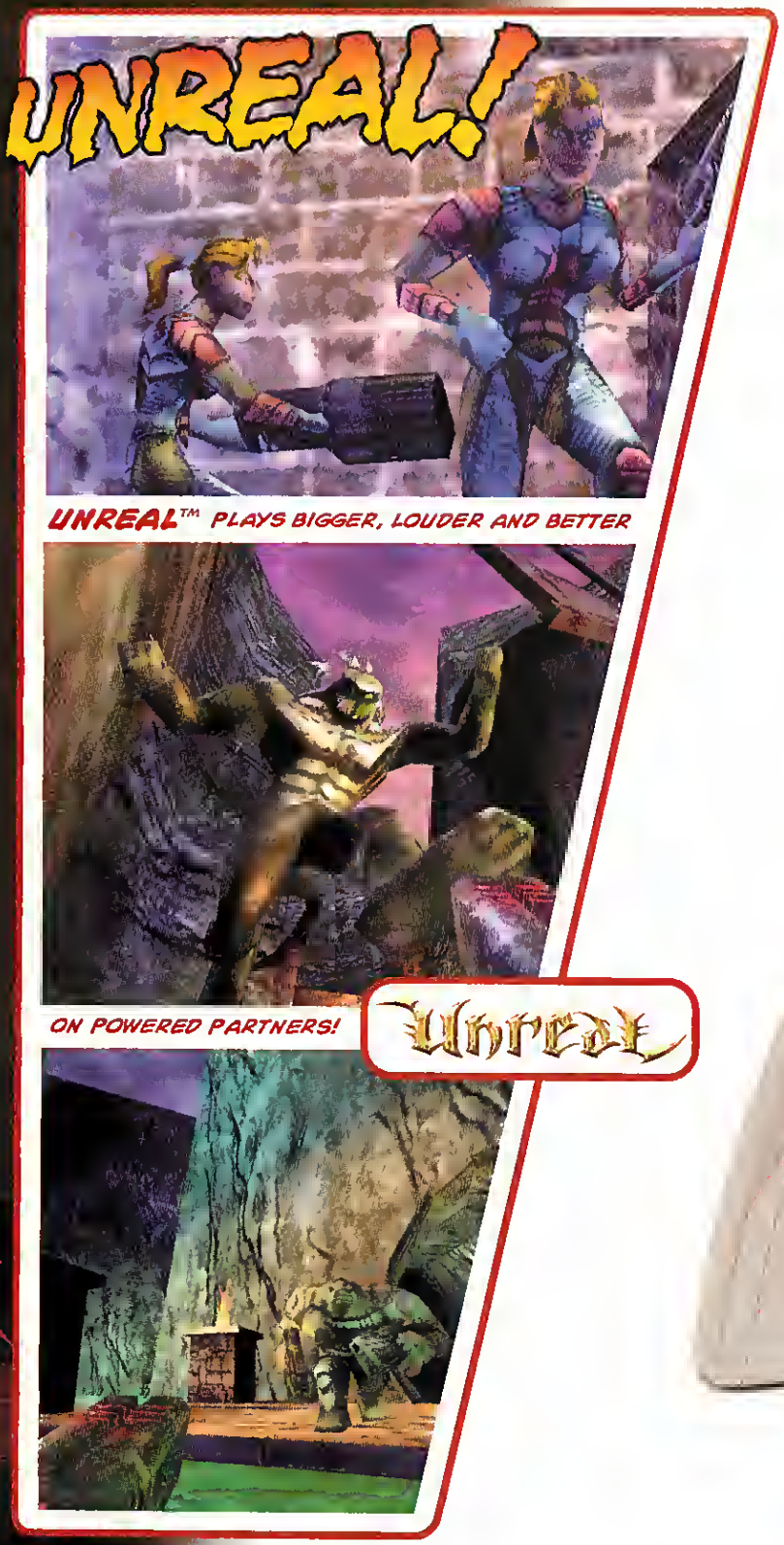

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Dell Dimension XPS400

★★★★½

Dell is the undisputed king of the direct sellers, and the XPS400 is a good reason why it has managed to stay on top. This system was a delight to set up, install, and run, and the price point is astonishing. You get a 400MHz Pentium II, 96MB of SDRAM, and solid graphics and audio—all for under $2,000. The only quibble we have is the lack of Voodoo² and the somewhat cheesy speaker system.

The combination of the RIVA TNT-based Velocity 4400 and the 400MHz CPU simply blew away the low-end competition in the test scores. Both the synthetic benchmarks and the 3D GameGauge scores were higher than the other sub-$2,000 systems by a fairly wide margin. The downside is that you don't get Voodoo² for the $2,000 price. But if you really came across a 3Dfx-only game you just *had* to play, you could always add a Voodoo² graphics card.

As with all the Dell systems, setup was a snap, and the system hummed along with no major glitches. The only concern we have is that the 200-watt power supply may be anemic if you really start loading the Dell down with a second hard drive and Voodoo² SLI. (Though the 12GB hard drive should hold you for awhile.)

Another concern is that the US Robotics Winmodem is a "soft" modem, meaning that the CPU plays a part when the modem is in use. So if Internet multiplayer gaming is in your future, you might consider upgrading the modem on this guy.

Most of our concerns are pretty minor. Overall, the Dimension XPS400 is one helluva bargain, offers unmatched performance in its price class, and should serve as a solid platform for most gamers.

Dell Dimension XPS400. *$1,999. Dell Computer, Round Rock, TX. (800) 999-3355.* ***www.dell.com***

PROS: *Works out of the box, great price/performance value.*

CONS: *No Voodoo², cheesy speakers.*

How Low Can We Go?

If you have a fat wallet, it's easy to get a fast system. But what if you don't have a fat wallet? What if even $2,000 is too rich for your blood?

We recently went through the exercise of assembling a couple of systems for under $1,500. One used the 300MHz version of AMD's K6-2 and the other used Intel's 333MHz Celeron-A CPU. In both cases, we were able to build systems—including a 17-inch monitor—that performed reasonably well for under $1,500.

Except for the motherboard and CPUs, the systems were identical. Common components included 64MB of PC100 compliant SDRAM, a 5.7GB Maxtor hard drive, a Diamond Monster Fusion AGP board (which uses the 3Dfx Voodoo Banshee chipset), and an Optiquest Q71 monitor. An IDMagic Vortex-based sound card and a set of Cambridge Soundworks PC Works speakers handled audio chores.

The K6-2 system ran on an ASUS PSA motherboard, which uses the ALi Alladin V chipset, whereas we popped the Celeron-A into an Abit BH6 motherboard. Both boards have one AGP and five PCI slots, plus a couple of ISA slots, and should have performance that's more than adequate for most games.

If we can build these systems for $1,500, then it's clear that the big resellers should be able to offer decent gaming systems for under $1,500—or even less. Most sub $1,200 systems we've seen have some serious compromises somewhere—either the graphics cards are terribly slow, the speakers tinny, or the monitor minuscule.

Of course, another use for a good $1,200 system would be for that second system in your house. That way, multiplayer becomes that much easier. After all, maybe the Ultimate Game Machine setup has more than one system....

Speeds & Feeds

CPU	Pentium II/400MHz
RAM	96MB
Motherboard	Intel
BIOS	Phoenix
2D graphics	STB Velocity 4400
Graphics RAM: 16MB	
3D graphics	N/A
Monitor	Dell 17-inch
Hard drive	EIDE 12GB
CD-RDM	NEC
DVD-RDM	N/A
Removable storage	N/A
Primary audio	TBS Montego
Secondary audio	N/A
Speakers	Harmon-Kardon
Game controller 1	None
Game controller 2	None
Keyboard	Dell Standard 101-key
Mouse	Microsoft (with wheel)
Modem	USR S6K WinModem

Gateway G6-350

★★½★★

For the Bang for the Buck roundup, Gateway sent us a Pentium II/350MHz box that's a pretty solid system, except that it marries you to Gateway's graphics card choice by putting the chip down on the motherboard with no AGP slot for future upgrades. To the company's credit, this flaw is mitigated by the presence of an STB Voodoo² board, but it's still an unfortunate design decision.

The G6-350 is pretty much a garden-variety beige box, but it's accessed easily enough by removing a single thumb screw. Once inside, we made the unhappy discovery that this rig has an AGP RIVA 12Bzx with 8MB of video memory down on the motherboard. This is unfortunate because there is a design option for graphics called "3-way AGP" that allows for a motherboard-down graphics chip as well as an AGP slot for a future upgrades, but in an effort to keep the price down, Gateway didn't opt for this design. The good news here is that right next to where an AGP slot should be is STB's Black Magic 3D Voodoo² board, which ably handles 3D graphics chores—although it can't run at 1024x768 double-buffered with a z-buffer. Gateway's audio choices are hit and miss. The hit is Boston Acoustics' impressive BA635s, which are just about the most impressive low-cost speakers we've heard. But the miss is Creative's Sound Blaster AudioPCI—a revamped version on Ensoniq's very basic PCI audio chip, which supports neither A3D nor Creative's own EAX standard, and it does most of its DirectSound "acceleration" on the CPU.

Gateway gets clearly outgunned by the other two entrants, due in large part to the RIVA 12Bzx's underwhelming performance relative to the Dell's RIVA TNT and Alienware's Savage3D-based parts. Gateway's poor performance is attributable to two things: First, RIVA 12Bzx's driver doesn't allow V-sync to be disabled, so part of its low 3D GameGauge score is caused by refresh rate issues. Second, RIVA 12Bzx has about one-third the fill rate of RIVA TNT, and this also shows up in the numbers. However, for secondary 3D graphics performance, Gateway was neck-and-neck with Alienware, which also has a Voodoo² board and a 350MHz Pentium II CPU. In the Fill-Rate Torture Test, the Gateway's graphics driver gave an error message saying it couldn't get a proper texture format.

Despite a few bright moments, Gateway's sub-$2000 offering makes too many compromises to be an effective gaming box. With a few tweaks, Gateway could have a winner on its hands, but until it addresses the G6-350's shortcomings, you may want to pass.

Gateway G6-350. *$1,698. Gateway, North Souix City, SD. (800) 846-4208* ***www.gateway.com***

PROS: *Easy access; great speakers; Voodoo² board.*

CONS: *Motherboard-down "permanent" graphics; RIVA 128zx no longer stacks up well; weak sound card choice.* CGW

Speeds & Feeds

CPU	Pentium II/350MHz
RAM	64MB
Motherboard	Intel Tolstoy
BIOS	Phoenix
2D graphics	RIVA 128zx w/8MB (motherboard-down)
3D graphics	STB Black Magic 3D
Monitor	Gate EV700 17-inch
Hard drive	Western Digital AC26400B 6.4GB
CD-ROM	N/A
DVD-ROM	Toshiba SD-M1201
Removable storage	N/A
Primary audio	Sound Blaster AudioPCI
Secondary audio	N/A
Speakers	Boston Acoustics BA63S
Game controller 1	None
Game controller 2	None
Keyboard	Gateway 101-key with multimedia controls
Mouse	MS Mouse w/wheel
Modem	Telepath S6.6

Bottom Line Time

If you've got the bucks, the prime choice is still Falcon Northwest's Mach V system. This year Falcon Northwest has shipped us a slightly more conservative system—no RAID array, no DVD drive. Instead, we got a solid, high-performance system that ran without any glitches.

As a runner-up, the Dell Dimension XPS450 turned out some solid benchmark numbers and ran flawlessly. About the only thing we'd add to it would be a Voodoo² card or two. This year's Bleeding Edge award goes to Alienware. We admire its attempt to push the envelope, but we ran into some annoying glitches. The frequent crashes of the EIDE RAID array were particularly worrisome. Compaq gets the Most Improved award, shipping a serious 3D accelerator for the first time, and it can even be upgraded.

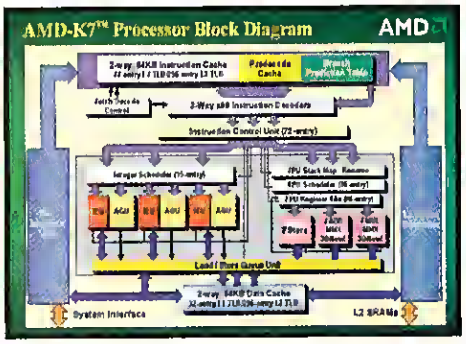
On the low end, the clear winner is the Dell XPS400. For just under $2,000, you get a 400MHz CPU, RIVA TNT, 12GB of hard-drive space, and lots of memory. Again, Alienware gets some nods for trying to push the envelope a bit, but we were quite disappointed with the performance and glitches exhibited by the Terminator Beast graphics card. Gateway's low-end system was disappointing because its adequate, but aging, primary graphics can't be upgraded.

So if you have a healthy budget, then take a look at the Falcon Northwest Mach V. If you're budget is tighter, the Dell XPS400 looks like a real winner—but you may need to add Voodoo².

New CPUs to Challenge Intel

At the recent Microprocessor Forum held in San Jose, California, AMD, Cyrix, and Rise Technology unveiled their 1999 wares, which were all aimed at delivering more power for less money.

Initially the PC price-bar was set at just under $1,000, but now many vendors are talking about sub-$800 systems, and there's even some talk of sub-$500 systems in the near future. How will system makers pull this off? By trimming every ounce of fat from the system, and by using highly integrated processors, such as Cyrix's MediaGX, which incorporates both graphics and audio functionality onto the CPU. Intel's forthcoming Whitney chipset will integrate an i740 2D/3D graphics chipset into the north bridge (the control circuitry and data path between the CPU and main memory), as well as audio and other basic system functionality. These new systems may put a PC on every kitchen counter, but they won't be effective gaming boxes. The good news is that all of this downward price pressure will make mid-level, and even many faster CPUs come down in price.



AMD unveiled its next-generation K7 processor core, which will feature a 12BKB Level 1 (L1) cache, and a backside Level 2 (L2) cache whose size will range from S12KB to 8MB. A backside L2 cache has the advantage of not having to share its bus with slower main memory, and can run at the CPU's full clock rate, and K7's L2 clock rate will be programmable. K7 also will support main memory speeds up to 200MHz, thanks to AMD's use of Digital's Alpha EV6 bus technology, which will allow for a peak data rate of 1.6GB/sec, twice the rate of Intel's current 440BX chipset. The downside here is that K7 will now need its own socket, which AMD has dubbed "Socket A." This presents two problems for AMD: The first is motherboard-maker support; and the second is system chipset-maker support. At press-time, we hadn't heard announcements of intended support from either camp, although AMD stated that third-party makers of both products would support K7. AMD will also be making a K7-compatible chipset.

K7 also has a revamped floating-point unit that features three superscalar (able to execute more than one command at once) execution units, and is fully pipelined. 3DNow! support is still present, and will help move Direct3D games along if they use D3D's transform and lighting engine.

Initial speed grades on the K7 will most likely start at S00MHz and head north after the chip debuts about the middle of 1999. —*Dave Salvator*

TechWatch

3Dfx Banshee 2 3Dfx's unannounced next-generation chip that will be its only offering. We haven't heard of any plans to do another 3D-only part for the PC market, though it still may still design 3D-only parts for the coin-op arcade market. As 3Dfx's flagship (and only) part, Banshee 2 will have to be an aggressive performer, and will most likely have a fill-rate between 250-300Mpixels/sec, which could well give 3Dfx an edge among 2D/3D chips. **ETA: Q2 '99**

Rendition Redline Multimedia Accelerator Rendition's next-generation part that will also feature dual rendering pipelines and support all DirectX 6 features. The chip features a 128-bit memory interface, but Rendition breaks this into dual independent 64-bit wide channels, which Rendtion claims will achieve real-world memory performance 50 percent faster than a 128-bit bus alone. **ETA: Q1 '99**

Direct RDRAM Intel's new memory technology that operates in a multichannel configuration. Initial speeds will most likely be a dual-channel setup running at t.6GB/sec (800M8/sec per channel). Katmai processors will be able to use either DRDRAM or SDRAM. **ETA: Q1 '99**

Intel Katmai Intel's next round of CPUs, with anticipated clock speeds of 450 to 500MHz. In additional to the higher clock speed, Katmai CPUs will also feature what Intel has clumsily dubbed "Katmai New Instructions," a name given to avoid calling these new instruction-set extensions MMX2. **ETA: Q1 '99**

Intal IA-64 This new 64-bit CPU will use a new set of Very Long Instruction Word (VLIW) instructions and use a technology termed EPIC (Explicitly Parallel Instruction Computing) to execution of instructions in parallel. **ETA: 2000**

3Dfx's Power of 2 Campaign Aimed at the SLI-impaired

3Dfx's Voodoo² Scan-Line Interleaved (SLI) configuration packs a serious amount of 3D horsepower and still remains the 3D king. But SLI has been out of reach for some gamers because of its daunting price tag, which was about $600–700 when Voodoo² first shipped. Well, it seems that Voodoo² board-maker Guillemot International is having an SLI fire sale, offering dual 12MB Voodoo² boards for $229. This fortuitous price drop was precipitated by the arrival of 3Dfx's own Banshee 2D/3D chipset, as well as nVidia's RIVA TNT chipset, which compare favorably to Voodoo². But where TNT and Banshee both trail is versus Voodoo² SLI.

Voodoo² SLI does have a few limitations: First, it will run only in 16-bit color, which for almost all current games is fine, but 1999 may well be the year game makers switch to using 32-bit true-color artwork, and Voodoo² will have to dither this down to 16-bit. Also, SLI's maximum resolution is 1024x76B, which is plenty for now, but RIVA TNT can run at higher resolutions, and ATI's forthcoming Rage 12B chipset will do the same.

What's interesting is that thus far, Guillemot is the only board maker making the $229 SLI proposition. Dther Voodoo² board makers such as STB, Diamond, and Creative Labs have all dropped their Voodoo² board prices, either by straight price drop or with rebate coupons. Dther board makers will probably follow Guillemot's lead this holiday season. —*Dave Salvator*

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The Lord of the CPU

The More Things Change...

"One Ring to rule them all, One Ring to find them,
One Ring to bring them all and in the darkness bind them
In the Land of Mordor where the Shadows lie."
—J.R.R. Tolkien, *Lord of the Rings*

Sometimes it seems that the PC on my desk is like the One Ring, Sauron's ring from *The Lord of the Rings*. Over time, it becomes an obsession, sometimes to the detriment of fiscal or physical health. It beckons you late at night when you're best off sleeping, but instead you find yourself wandering over to the glowing screen, as if it is beckoning you in some irresistible fashion. Someone suggests that maybe you don't need that next upgrade and you find yourself snarling, "My precious!"

Okay, so I'm exaggerating. In fact, these engines of entertainment we call personal computers have become as much a part of our lives as cars were to a previous generation. So it's time to peer into the crystal ball for the upcoming year and try to figure out upgrade strategies.

The Best of Times, the Worst of Times

As you read this, Intel is readying its successor to the now-venerable Pentium II. The code name is Katmai, and it delivers a slew of enhancements to the Pentium II architecture. It's still pretty much the P6 core at heart, but there's a radical enhancement to the old MMX technology known as Katmai New Instructions (KNI). We've written about Katmai elsewhere. Suffice it to say that it should accelerate the kind of math needed for 3D geometry calculations 100–200 percent faster than a Pentium II.

LOYD CASE

The good news is that the first release of Katmai will be a slot-one CPU. That means it should plug into most motherboards that use Intel's 440BX chipset. You may need a BIOS update from the board manufacturer, but that's about it. Katmai will initially ship as a 450MHz CPU, with a 500MHz part to ship a bit later. This means that if you've followed my past advice, and upgraded to a 440BX motherboard with PC100 compliant memory, you can step up to the next generation CPU from Intel simply by swapping CPUs.

So Much for the Good News

Late in the year, PC technology will change radically. For the industry, it's good news, because it will generate a whole slew of new upgrades. For those of us that feel compelled to keep up with the Jonses, it's bad news, because it means we'll have to shell out more hard-earned dollars. For one thing, the difference in performance between low-end and and high-end systems will start to get wider again. In the past few months, tech savvy users have upgraded to Pentium II class systems by getting Celeron or

> Katmai can **accelerate** the kind of math needed for 3D geometry calculations 100–200 percent **faster** than a **Pentium II.**

The *Computer Gaming World* Reference System

One of the problems we here at *CGW* wrestle with is how to present review information in a usable way. One of the other editors pointed out that it was difficult, for example, to choose a graphics card because the system the cards are tested on would vary from one issue to another. That makes it nearly impossible to compare the performance of one product to another. Because of this, we decided it was time to create a baseline system on which all our hardware reviews would be conducted. So I'd like to present to you the *Computer Gaming World* Reference System. We'll use this for all our performance-oriented product testing over the next 9–12 months. In the list at right is the gear we brought together for the system.

Since our performance-oriented testing, such as graphics cards, will be run on this system throughout most of the year, you'll be able to compare performance of different products in an intelligent way. It's just another way of providing you with the information you need to make an informed buying decision.

- **Intel SE440BX motherboard**
  (Similar to those used by Dell and others)
- **400MHz Pentium II**
  (By year's end, this will be the entry level CPU)
- **12BMB PC100 compliant SDRAM**
- **10GB, 7200RPM EIDE hard drive**
- **RIVA 12BZX-based**
  (Primary graphics card)
- **12MB Voodoo^2**
  (Secondary graphics card)
- **17-inch monitor**
- **S6K modem**
- **Vortex-based PCI audio card**

"These **engines** of entertainment we call personal **computers** have become as much a **part** of our lives as **cars** were to a previous **generation.**"

Celeron-A CPUs and clocking them up so they glow like the One Ring tossed into a fire. But although the Celeron line will step up to the 100MHz system bus in 1999, there will be *no* Celeron with Katmai New Instructions.

Celeron itself will be changing. Future Celerons will be chip-based, and will plug into—get this—yet another socket format. No, it's not socket 7. It's not socket 8. It's socket-A.

The Once and Future PC

One discussion at the Intel Developer forum went into great length on the wonders and benefits of software audio. In other words, instead of having a sound card, you'd have the CPU process all audio data. Intel suggested that on a 300MHz Pentium II, "233MHz will be free after audio processing." Gee, and I thought with all these hardware accelerators coming out for 3D graphics and audio, we'd finally have some spare CPU cycles for game AI and physics. Intel thinks otherwise, and would just as soon you use those CPU cycles for sound processing—meaning if you want better performance, you pay more money for a faster CPU. Guess what: Soft audio will be targeted for low-end ($1,000) systems. Core gamers willing to shell out bucks will of course get a Katmai CPU and a PCI sound card with DirectSound acceleration. The performance difference between high end and low end will get even greater.

Intel also wants to eliminate legacy hardware—which means no more ISA bus. While this will cause some financial pain for people who might buy a "legacy free" system, it means, in the long run, better performance and easier upgrading. This is one change that I'm applauding.

Then there's Rambus DRAM (RDRAM). RDRAM is a new memory technology that promises to speed up the rate at which data is moved between memory and the CPU. Coupled with Katmai's streaming memory technology, we may see system bus speeds of 133MHz, 200MHz, or more. Of course, it means that if you upgrade to a RDRAM-capable motherboard and you want to use RDRAM, you get to throw away all that SDRAM you bought. There is a bit of good news: Those motherboards should also support SDRAM, easing the transition a bit.

As 1999 draws to a close, we'll see the appearance of FireWire (IEEE 1394) as a disk interface in PCs, supplanting both IDE and SCSI. FireWire will be faster than either, and can support hot swappable hard drives. To complement this, a new technology called device bay may start to appear on PCs by year's end. Today, installing a hard drive or CD-RDM means turning off the system, opening the case, removing the hard drive, screwing in the new one, and so on. With device bay, you just pop the old drive out from the front of the case and slip in the new one.

Power management will change, too. Today, we have fairly crude setups, with modest abilities to go to low-power state. Future PCs will never be completely turned off (like newer model televisions). Instead, when you hit the power switch, the system will go into a very low-power state. Pressing the power switch again brings the system back up. To some extent, you see this today, but the capabilities will be much more sophisticated.

The Dawning of a New Age in Predictions

So it looks like my general advice to build systems with upgrades in mind may change by the end of 1999. At that point, it may be better to buy a new PC than to upgrade an existing one. My big fear is that PCs will become like modern cars. Ever try to "tune up" a car with an onboard computer and fuel injection?

At any rate, 1999 will be an interesting time for PC users and gamers. The only thing we can do now is wait to see what pans out and how much thinner our wallets will get. Now, where's that damned volcano? CGW

Tech Tips

My multiplayer games seem to have some lag over a local area network. Is there anything I can do to improve performance?

There are a couple of things you can do. First, if you're using TCP/IP, and you don't have to a network administrator to worry about, hard code your IP addresses. If this is an internal-only LAN, you can set the addresses to 192.168.0.xxx, where xxx can range from 1 to 255. Set the subnet mask to 255.255.255.0. Second, unbind your IPX protocol from file and print sharing. You can do this by going into the network control panel and unchecking the boxes for file sharing and print sharing in the IPX protocol property sheet. If you have TCP/IP enabled (and you should), then you'll still have file sharing and print sharing, but overall performance during IPX net gaming should improve, since the network isn't trying to do two things at once. TCP/IP games don't seem to be affected.

Help! I just installed Frontpage 98 and now I have problems connecting with Compuserve!

Frontpage 98 has the nasty habit of installing an older copy of Winsock, even if you're running Windows 98. The only thing to do is load the newer version of Winsock off the Windows 98 CD. The Windows 98 WINSOCK.DLL file is in the file PRECOPY1.CA8 in \win98 on the Windows 98 install CD. You can get it by using the extract command from a DOS window: extract /a x:\precopy1.cab winsock.dll /l c:\windows\system (where "x" is your CD-ROM's drive letter).

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-PC Gamer, January 1998

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Canopus Pure 3D Voodoo2 12MB
Witchdoctor TV-OUT
10.1 GB Ultra-ATA Hard-Drive
SoundBlaster LIVE! 3D Sound
Cambridge 4-Point Surround
Speaker/Subwoofer System
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PC Power Cooling K-1 CPU Fan
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1.44MB 3.5" Floppy Drive
Canopus SPECTRA 2500 TNT 16MB
Canopus Pure 3D Voodoo2 24MB
SLI-Mode Witchdoctor TV-OUT
H3D Stereoscopic VR Glasses
14.4GB IBM Deskstar HD (7200RPM)
Iomega Internal ZIP Drive 100MB
SoundBlaster LIVE! 3D Sound
Intensor Sensory Gaming Chair
Speaker/Subwoofer System
Toshiba 3rd Generation DVD Player
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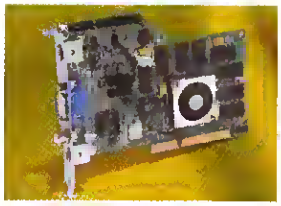
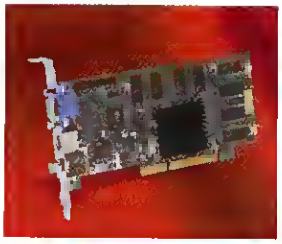
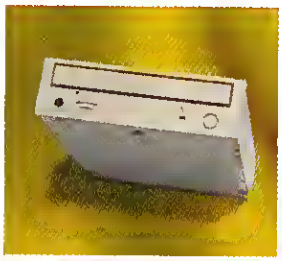


COMPONENT	PRODUCT	PRICE	WEB ADDRESS
Motherboard	ASUS P2B-LS	$294	www.asus.com
CPU	Pentium II/450	$497	www.intel.com
Memory	256MB of Corsair PC100 SDRAM	$424	N/A
Disk Controller	Built-in Ultra2 SCSI		N/A
Primary Graphics	Canopus Spectra 2500	$199	www.canopuscorp.com
Secondary Graphics	Quantum3D Obsidian X24	$426	www.quantum3d.com
DVD Decoder	Quadrant Cinemaster	$102	N/A
3.5" Floppy Drive	TEAC	$20	www.teac.com
Hard Drive	Seagate Cheetah 18	$1,215	www.seagate.com
Backup	Iomega Jaz 2	$318	www.iomega.com
CD-ROM / DVD	Pioneer SCSI DVD-302	$130	www.pioneerusa.com
Monitor	Sony 500PS	$1,128	www.sony.com
Primary Audio	Creative Sound Blaster Live	$83	www.soundblaster.com
Speakers	LFT-11	$500	www.eminent-tech.com
	Altec Lansing ACS-43	$50	www.altecmm.com
Modem	3Com ImpactIQ	$200	www.3com.com
Networking	Built-in Intel 10/100 Ethernet chip		N/A
Case	Supermicro 750A	$154	www.supermicro.com
Power Supply	Turbocool 300	$129	www.pcpowercooling.com
Keyboard	Logitech Newtouch	$45	www.logitech.com
Mouse / Pointing Device	Logitech Cordless Wheel Mouse	$49	www.logitech.com
Action Game Controller	Microsoft SideWinder Freestyle	$75	www.microsoft.com/hardware
Flight Joystick	ThrustMaster F22 Pro	$129	www.thrustmaster.com
Throttle	ThrustMaster TQS	$109	www.thrustmaster.com
Rudder Pedals	ThrustMaster Elite RCS	$79	www.thrustmaster.com
Driving Controls	ECCI CDS 4000	$1,129	ourworld.compuserve.com/homepages/extreme/

TOTAL: $7,484

LEAN & MEAN





COMPONENT	PRODUCT	PRICE	WEB ADDRESS
Motherboard	Abit BH6	$98	www.abit.com.tw
CPU	Pentium II/400 + fan	$369	www.intel.com
Memory	64MB PC100 SDRAM	$109	N/A
Disk Controller	Built-in UDMA/33		N/A
Primary Graphics	STB Velocity 4400	$134	www.stb.com
Secondary Graphics	Diamond Monster 3D II 12MB	$139	www.diamondmm.com
Floppy Drive	TEAC	$20	www.teac.com
Hard Drive	IBM Deskstar 14 10.1GB drive	$229	www.ibm.com
CD-ROM / DVD	Kenwood Multibeam	$119	www.kenwoodcorp.com
Monitor	Optiquest V7S	$345	www.optiquest.com
Primary Audio	Turtle Beach Montego	$94	www.voyetra.com
Secondary Audio	NA		N/A
Speakers	Boston Acoustics BA635	$99	www.bostonacoustics.com
Modem	US Robotics V.90	$113	www.3com.com
Networking	NA		N/A
Case	Elan Vital T10 AB	$79	www.elanvital.com.tw
Power Supply	Built-in 235W		N/A
Keyboard	Logitech Newtouch	$45	www.logitech.com
Mouse / Pointing Device	Logitech USB Wheel Mouse	$22	www.logitech.com
Action Game Controller	ThrustMaster Rage3D	$29	www.thrustmaster.com
Flight Controls	CH F16 Combat Stick	$79	www.chproducts.com

TOTAL: $2,122

We have made every effort to ensure that this information would be timely and accurate. However, new hardware is constantly being released, and magazine production and distribution involves an 8- to 10-week delay. In cases where new products were close to release at press time, we have kept our current top choice so that we recommend only finished products we have tested. *Lists compiled by Dave Salvator and Loyd Case*

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More Power, Scotty

by Dave Salvator

Intel's Pentium Pro processor enjoyed only a short stint as the company's flagship, getting quickly overshadowed by the Pentium II onslaught. If you got a Pentium Pro–equipped box when they came out, you're probably thinking about upgrading your CPU and motherboard. Well, Intel has another option for you to consider: a Socket B Pentium II OverDrive.

Speed grades for 180MHz and 200MHz Pentium Pros are 300MHz and 333MHz, respectively. Intel says that this OverDrive will be the last one in its product line and will effectively turn a Pentium Pro box into a Xeon machine. Like Intel's Xeon, the OverDrive's 512KB L2 cache runs at the CPU's full clock speed, which moves things along faster. But also like Xeon, this upgrade option is expensive. In fact, you can find a Pentium II 400MHz CPU and a motherboard for less than OverDrive's $550 cost.

On WinBench 99's CPU tests, OverDrive clearly outpaces Pentium Pro, with an 82 percent speedup in integer performance and a 66 percent bump in floating-point performance. In 3D WinBench 99, OverDrive was 58 percent in the Transform and Lighting test, a CPU-intensive test that measures how fast triangles can be transformed and lit in Direct3D. These numbers seem to make OverDrive a winner, but on 3D GameGauge the 24 percent speedup is less impressive.

Theoretical performance is fine, but OverDrive's real game performance doesn't warrant its price tag. After the upgrade, you still have a 66MHz system memory bus, a 33MHz PCI bus, and no way to add AGP. If you can't part with your Socket B motherboard, OverDrive will breathe new life into your rig. But you'd do better to swap in an AGP motherboard and a new Pentium II processor. CGW

COMPUTER GAMING WORLD

★★★☆☆

APPEAL: Gamers with Pentium Pro boxes who want more speed without a motherboard swap.

PROS: Ups performance about 25 percent on games; easy installation; adds MMX.

CONS: Still uses Pentium Pro's 440FX chipset, no AGP, potential compatibility problems, very expensive compared to other upgrade options.

Price $550 (street)
Manufacturer Intel
(408) 765 8080

www.intel.com

PERFORMANCE BENCHMARKS

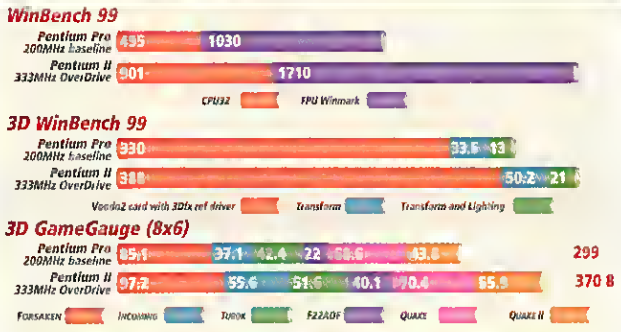

photo Michael Falconer

Sounds From the Flat

by Dave Salvator

"I know this violates the laws of physics, but you see, I never studied law."
—Bugs Bunny

Bending the laws of physics seems to be a trend. Getting clean, loud output from satellites with two-inch drivers has become commonplace, with impressive offerings from both Boston Acoustics and Cambridge SoundWorks. But there's another approach. Using magnetic planar technology licensed from Eminent Technologies (makers of the impressive LFT-11s) along with its own manufacturing process, Monsoon Multimedia produces a speaker system featuring flat-panel satellites and a woofer/amplifier that deliver impressive audio for a little over $200. Now, this may seem pricey relative to Boston Acoustics' and Cambridge's offerings, both of which are under $100. However, compared to Eminent's LFT-11s, the Monsoons look like a pretty good deal.

Setup is pretty straightforward. The only kludge in the design is the "hockey puck" volume control. The sparse documentation claims this control will allow you to control volume and mute the speakers, but I was only able to do the latter, toggling between mute and blastissimo. Even if it had worked as advertised, it's not intuitive. The controls on the front of the woofer cabinet let you tweak overall volume, bass level, and what Monsoon terms "punch," which boosts the 55Hz band 6dB for added bass response.

Now we get to the good part. The Monsoons sound terrific, with the very "tight" imaging typical of magnetic planar speakers. This makes for a focused "sweet spot," where stereo imaging is precise and well placed—as is 3D positional audio. Overall sound quality is solid throughout the audible frequency range, although there's no granular control for treble settings, and the high-frequency part of the signal becomes less discernible if you move out of the sweet spot. Audio CDs ranging from Beethoven to Cassandra Wilson sounded great, and gaming audio was equally beefy. 3D positional audio from a Vortex2 reference board was rendered well. Thanks to Monsoon's 50-watt amplifier, these units can be cranked up pretty loud before there's any perceptible distortion—louder than either the Cambridge or Boston Acoustics low-cost units.

Overall, the Monsoons bring a lot together. They have great audio quality, and they make magnetic planar technology more affordable. These speakers are now finding homes in Micron's newest systems. If you're in the market for a pair of solid speakers, maybe they should find a home in your rig too. CGW

photo Michael Falconer

COMPUTER GAMING WORLD

★★★★☆

APPEAL: Gamers looking to soup up their audio.

PROS: Terrific overall sound, ample volume, boomin' bass, affordable magnetic planar design.

CONS: Volume control doesn't work well, still a little pricey compared to Cambridge PC Works and Boston Acoustics 635s.

Price $229
Manufacturer Monsoon Multimedia
(877) PCAUDIO

www.sonigistix.com

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Go to #271 @ www.computergaming.com/infolink

Costs Less, More Filling

by Loyd Case

Imagine a force-feedback wheel for under $140. That's not much more than some mid-range analog steering wheels. Richmond, BC–based ACT Labs has managed to pull off a real coup with the Force R5. Not only is this wheel cheaper than the competition, it's in some ways better. The first thing you notice is the grip. The genuine, simulated fine Corinthian leatherlike wrap around the padded wheel just feels right. There are seven buttons along the front face of the wheel and a pair of paddle shifters. Cosmetically, the wheel is slick, a touch subdued, and even a bit dangerous looking. The wheel plugs into a free serial port, which can be a problem for some users. But you'll be able to upgrade easily to the USB plug-in cartridge, which will be around $25 when it ships.

Another big plus is the pedal base. The ACT Labs pedal set is easily the best I've used in a low-cost wheel, and the base never moved on my carpeted floor. The angle and resistance of the gas and brake pedals feels just right, too.

I spent a lot of time with EA's NEED FOR SPEED III and can report that the forces generated by this wheel feel about right. They're not so strong that they wrench the wheel out of your hands, but you definitely feel it when you collide head-on. The level of resistance in normal road handling felt good, and the belt-driven motor didn't feel quite as "notchy" as the Microsoft wheel. I also booted up the INTERSTATE 76 NITRO PACK and was pleasantly surprised to get some force feedback out of the game since it was tuned for Microsoft's wheel.

About the only fault I found is the mounting brackets. While this worked reasonably well on a flat desktop, when used on a folding table I have with supporting ridges under the tabletop, the wheel didn't seat all the way forward, which made it a bit wobbly. Still, the mounting gear is easy to use and should work with most desktops.

All in all, the Force R5 is a real winner. The only downside is that ACT Labs doesn't have the distribution muscle of a Microsoft, so you'll have to order it direct. If you like arcade racing and even get into racing simulators in a casual way, you owe it to yourself to give this a whirl. CGW

Photo: Michael Falconer

COMPUTER GAMING WORLD

★★★★½

APPEAL: Price conscious gamers looking for a force-feedback wheel

PROS: Good grip on wheel, great pedals; solid feel.

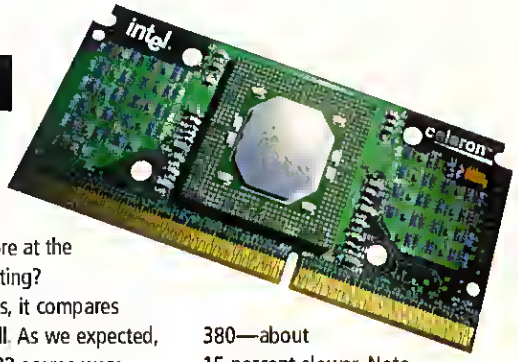
CONS: Serial port required (USB version to ship soon).

REQUIREMENTS: Pentium 90 with free serial port.

Price: $139
Manufacturer: ACT Labs
(800) 980-9997
www.actlab.com

REVIEW • CELERON 333-A

Intel's Baby Pentium II



by Loyd Case

First of all, let's dispense with the overclocking question. Yes, you can overclock a Celeron-A. If you do, it will always run at a fixed multiplier of the bus speed. The 300MHz part will run at 450MHz if the bus speed is 100MHz. The 333MHz part will run at 500MHz. It may be stable, but it may not. *CGW* generally doesn't recommend this degree of overclocking, but if you do, be aware of the risks. If you do want to experiment with overclocking, the 300MHz part may be more stable.

Now, let's assume for the moment that we'll be running our Celeron-A at the rated clock speed, 333MHz, and that the system bus is set to 66MHz. How does the Celeron-A compare against the 350MHz Pentium II, which costs about $110 more at the time of this writing?

For $110 less, it compares reasonably well. As we expected, the CPUMark 32 scores were somewhat less, as were the FPUMark scores from WinBench 99. The big surprise was the 3D GameGauge scores. The 350MHz Pentium II clocked in at 447 for 3D GameGauge, whereas the Celeron-A eked out just under 380—about 15 percent slower. Note that everything except the CPU was identical—we simply swapped in the CPU and set the correct clock speed. (We tested on an Abit 8H6 motherboard with 64MB of SDRAM and an STB Velocity 4400 graphics card.) In other words, for a third less money, you get 15 percent less performance, which seems like a reasonable tradeoff.

So even if you're not into overclocking, the Celeron-A, with its 128KB of Level 2 cache running at the full speed of the CPU, may be a good deal. It will not, however, break any performance records. CGW

Photo: Michael Falconer

PERFORMANCE BENCHMARKS

COMPUTER GAMING WORLD

★★★½☆

APPEAL: Users on a tight budget looking for near-Pentium II performance.

PROS: It's cheap

CONS: Unless you're into overclocking, it's not all that fast.

REQUIREMENTS: 440BX-, 440LX-, or 440EX-based motherboard with one slot.

Price: $220 (street)
Manufacturer: Intel
(408) 765-8080
www.intel.com

Soundman Extreme-ly Bland

by Loyd Case

When I first saw the Logitech Soundman Extreme, the first thought that entered my head was "Labtech." That was a somewhat uncharitable assessment. On the surface, the Soundman Extreme vaguely resembles some of Labtech's speakers. But the Soundman cost more, and they sound better.

Having said that, let me add that these speakers don't sound great. For $149, you would expect something pretty solid. I ran a bunch of music CDs to get a feel for the overall balance and clarity of the Soundman speakers, and I found them wanting for playing musical material. Sharp acoustic guitar attacks sound flabby, and vocal sibilants sound overly exaggerated. Despite Logitech's claims of frequency response down to 28Hz, the deep bass response was practically nonexistent.

All this sounds dismal, but the speakers do excel in a couple of areas. Stereo imaging is very good, which is a must with HRTF 3D positional audio schemes like Aureal's A3D. The speakers seem to have a midrange emphasis, which means that speech material sounds prominent. This is handy in games, where the speech is often mixed down in the mud of the background sounds. So despite the lack of musical fidelity, these speakers don't sound half bad with games.

The speakers themselves are very compact. Two satellites take up very little room on your desktop. But the bass unit is almost tiny, so it's no surprise that the bass output is anemic. Setup is easy, and there's no power brick since the power module is integrated into the bass module.

Overall, the Soundman Extreme is a decent, though unspectacular, first effort from a company known more for pointing devices and game controllers. But there are better speakers that cost less, like the Cambridge SoundWorks PC Works and the Boston Acoustics BA635s. In comparison, Logitech's Soundman Extreme seems like a wan debutante wallflower compared to the prom-queen presence of the BA635's. CGW

photo: Michael Falconer

COMPUTER GAMING WORLD

★★½☆☆

APPEAL: Loyal Logitech customers or those gamers who can't find any other decent speakers.

PROS: Decent game audio, very easy to set up.

CONS: Underwhelming bass output; muddy music.

Price: $149 (manufacturer list price)
Manufacturer: Logitech
(510) 795-8500

www.logitech.com

Sight and Sound

by Loyd Case

Multimedia monitors with built-in speakers and microphones seem attractive at first glance. Wouldn't it be great to have PC display, speakers, and microphone all in one compact package? The Proton MM750i comes close—closer than other so-called multimedia monitors. But it falls short of its aspirations.

Unpacking and setting up proved to be something of a chore. The swivel base was a pain to attach. The monitor ships with audio cables, but they are very short. As a nod to the user with gothic taste, the monitor ships in a black version as well as beige.

Once past the cabling hurdle, the MM750 proved to be a capable, if unspectacular, 17-inch monitor. With a 15.8-inch viewing area, it offers a fairly low bandwidth, supporting a scant 65Hz refresh rate at 1280x1024. At a more reasonable 1024x768, the Proton managed an 85Hz refresh rate. We did notice a slight moiré pattern in Windows, though not in gameplay.

Controls are simple, with the now-familiar "wheel button" on the front of the screen. Press the wheel, and the on-screen display pops up. Rotate the wheel, and you can select your option and adjust speaker volume.

The good news about the speakers is that they don't suck. The bad news is, they don't sound nearly as good as a pair of stand-alone speakers. The monitor's bass unit has an odd, vertical tube protruding out of the right rear corner and has its own 14-watt amplifier. The satellites share an 8-watt amplifier, but they're side-firing, rather than front-facing and have a "3D audio" effect built in that isn't true positional audio. Instead, the effect widens the sound stage, but it can't be disabled, so there's always some reverb, and the sound is never completely clean.

Music played through the Proton tends to sound artificial. Games fare much better, and the unit pumps out a surprisingly loud volume. Bass came off subdued—there's only so much you can do with a four-inch woofer.

If you're tight on dollars and desk space, you might consider the Proton—especially if you don't play audio CDs on your computer. The picture quality is decent, and the audio isn't awful. But if you can, get stand-alone speakers and a separate monitor. Your ears will be most grateful. CGW

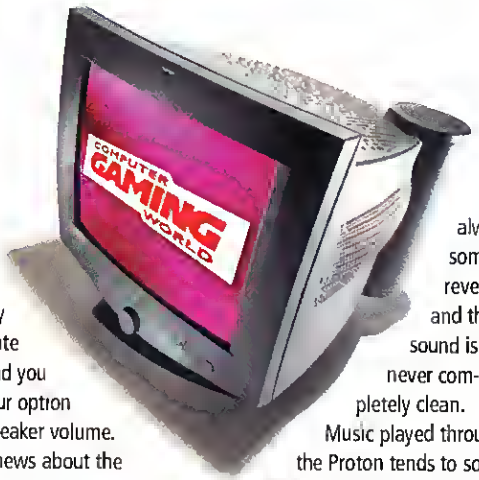


photo: Michael Falconer

COMPUTER GAMING WORLD

★★★½☆

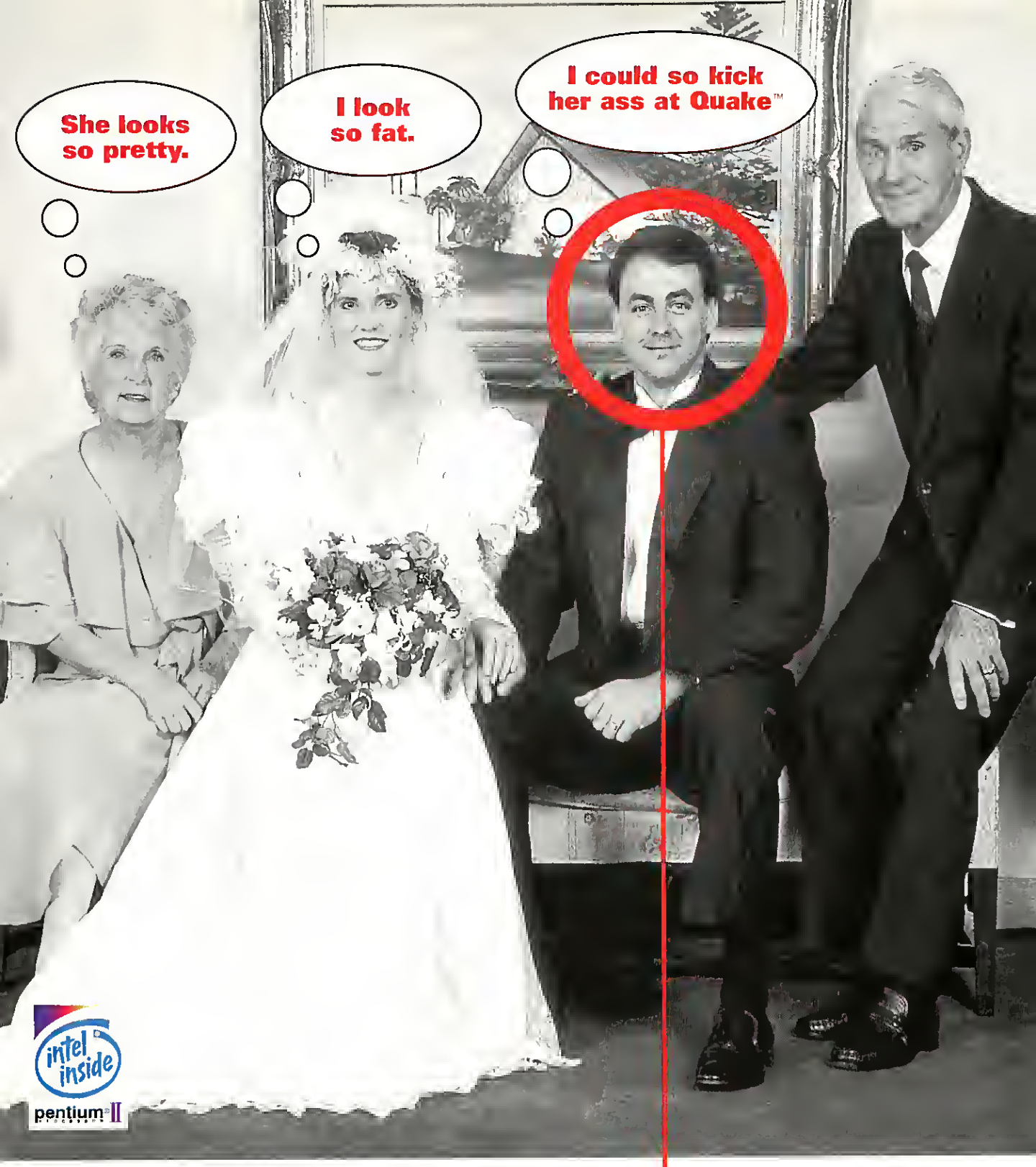
APPEAL: Users with limited space and modest audio needs who want a 17-inch monitor.

PROS: Decent audio for built-in speakers.

CONS: Slight, but noticeable moiré pattern throughout the display at high resolutions in Windows.

Price: $399
Manufacturer: Proton
Cerritos, CA

www.proton-usa.com



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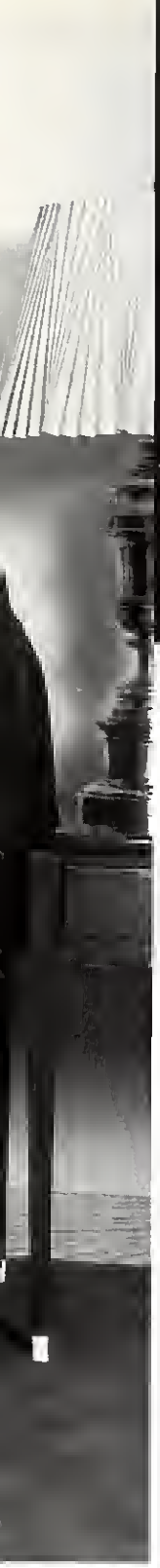

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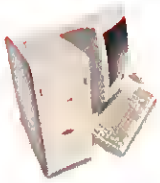

Model Name	Millennia 350	Millennia 450	Millennia 350 MAX	New! Millennia 450 MAX
Processor	Intel Pentium II processor 350MHz	Intel Pentium II processor 450MHz	Intel Pentium II processor 350MHz	Intel Pentium II processor 450MHz
Cache	512KB internal L2 cache	512KB internal L2 cache	512KB internal L2 cache	512KB internal L2 cache
Memory	64MB 100MHz SDRAM	128MB 100MHz SDRAM	128MB 100MHz SDRAM	128MB 100MHz SDRAM
Hard Drive	8.4GB Ultra ATA hard drive*	13.6GB Ultra ATA hard drive*	14.4GB 7200 RPM Ultra ATA hard drive*	14.4GB 7200 RPM Ultra ATA hard drive*
Monitor	17" Micron 700Vx monitor (15.9" display)	19" Micron 900Lx monitor (18" display)	19" Micron 900Lx monitor (18" display)	19" Micron 900Lx monitor (18" display)
DVD/CD-ROM	32X max speed CD-ROM drive	4.8X DVD111 ROM drive	4.8X DVD111 ROM drive	4.8X DVD111 ROM drive
Modem	3Com/U.S. Robotics 56K WinModem**	3Com/U.S. Robotics 56K WinModem**	3Com/U.S. Robotics 56K WinModem**	3Com/U.S. Robotics 56K WinModem**
Graphics	nVidia Riva 128, 8MB SGRAM 3D AGP graphics	nVidia Riva 128, 8MB SGRAM 3D AGP graphics	Diamond Viper 550 nVidia TnT, 16MB graphics	Diamond Viper 550 nVidia TnT, 16MB graphics
Sound System	PCI 64-voice Wavetable sound	PCI 64-voice Wavetable sound	PCI 64-voice Wavetable sound	PCI 64-voice Wavetable sound
Warranty	5-year/3-year Micron Power™ limited warranty	5-year/3-year Micron Power limited warranty	5-year/3-year Micron Power limited warranty	5-year/3-year Micron Power limited warranty
Software Included	Microsoft® Windows® 98 Microsoft Office 97 Small Business Edition Norton AntiVirus	Microsoft Windows 98 Microsoft Office 97 Small Business Edition Norton AntiVirus	Microsoft Windows 98 Microsoft Office 97 Small Business Edition Norton AntiVirus	Microsoft Windows 98 Microsoft Office 97 Small Business Edition Norton AntiVirus
Also Includes:	New MicroTower™ case Advent AV009 stereo speakers 104-key enhanced keyboard Microsoft IntelliMouse® 3.5" floppy drive	New MicroTower case Monsoon MM1000 flat panel speakers with subwoofer 104-key enhanced keyboard Microsoft IntelliMouse 3.5" floppy drive	Micron MiniTower case Monsoon MM1000 flat panel speakers with subwoofer 100MB Iomega Zip Drive 104-key enhanced keyboard Microsoft IntelliMouse 3.5" floppy drive	Micron MiniTower case Monsoon MM1000 flat panel speakers with subwoofer 100MB Iomega Zip Drive 104-key enhanced keyboard Microsoft IntelliMouse 3.5" floppy drive
Price	$1,499 As Low As $40/mo.[1] Payment Plan 48mos.	$2,399 As Low As $65/mo.[1] Payment Plan 48mos.	$2,699 As Low As $73/mo.[1] Payment Plan 48mos.	$2,899 New Low Price! As Low As $78/mo.[1] Payment Plan 48mos.

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Ass-inine Peripheral

by Loyd Case

I survived the VFX-1 virtual reality helmet, having nearly ripped out my ears straying too far from the PC to which it was tethered. I survived an exploding network interface card, having removed my head from the inside of the case only seconds before it self-destructed. I've even survived lifting 21-inch monitors.

But I nearly didn't survive the Intensor. After only a half-hour in this baby, I felt like I had three compressed vertebrae, I had whacked my funny bone three times on the so-called armrests, and I nearly blew out my eardrums when I rolled the chair back and yanked out the all-too-short tether from the amplifier. The result was a huge popping sound that left my ears ringing.

If you get the Intensor, skip getting the base. The Intensor itself isn't too difficult to set up, but installing it into the five-wheel pedestal nearly reduced two grown men to tears. Attaching the armrests proved an interesting exercise in puzzle solving. Worse, the chair is easier to install in its folded position (since it would fall over anyway), but the armrests *prevent the unit from unfolding once installed*.

On top of all this, it sounds terrible. The speakers sound tinny and flat, and the bass is pretty pathetic. Even with the subwoofer active, there wasn't a lot of bass rumble, and musical content sounded abysmal. Gameplay wasn't particularly enhanced either.

The Intensor may simply be poorly suited for modern PC games. Many games are coming out with 3D audio support via DirectSound3D, Creative's EAX, or Aureal's A3D positional audio, and the Intensor completely screws up the imaging in 3D audio. I played around with A3D settings, even changing to headphones, but the 3D effect was either lost or rendered incorrectly by the position of the speakers in the chair. Controls are pretty basic, with a power switch on the main unit and a pair of controls on the chair itself—right between your legs. One is a volume control; the other controls the intensity of the—uh—effect. If you have the subwoofer, there's a volume knob and crossover adjustment on the bass unit. Cranking everything up didn't really make me "feel the action," though.

Stay away from this turkey—unless you really do want a stiff neck. CGW

COMPUTER GAMING WORLD

★☆☆☆☆

APPEAL: People who buy products based on the way they look

PROS: It looks like an alien chair from a *Star Trek* episode

CONS: Uncomfortable as hell, sounds terrible, expensive; a pain to set up

Price: chair, $299; amp/subwoofer $199; chair base $99, $597 total (street)
Manufacturer: BSG Laboratories
Panama City, FL
(850)265-5000
www.intensor.com

Easy Rider

by Jeff "I Can't Drive 45" Green

I hate hardware, and hardware hates me. Take any functioning piece of computer equipment, give it to me, and sit back as springs fly, circuits short, and all sorts of other bad voodoo goes down. This is why I was asked to review ThrustMaster's NASCAR Sprint Racing Wheel, an ultra-cheap, low-end steering wheel aimed squarely at first-time wheel buyers. Since a chimpanzee wasn't available, I was the next best thing to the ultimate hardware-impaired gamer.

This wheel delivers on its promises. I had the Sprint Racing Wheel set up, installed, and ready to race in about three minutes. It's nearly Plug-and-Play—all you have to do is attach the enclosed clamps to the wheel, fasten the wheel to your desk, and plug the cord into your gameport. Software installation is just as simple. An install CD basically takes care of everything for you, including a superintuitive, visual calibration before you use the wheel for the first time.

The Sprint Racing Wheel's footprint is much smaller than higher-end wheels, making it a convenient, practical choice for those with a cramped workspace.

Happily, the smaller footprint does not in any way lessen the quality of the driving experience. The wheel itself is small but solid and has a rock-steady feel to it as you drive. I've played with much more expensive wheels that didn't feel nearly as good as this one. There are four programmable buttons on the Sprint Racing Wheel (as opposed to just two on ThrustMaster's higher-end NASCAR Pro Racing Wheel). There are two levers underneath the wheel that can be either mapped as buttons or as throttle and brake controls—depending on whether you want to use the Sprint Racing Wheel's enclosed pedals.

And this leads to the product's only serious flaw—these pedals suck. The pedal unit is small and flimsy, is easily knocked over, and the pedals themselves are so tiny that it's a struggle not to press both at once. Fortunately, the levers on the wheel work quite well—because you'll definitely want to use these instead of the pedals.

As long as you can handle the compromise of either using no pedals or lousy pedals, the NASCAR Sprint Racing Wheel is a great first steering wheel. It's cheap, easy-to-use, and has the high-quality feel of more expensive ThrustMaster products. For those new to the driving game, it's a solid choice. CGW

COMPUTER GAMING WORLD

★★★★½

APPEAL: Newbie PC drivers looking for their first wheel.

PROS: Simple installation and calibration, small footprint, low price point.

CONS: Tiny pedals from hell.

Price: $79.95 (list price)
Manufacturer: ThrustMaster
(503) 615-3200
www.thrustmaster.com

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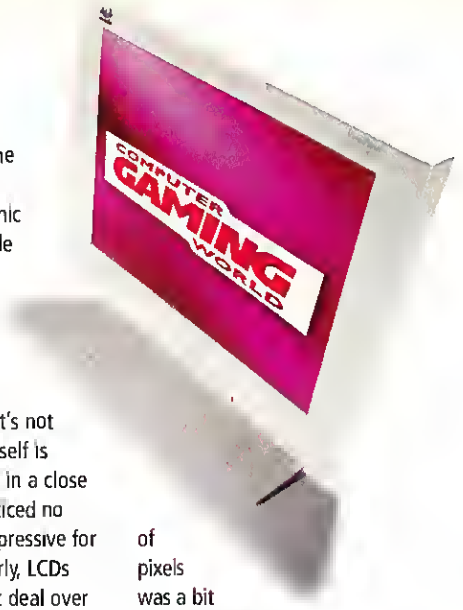

by Loyd Case

I've been skeptical of flat-panel displays for gamers, but this one made me a convert. I'm used to laptop displays that either shrink or get horribly distorted when the resolution changes, but this is no longer a problem. If you don't mind the somewhat small image and the nearly $1,000 price tag, the Viewsonic VP150 may be just the thing to grace your desktop.

COMPUTER GAMING WORLD

★★★★☆

APPEAL: People with cramped desk space and looking for a superb display

PROS: It's small, fairly bright, and very, very flat.

CONS: Expensive.

Price $995
Manufacturer Viewsonic
Walnut CA
(800) 888-8583

www.viewsonic.com

The VP150 is an analog flat-panel display that works with any graphics card. It's not a digital flat panel and thus doesn't require a special graphics card. There's none of the usual distortion associated with tube displays, such as pincushioning, misconvergence, or trapezoid adjustments. Setup is straightforward—unpack it, plug in the VGA and power cables, and turn it on. I did have to hunt for the cleverly hidden power switch, though. (It's on the right side.)

Although it's only a 15-inch display, it's a *true* 15 inches diagonally and somehow *feels* bigger. There's no tube to hide under the bezel, so it's really equivalent to a mythical 16-inch tube–based display. It's so flat that at first it appears concave if you're used to standard monitors. One concern with LCD displays in the past was the limited viewing angle. Viewsonic specs the viewing angle at 140 degrees horizontal, but it does start to fade a bit after being about 45 degrees off center. Still, for most uses that's not an issue. The picture itself is bright and steady, and in a close visual inspection, I noticed no dark spots—pretty impressive for a 1024x769 LCD. Clearly, LCDs have improved a great deal over the last several years.

I put the monitor through its paces by running QUAKE II and CIVILIZATION II through a number of different resolutions. I was very impressed. Even when running QUAKE II at 320x240, the VP150 displayed the image full screen. Image quality was very good, although the effects of interpolation of pixels was a bit disconcerting. At 640x480 and higher, there wasn't any noticeable image degradation. The maximum supported resolution is 1024x768 at 75Hz, but there's no noticeable flicker at that setting.

The VP150 is a great answer for tight desktops, provided you can afford it and can live with its 15-inch size. CGW

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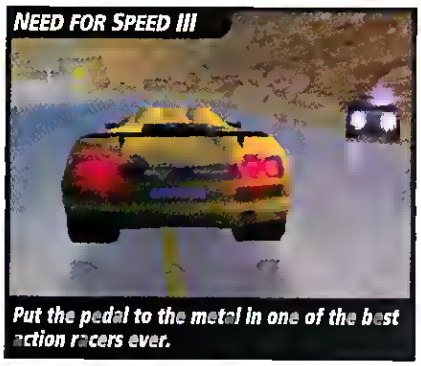


Put the pedal to the metal in one of the best action racers ever.

This Month CGW Editors' Choice Games Are Indicated in Yellow

Game	Rating	Page
Age of Empires: Rise of Rome	★★★★½	354
Axis & Allies	★★★★½	358
Caesar III	★★★★½	352
Combat Flight Simulator	★★★★½	330
Creatures 2	★★½☆☆	364
Entrepreneur: Corporate Expansion	★★★☆☆	360
F-16 Multirole Fighter	★★½☆☆	326
Front Office Football	★★★★½	348
Grand Prix Legends	★★★★½	340
Hexplore	★★½☆☆	336
Klingon Honor Guard	★★★½☆	316
Knights & Merchants	★★½☆☆	356
Madden 99	★★★★½	346
MiG-29 Fulcrum	★★½☆☆	326
Morpheus	★★★☆☆	334
NCAA Football 99	★★★★½	350
Need for Speed III	★★★★½	342
Pro Pilot	★★★½☆	332
Quake II: Ground Zero	★★★½☆	308
Rage of Mages	★★★☆☆	338
Return Fire 2	★★★½☆	322
Shogo	★★★½☆	312
Trespasser: Jurassic Park	★☆☆☆☆	318
War Along the Mohawk	★☆☆☆☆	362

The Game Genres

Action Games that emphasize fast gameplay over story or strategy

Adventure Games that require you to solve puzzles to move through a story line.

Classics/Puzzle Classics are old standbys such as *Chess* and MONOPOLY. Puzzle games emphasize problem-solving without requiring gamers to follow a story.

Role-Playing A subset of adventure games, these stress character development through attributes. The gameworld tends to be large, the plot less linear.

Simulations Highly realistic games from a first-person perspective, including flight sims and space simulations.

Sports A broad genre encompassing action sports games, such as NBA LIVE; strategic sports games, such as FPS FOOTBALL; and even driving games, such as CART PRECISION RACING.

Strategy Problem-solving and planning are the keys here. These games emphasize resource and risk management. Includes conflict-based sci-fi and fantasy games as well as construction programs like SIMCITY.

Wargames A subset of strategy games, these re-create historical conflicts from a command perspective. They may be tactical, operational, or strategic.

How Do We Rate? We review only finished products, not prerelease versions. The ratings are as follows:

★★★★★ **Outstanding** The rare game that gets it all right. A must-play experience.

★★★★☆ **Very Good** Worthy of your time and money, but there are drawbacks.

★★★☆☆ **Average** Either an ambitious design with major flaws, or simply vanilla.

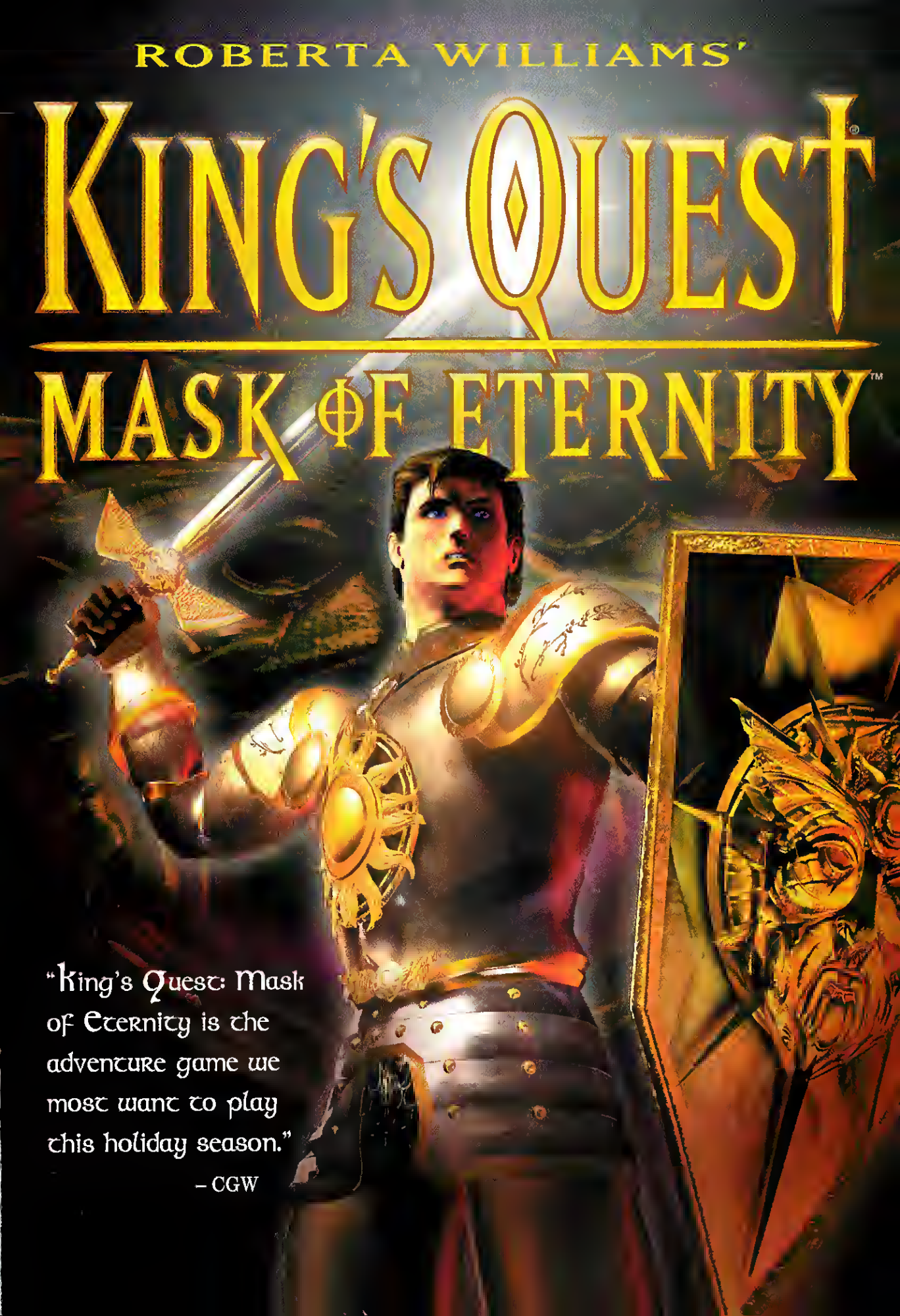
★★☆☆☆ **Weak** Seriously lacking in play value, poorly conceived, or just another clone.

★☆☆☆☆ **Abysmal** The rare game that gets it all wrong. Pathetic. Coaster material.

ROBERTA WILLIAMS'

KING'S QUEST®

MASK OF ETERNITY™



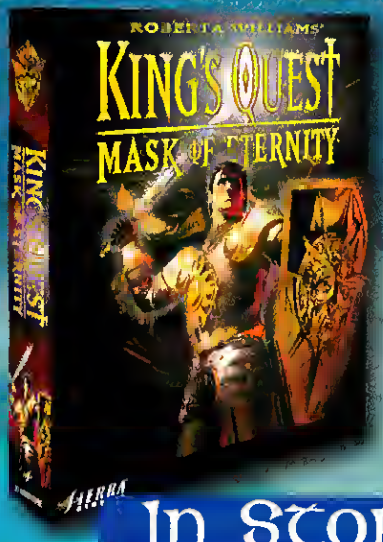
"King's Quest: Mask of Eternity is the adventure game we most want to play this holiday season."

– CGW

Seven Worlds, Three One

"The series is in position to reinvent the adventure gaming genre...again."
– Gamespot.net

Master storyteller Roberta Williams brings her best-selling King's Quest series into the next millenium with a revolutionary blend of technology, gameplay and storycelling. You alone have been chosen by fate to make an epic journey through seven amazing lands to recover the shattered pieces of the Mask of Eternity and restore light to a darkening world. Succeed, and honor and glory will be yours. Fail, and the forces of evil will reign supreme...for eternity.



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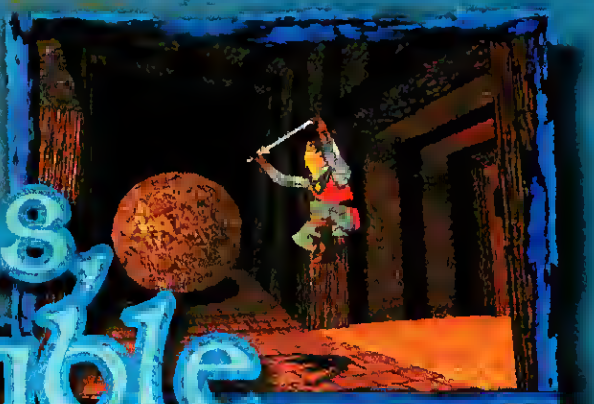
Revolutionary 3d action engine gives you complete freedom of movement.

dimensions Indescribable Adventure



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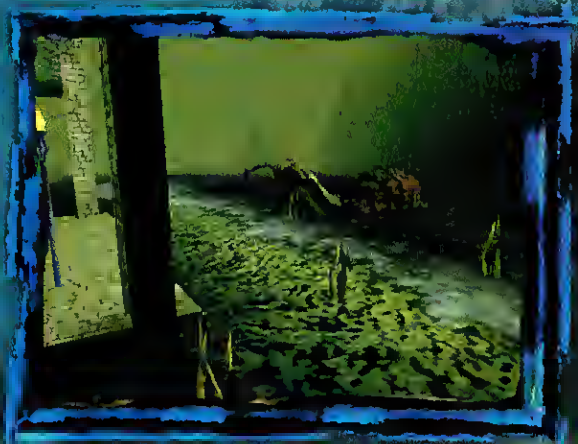

Experience all seven worlds through either a 1st- or 3rd-person point of view.

Interact with dozens of unique characters who will guide you in your quest to recover the lost pieces of the Mask of Eternity.

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Instant Action – Your excitement jumps to full afterburner in *Falcon 4.0*'s Instant Action. Instantly you're in combat up to your eyeballs, facing an endless supply of bandits. Even if you're new to flight sims, *Falcon 4.0*'s simplified radar and flight model will let you get your bearings and have a blast at the same time. When you're ready for greater challenges, there's plenty of room to grow with our full avionics suite and accurate flight model. *Falcon 4.0*'s AN/APG-68 radar, with its dozen modes and submodes, and the HARM Targeting System make *Falcon 4.0* the most realistic combat sim on the planet. Of course, our stunning graphics and special effects just make it all the more believable. In a hurry? Instant Action – no waiting.

NEXT TIME

"While the hard-core flight-sim crowd will appreciate the systems realism and the depth of the campaign, the graphics environment should blow away gamers of all types."

-Denny Atkin
Computer Gaming World

"Flameout landing...keep the runway between 11-17° in the HUD...airspeed 220 knots. Don't forget to compensate for the winds. Is this *Falcon® 4.0* or the real F-16? It's both – it has to be real to be *Falcon*."

-Pete Bonanni
F-16 Pilot

UPGRADE TO

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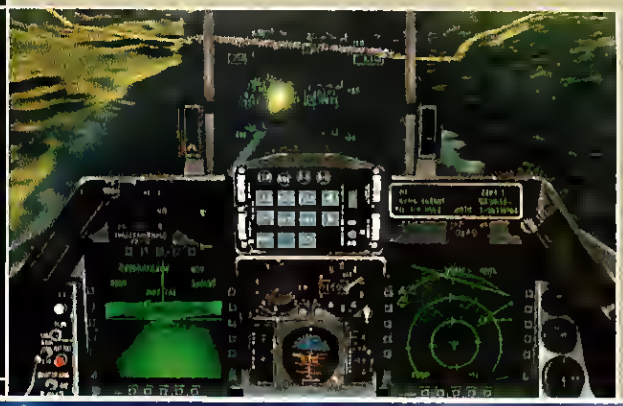
Tactical Engagement – Tactical Engagement is *Falcon 4.0*'s mission builder, the most sophisticated in the known universe. We used it to provide you with dozens of training missions, covering weapons, avionics, flight dynamics – everything you need to become a combat ace. But you can use it to build your own custom missions. You set up and control *everything*, from the number and placement of bad guys to the specific attack profile of your wingmen. Your missions can be as simple as navigation training or as complex as a multi-objective campaign. Share your missions with others over the Internet. Or better yet, *play* your missions over the Internet. However you use it, Tactical Engagement trains you to stay alive.



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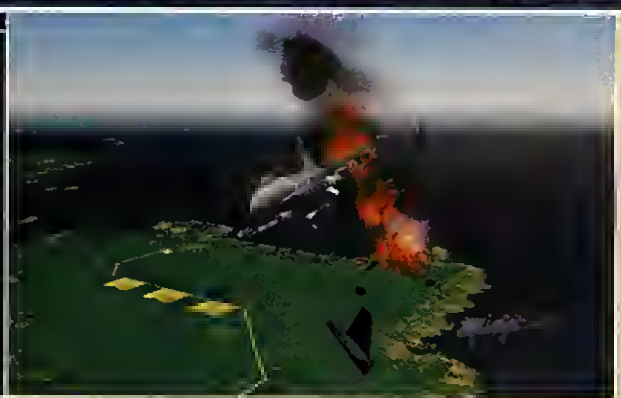

T TEEN ESRB

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HASBRO Interactive

MICROPROSE
www.microprose.com

Go to #230 @ www.computergaming.com/infolink

Multiplayer: 1, Single-player: 0

Rogue's New QUAKE II Pack Is Better With Friends Than Alone

by Thierry Nguyen

You gotta love a severed head. Especially the severed head of a Tank Commander, one of the mightiest foes in the QUAKE II bestiary. Now, before you rush off to stuff and mount that bad boy for proud display in your den, there's something you'll need to do—pick up that bloody melon and use its lifeless eyes to get past a retinal scanner in the Stroggos base that you've infiltrated. That's what I call good, clean fun, and it's just one of the cooler things you get to do in the new QUAKE II MISSION PACK: GROUND ZERO.

Smart Monsters= Deadly Monsters

The biggest improvement to the single-player game is the AI. Rogue Entertainment took QUAKE II's core AI and tweaked it to make enemies more effective. For one thing, enemies learn how to use terrain. Berserkers, formerly afraid of heights, have conquered their sense of vertigo and readily descend on you whenever they can. Improved enemy pathfinding means you can no longer count on them getting stuck around boxes or corners anymore.

Another improvement to the AI is its threat detection. The enemies have a better sense of how to avoid damage—best illustrated when you use the Tesla Mine, one of the new items. After you deploy a Tesla Mine, it's set to shoot a lightning-type bolt at any nearby being. Enemies who survive the initial blast learn to destroy the mine and any more that are created afterward. You can use this to your advantage: Drop a Tesla Mine in a narrow hall near a Berserker. He can't destroy it and lacks the room to maneuver around it. So he runs around confused, letting you kill him while he's spinning.

As in the previous Mission Packs, some of the enemies from the original QUAKE II are buffed up for this release. In addition to the AI tweaks, Medics now use hyperblasters, and the Daedalus is an Icarus with a better gun and a power shield.

There are two all-new enemies, as in THE RECKONING. Turrets are a tough lot, firing either lasers or rockets with pinpoint accuracy. On top of that, they require a few direct rocket hits to take down, and they pop up at the most inopportune times. The Stalkers are a creepy, spiderlike enemy that can easily dodge most projectile weapons by hopping from the floor to the ceiling. Their trickiest feat is playing dead, so you need to gib them. These pests are pretty much the coolest enemy in the game.

DIRTY FIGHTER With his rail gun, machine guns, and grenade launcher, it almost isn't fair that the Carrier also has nasty Flyers that he can launch to kill you.

SHOCK THERAPY An improved AI means this bad guy will learn to shoot Tesla Mines—that is, provided he lives through this attack by one of them.

Reach Out and Kill Someone

The rest of the improvements are tuned specifically for multiplayer (see "Multiple Mutilation" sidebar for specific goodies). For one thing, there are three all-new weapons. The first is a chain saw, à la DOOM. In single-player mode, it's effective only against the soldiers, but it makes for a nice "I have bragging rights" kill during a multiplayer game. The ETF Rifle is essentially a nail gun that shoots explosive-tipped flechettes. It's pretty mediocre in the single-player game but shines in a DeathMatch; its armor-piercing rounds completely ignore armor and pound at your enemy's health, weakening the tactic of getting 200+ armor. The Plasma Beam, which shoots a concentrated light beam, is the last new weapon and the best of the lot. It's similar to a lightning gun although it chews up cells a bit slower than its QUAKE inspiration and has unlimited range.

One gun that didn't quite make the cut was the Disruptor (the negative-light gun), which was demonstrated in preview versions of the game. However, Rogue has said that the Disruptor is still being tinkered with and will probably be offered as a free download once the designers work out the kinks. For now, the only place you'll see the Disruptor is in the hands of the game's final boss.

The other additions are really modifications. There's the aforementioned Tesla Mine as well as

COMPUTER GAMING WORLD

★★★½☆

APPEAL: QUAKE-heads who lean more toward multiplayer and just can't get enough.

PROS: Improved enemy AI, great additions to DeathMatch

CONS: Level design is a bit uninspired, single-player generally feels like more of the same, multiplayer levels are too big

DIFFICULTY: Intermediate

REQUIREMENTS: Pentium 90, Windows 95, 16MB RAM (24MB for GLQUAKE II), 150MB hard-drive space, 4x CD-ROM, DirectX5-compatible sound and video cards, original QUAKE II.

3D SUPPORT: OpenGL.

MULTIPLAYER SUPPORT: TCP/IP and LAN (2–16 players).

Price $26.95
Publisher Activision
Santa Monica, CA
(310) 255-2000

www.activision.com

KILL BUGS DEAD The spiderlike Stalkers will play dead. So make sure you blow them to tiny bits lest they play dead and attack you once your back is turned.

IT SLICES, IT DICES The best new weapon, the Plasma Beam, is perfect for neatly cutting through enemies, such as the Medic Commander.

MORE GUNS, LESS FUN While the Turrets are a nice addition to the Stroggos world, there are too many of them in most of the levels. The result is a less enjoyable game.

proximity grenades, which made an appearance back in SCOURGE OF ARMAGON. One nice detail about these is that they explode when placed near a respawn point in multiplayer, so you can't get any cheap frags that way.

The Mission Pack includes 14 levels designed for multiplayer. They're generally well designed, but have one common flaw: They're too big. You can tell Rogue had the Internet crowd in mind by creating maps that cater to crowds of 8–16 players. It's a nice thought but impractical for those on a local network with a few buddies. You spend too much time just trying to find each other. Despite that, levels such as The Razor's Edge, The Road to Nowhere, and Rogue's own version of The Edge make for fun fragfests.

Here We Go Again

The single-player game could use some work, though. For one thing, it's a bit too much QUAKE II. That is, you're still running around various warehouses, hangars, and storage depots while shooting up the populace. With textures that are generally the same as those in the original QUAKE II, the game gives you a "been there, done that" feeling.

The design itself is basically equal to QUAKE II, although it's less linear, since you must run back and forth among the various levels within each unit. There are some particularly cool moments in the levels, including a secret level in which you ascend a mine shaft as it fills with rising lava. Level triggers are used for maximum effect in this level. Another cool moment is when you don a soldier uniform and get to wander around a single level incognito. And then there's that lovely severed head.

But these cool single-player moments are the exception, not the rule. In general, triggers are used for average effects, such as falling columns or air strikes. Also, the new turrets are overused. After their first appearance, the level designers seem to pack them in wherever they can. Everywhere you go, one just pops open from the wall and starts blasting away. It gets tiresome after a while.

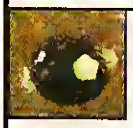
The single-player game does have a highlight—the devious bosses. The Carrier seems to have a bit of the STARCRAFT influence since it conjures smaller Flyers to support it—even though it's packing machine guns, a rail gun, and a rear-mounted grenade launcher. The Black Widow is even worse, resembling the classic Cyberdemon from DOOM, with a more sinister form and arsenal to boot.

GROUND ZERO is kind of a mixed bag. QUAKE II has been around, and this pack doesn't deliver as profound a change as Rogue's DISSOLUTION OF ETERNITY pack did for QUAKE. It has a solid, if uninspired, single-player game and some good multiplayer enhancements. The hard-core QUAKEhead who downloads everything may be disappointed. But overall, this is a decent pack for the middle-of-the-road QUAKE II fan. CGW

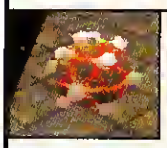
Thierry "Scooter" Nguyen is also playing INDEPENDENCE WAR, HALF-LIFE: DAY ONE, SHOGO: MOBILE ARMOR DIVISION, and STARCRAFT.

Multiple Mutilations

Rogue has added quite a few items to the DeathMatch menu. Here's a quick guide to what these items do:



Defender Sphere This sphere gives support fire via a modified blaster and absorbs half the damage from any attack directed to you.



Vengeance Sphere When your heath drops to 25 percent, the Vengeance Sphere fires on your attacker enough that the attacker reaches that 25 percent figure.

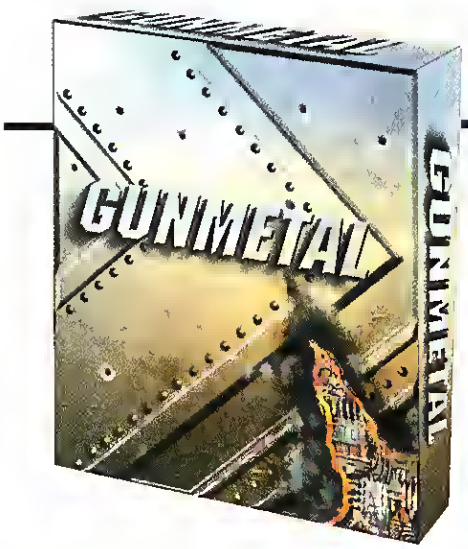
Hunter Sphere The best one of the lot, it can also be called the Mutually Assured Frag Sphere. If you die while this is active, the sphere homes in and obliterates whoever just killed you. Revenge is sweet, indeed.

Antimatter Bomb The "Up yours, everyone!" nuke. Drop it, and it starts beeping; after about five seconds, it explodes, heavily damaging—if not outright killing—anyone within the blast radius. Best used in a crowded room where people may not notice the beeping.

IR Goggles They give a reddish tinge and make items, such as weapons, power-ups, and enemies, bright red. It's usefulness is limited and is chiefly good for spotting campers who hide in dark corners.

Doppelganger This is an improvement on the DUKE NUKEM 3D model. Not just a mere replica, this clone image will instantly kill anyone who attacks it.

Have You Driven An Urban Assault Vehicle Lately?



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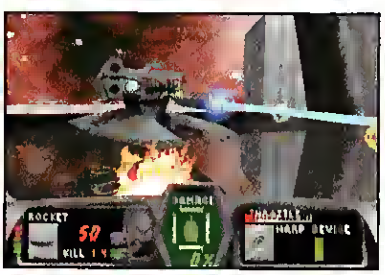

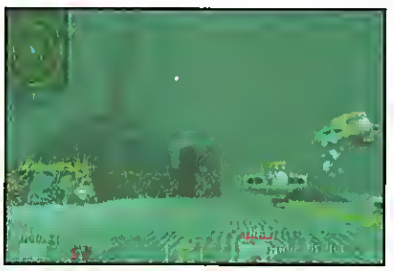

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TRI SYNERGY

Let's Go Shogo!

Monolith's Slightly Premature Anime Shooter Is One Patch Short of Mightiness

by Thierry Nguyen

Imagine the image of massive, mighty *mecha* wreaking destruction and carnage to the sound of a young woman singing an upbeat, Japanese pop song. Chances are you'll think one of two things: 1) What was the game design team smoking? or 2) Boy, Monolith really captured the flavor of anime! Regardless of your reaction, you're bound to find SHOGO: MOBILE ARMOR DIVISION to be a truly unique shooter.

FEEL THE HEAT The visual effects for explosions and smoke is consistent with the anime style of mecha fighting.

Tenchi Sanjuro in Love

Unlike a lot of first-person shooters, SHOGO's single-player storyline matters. It's no filler summary like in UNREAL or QUAKE, it's more like JEDI KNIGHT's story in how it blends tightly with the gameplay. The anime-inspired back-story is enormous, involving rebellion, terrorism, and really big robots. And like good anime, it features several characters caught in a tangle of relationships. A little background. You're currently dating Kathryn, the sister of your presumably dead girlfriend, Kura. Both are the daughters of your commanding officer, Admiral Akkaraju. Got it? Anime fans will appreciate the parallels to the Hikaru/Misa relationship in *Macross*.

The rest of the story unfolds in cut-scenes. Unlike JEDI KNIGHT, they're not FMV filler populated with bad actors; these scenes use the in-game engine and voiceovers to sustain a consistent look throughout the game. This allows more cinematic scenes to be packed in the levels (not just in between), and that's not counting all the dialogue that gets displayed at the top of the screen. Even when loading levels, you get to read nice, concise paragraphs summarizing the current situation.

LithTech: Power in a Pretty Package

One thing for which Monolith deserves congratulations is for creating a good, *scalable* 3D engine. My Pentium 166 runs QUAKE II only adequately and UNREAL just chokes it. So it was refreshing to see SHOGO run fairly fast in medium detail (which is higher than QUAKE II but lower than UNREAL). The biggest boost was seeing it run fast and fluidly on a Pentium 133 acting as a deathmatch server. Sure, it was low detail, but even so, there were neat visual tricks.

You may need to adapt to the character models because they look more like *Speed Racer* than QUAKE II, but it was nice to see the level of detail in action (seeing the model get more complex as you get closer to it). Lighting (both colored and dynamic) and shadows are well done, and even the chrome on your guns looks slick.

FUN WITH FRIENDS Occasionally, an AI buddy will help you take on the bad guys. Too bad you can't control them.

Full Metal Jacket, Shoes, and Pants

On foot, the gameplay is a lot like that of your traditional FPS. It's when you get into Mobile Combat Armor (MCA) that the game takes on a different feel. On foot, you've got your standard John Woo pistols, machine guns, and rockets, but the MCAs have explosives, explosives, and more explosives. Their arsenal can best be described as "What flavor do you want your rocket in?" You have weapons that spew out "drunk" missiles, mines that attach themselves to their target, and even an energy weapon that has the same effect as a nuke. The one flaw with the weapons is that they're a bit unbalanced by a sniper rifle that reloads too fast—both in MCA and on foot. The coolest addition gameplaywise is the Critical Hit system, which rewards you for hitting a weak spot by both dealing more damage and boosting your health by 25 percent.

Not only are the weapons hefty, so are the MCAs. You can feel the

COMPUTER GAMING WORLD

★★★½☆

APPEAL: Anime fans, action gamers looking for a different style of shooter

PROS: Good balance between performance and visuals; great anime feel; well done weapons; great levels when you're in an MCA.

CONS: Shipped with semibroken AI and lackluster multiplayer; weapon balance needs tweaking

DIFFICULTY: Intermediate

REQUIREMENTS: Pentium 166 or better Windows 95, 32MB RAM, 80MB hard-drive space, 4x CD-ROM, DirectX6-compatible sound and video cards.

3D SUPPORT: Direct3D

MULTIPLAYER SUPPORT: TCP/IP, LAN, and serial connection, all through DirectPlay (2–16 players)

Price $49.95
Publisher Monolith Productions
Kirkland, WA
(425) 739-1500

www.lith.com

PUT ON YOUR LEAD SUITS The weapon effects, such as from this nuke, are much more visceral and aural than in UNREAL.

size as you stomp on foot soldiers and tanks in the city levels. This is anime, so MCAs move like humans, à la the *Macross* Valkyries, not like the hefty tanklike motions of *BattleTech*. And like Valkyries, these MCAs can transform between bipedal and vehicular mode. You can pilot four different ones, which vary in speed and durability (see the "Multi MCA Mayhem" sidebar).

Also, the variety of enemies is better in the MCA levels. On foot, you essentially have only two types of enemies: armored and unarmored. At least the MCA levels give you the foot soldiers, different varieties of MCAs, and even tanks and rocket launchers.

The level design is pretty straightforward, focusing on playability and practicality instead of flashy architecture. There isn't the awe-inspiring architectural eye candy of UNREAL, and the way the levels are laid out feels somewhat more realistic, although there are exceptions: Sometimes you wonder why there are so many *really* big buttons for the MCAs to push.

Shogo a No-Go

This is where things get a bit ugly. For one thing, the SHOGO AI isn't really broken, it's just *really* uneven. The general AI is similar to QUAKE II and even Monolith's previous shooter, BLOOD, in that the AI has really good aim and itchy trigger fingers. Enemies will chase you and alert others to your presence. The catch is that there are times when the AI attacks *only* if injured. Unfortunately, a bug slipped through. A significant number of enemies were flagged with this idle mode so, at least three to five times per level, you can stand five feet in front of someone and kill without retaliation. Or you can shoot an enemy and get no response from the enemy right next to him. Gameplay isn't completely FUBAR, but it tends to be easy.

HIGHWAY ROBBERY The city levels let you flex your mechanical muscle. If only the on-foot levels would get out of the way of the more enjoyable MCA ones.

Also, I got to play deathmatch...over a LAN. I couldn't get an Internet game running, but early signs are that Internet games will be like pre-QUAKEWORLD QUAKE, in that it's a lag-filled fragfest. Only straightforward deathmatch is available, and while it doesn't sound thrilling, I found myself surprised by how much fun it was (in an MCA). On foot, QUAKE is still king, but the MCAs give you great weaponry and the toughness to dish it out and take it.

Monolith has taken these issues to heart and is promising a point release that will clean up the AI and make the multiplayer game more efficient. What this means is that SHOGO was slightly rushed to stores. Other than the technical issues that are being covered by the patch, I only have minor issues with the game. What we ultimately have is a game that could have gotten an Editors' Choice had it been tested thoroughly. By the time you read this, however, the patch should be out—assuming it's not vaporware (but I have some faith in Monolith). So, if you're willing to download a patch, you'll find SHOGO a shooter filled with lots of style, substance, and charm. Those without Internet connections or who just don't like patches will find a game that could have been great, but was premature in birth. CGW

Thierry "Scooter" Nguyen watches a whole lot of anime with mecha and wants someday to pilot either the EVA-01 or the VF21 Valkyrie.

Multi MCA Mayhem

Here's a quick guide to the different MCAs and how they handle for multiplayer purposes.

Akuma

The fastest but frailest of the four, this is the MCA of the lurking one. If you favor hit-and-run tactics and can reasonably dodge incoming fire, you may like the Akuma.

Enforcer

One of the midline MCAs, this is the basic, all-purpose MCA for the player who isn't picky. If you want a mecha that does everything well without any of the tradeoffs that come with doing one thing extremely well, this is the one for you.

Ordog

The other midline MCA, but with the advantage of a faster vehicle mode than the Enforcer. The Enforcer's vehicle handles better, but the raw speed of the Ordog's vehicle rivals the Akuma's. If you want a midline MCA that can make quick getaways, get this one.

Predator

This is the big, hefty MCA. It's slow, but it can take more punishment than any of them. If you value raw durability over speed, you can't go wrong with this hulking menace.

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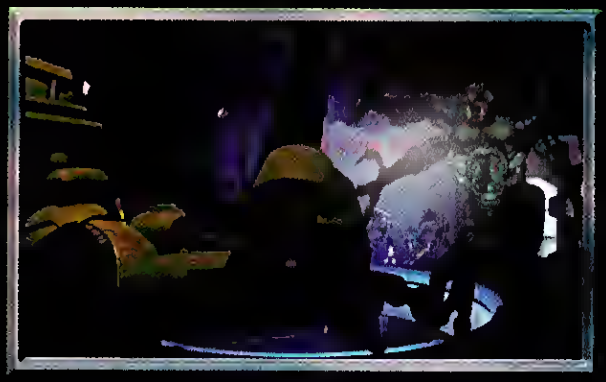
e in the search for life. Only one will survive.



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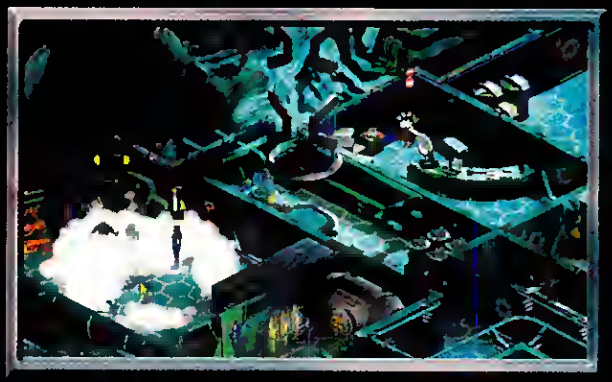

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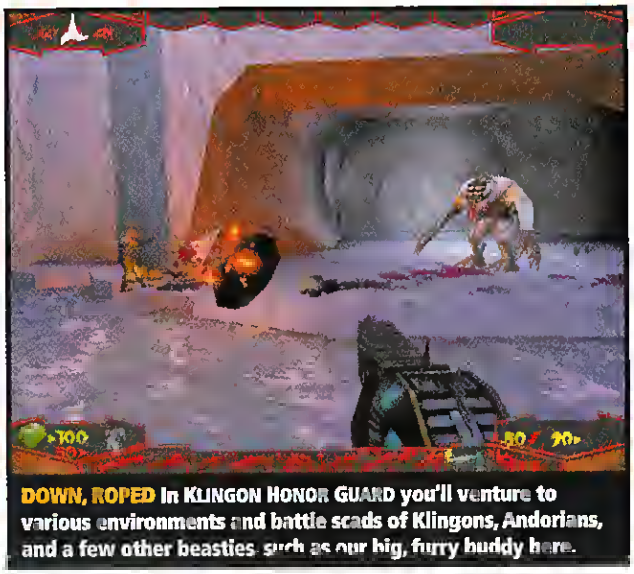
Way of the Warrior

Joining the Klingons Isn't Quite the Honor It Should Be

by Elliott Chin

Klingons and 3D shooters are a match made in Skorvakor, right? After all, who can argue with a 3D shooter based on the violent Klingons? The best of the breed are the Klingon Honor Guards, highly trained and tasked with the protection of the Klingon High Council, but recently, treachery has entered the ranks of these once incorruptible warriors. With the Klingon High Council all but destroyed by an assassin's bomb, the Honor Guard has sworn a blood oath to exact swift vengeance on the masterminds of this traitorous plot. As the epitome of Honor Guard training, it's your job to hunt down the ringleaders of the plot for your Honor Guard mentors.

It sounds like the perfect setup for a stellar first-person shooter—full of gore, Klingon expletives, and charred body parts—but MicroProse's relative inexperience in 3D shooters hobbles what might have been an excellent action game.



DOWN, ROPED In KLINGON HONOR GUARD you'll venture to various environments and battle scads of Klingons, Andorians, and a few other beasties, such as our big, furry buddy here.

First Contact

KLINGON is a game that gets better the more you play it. Forget the cheesy slide show intro and the first two levels. It's only once you get off the Klingon homeworld of Qo'noS and start chasing Gowron's would-be assassins across space that things get interesting. You'll trace the killers to the icy caverns of penal colony Rura Penthe, which, in contrast to the drab walls and textures of the first levels, is bright and eye-catching. There's even a prison riot there to spice things up, although for all the noise generated by the riot it could have been a lot bigger.

Later levels include the pleasure spot Qualor 2, where you'll see some sparsely populated bars and clubs, an Andorian space station, a polished Andorian tradeship, a crimson-hued Klingon cruiser, and the ruined moon of Praxis. The level design on the later levels is pretty good, with hangar bays in the space station and sickbays and warp cores aboard ships. The story and briefings that propel each mission are well thought out, but unfortunately, almost all the missions are marred by constant key hunting.

KLINGON calls its keys by various names—genetic key, digital palm print, holographic retinal projector—but they're all keys nonetheless. Most of the time, I was running through levels trying to find that one, tiny key hidden among similar textures to open that last door. While some levels were nicely designed with logical paths toward mission objectives, others were confusing. I lost lots of time trying to figure out what to do on the space station level since there was no indication that I could walk off the path of the outer hull and scale the steep walls of the station to a rooftop elevator. Many times, because the computers or download terminals all looked the same from room to room, I had no idea I was in the mission objective room until the mission-ending screen popped up. One other thing that disappointed me was that the Fek'lhr mission has a time limit courtesy of a ticking bomb; yet I was still alive after the counter ran out.

Know Your Enemy...and Your Bat'leth

In KLINGON most of what you fight are Klingons and Andorians in a limited number of guises. Some Klingons look better than others, but they all just become cannon fodder toward the end of the game. There was no sense that I was really ramping up toward more powerful enemies (like the way I moved from scrags to death knights to shamblers in QUAKE). I can forgive the fact that all the Klingons and Andorians looked the same since there isn't supposed to

SHAKE THAT BOOTY These Andorians are dancing in one of the clubs in Quaior 2. It's a cool effect, but the clubs are too sparsely populated.

COMPUTER GAMING WORLD

★★★½☆

APPEAL: *Star Trek* fans hungry for blood; 3D shooter fans looking for a more fleshed-out story and atmosphere.

PROS: Excellent premise; gets better as you progress; some good visual effects; some well-made levels; good tie-in between missions and story.

CONS: Uneven level design; too much key hunting; not enough variety in monsters.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 166, Windows 95/98, 32MB RAM, true-color graphics for 24-bit color, 4x CD-ROM, 250MB hard-drive space, supports DirectX-compatible sound card.

3D SUPPORT: 3Dfx, PowerVR.

MULTIPLAYER SUPPORT: LAN (2–8 players), Internet (2–4 players).

Price: $49.95
Publisher: MicroProse
Alameda, CA
(510) 864-4550

www.microprose.com

DON'T GO INTO THE LIGHT The particle dispersal cannon is the BFG of KLINGON HONOR GUARD, and it's strong enough to scare off our friendly neighborhood Ro'Ped.

be much variation in military dress, but it would have been nice if they had ultra-elite guards or fantastic alien monsters. The Nausicaans (bothersome weaklings) and Lethians (impressive, ethereal attackers) do spice up the action.

Another disappointment is the lack of large, menacing beasts—aside from the gargantuan Ro'PeD. This rock-hurling brute is imposing, but he only appears on Rura Penthe. Nothing quite his size or demeanor appears for the rest of the game. The other non-humanoid creatures are the guard beast, the Targ, and the Tar Chop. What are they? A white dog, a Klingon pig, and a scorpion. Yawn. In fairness, the water creatures are very nice—quick, sleek barracudalike monsters with rows of teeth and a tendency to attack in packs. Enemy AI isn't that great. Some enemies just stand still, and I had to push them before they would attack.

There are some winners and some losers in KLINGON's formidable arsenal. The disruptor pistol and rifle are serviceable, but look utterly uninspired—an unfortunate by-product of MicroProse's obligation to faithfully represent *Star Trek* weaponry. I switched to the assault disruptor as soon as I acquired it and kept using it for most of the game. Its secondary-fire mode disintegrates opponents, turning them into red ashes. The ding pach spits a spinning disc that chews apart its target before returning to the gun. Very nice. Strangely, the Sith har blaster, a late game weapon, was effective at taking out Klingons with one shot but couldn't even dent certain tar chops. The final weapon is a BFG-like cannon that can also create a mini black hole as its secondary attack. Two melee weapons round out your arsenal and are among the cooler weapons in KLINGON.

DIE WITH HONOR This curved blade is the Bat'leth, a vicious melee weapon that can also be thrown.

Engine Ups and Downs

The graphics, like everything else in this game, are a mixed bag. Beginning levels are boring and monotonous, but the later levels—from Rura Penthe to the Andorian ship to the Klingon cruisers—are much more impressive. Most enemies look good, but get close to them and you'll find they aren't anywhere near as detailed as the beautiful creatures in UNREAL. MicroProse says it opted for this lower texture detail to boost frame-rate. For the most part the game runs along at a nice clip, but in some areas the game would chug along before coming back to full speed. This was on a Pentium II 400 with 64MB of RAM.

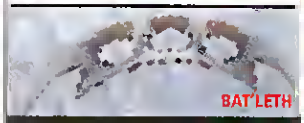
Some of KLINGON's special effects are very nice, most notably the transparent Lethians and their translucent balls of blue energy. Similarly striking is the shimmering energy in the various warp cores and clear tubes throughout the levels. Nearly as impressive are the death scenes for zero-G kills—zap an enemy and he'll float away, bubbles of blood spinning around him. However, the explosions aren't spectacular and the blood is too blurry. The detail on objects also suffers greatly at extreme close-ups. I encountered some clipping problems, the most egregious being a dead Klingon that spun backward and became halfway lodged into a wall.

Multiplay isn't as fast as in QUAKE II, but level design for the multiplayer levels is pretty good and the frame-rates aren't too bad. Still, before rushing into KLINGON deathmatch, remember that KLINGON uses the UNREAL engine, so look for the latest patch.

MicroProse was onto something with KLINGON HONOR GUARD, and the end result is a fairly good game with a split personality. The great premise starts out slowly but improves the longer you play. Some weapons and monsters aren't too hot, others are pretty cool. The problem is that it could have been much better. Still, if *Star Trek* and shooter fans can forgive the game's plodding start and key-hunting mission design, KLINGON HONOR GUARD could provide a rewarding, if uneven, experience. **CGW**

Elliott Chin has read almost every Star Trek *book published, but still likes classic* Trek *the best.*

Basic Weapons Training



The dagger and Bat'leth fly in an arc. Remember this when using them as throwing weapons. Aim high and only throw at medium ranga to short range.

Tha disruptor rifle, assault disruptor, and grenade launcher all require reloading each time you switch between primary and secondary fire modes. Even when you return to a weapon after putting it away, it won't default to primary firing moda but rather will remain at the setting you left it in.

The assault disruptor is a powerful weapon, but has a short range. Its more powerful secondary attack has an even shorter range. For long-range sniping, use the secondary attack of the disruptor rifle or the rocket launcher (shown below).

Two undocumented power-ups you'll find are the blood wine and bowl of gagh. Blood wine increases your attack damage, and gagh gives you 100 bonus health.

Veloci-Craptor

TRESPASSER Is Knee-deep in Something and It Sure Isn't Fun

by Robert Coffey

As bad as genetically re-engineering dinosaurs turned out to be in *Jurassic Park* movies, TRESPASSER definitely tops them in the "good idea gone horribly wrong" department. A first-person shooter that desperately wants to be an adventure game, TRESPASSER is an ugly mish-mash of uncertain identity, crippled by ill-conceived ideas, a technically promising engine that screws up gameplay, and more horrendous glitches than 10,000 men could shake 10,000 sticks at.

Be Scared, Be Very A-scared

The game's premise is simple. You, as a young woman named Anne, find yourself stranded on a dinosaur-infested island and quite reasonably decide you'd be better off back home. You explore the island, searching through the rubble for a phone, a radio, anything to contact the outside world.

Gamers expecting a first-person shooter with T-Rex's and Raptors providing the targets will be the first (but definitely not the last) to be disappointed, since TRESPASSER is no run-and-gun shooter. Instead, it tries really hard to be an adventure game, emphasizing puzzle solving and exploration. It's not that either. So what is it? It's thuddingly dull and totally frustrating, that's what. Operating under the misguided notion that an action-packed, thrilling shooter was something to be avoided, Dreamworks barely sprinkles dinosaurs across the gaming landscape, keeping your weapon supply woefully low so that often the best course of action is to avoid action. Doesn't that sound like fun?

This wouldn't be so bad if TRESPASSER lived up to its self-deluding high ideals and served up loads of challenging puzzles in a rich and fascinating environment that rewarded exploration, but it doesn't—some levels are puzzle-free. Most of the puzzles involve stacking boxes into impromptu staircases so you can reach higher areas. When a new puzzle does crop up—like lobbing stones to make a teetering plank create an accessible ramp—expect to do it at least three times in a row.

Engine Trouble

Solving the same puzzle repeatedly is bad enough, but it's even more maddening thanks to the game's engine and interface. A tangle of keyboard commands lets you raise and lower your arm as well as bend and turn your wrist. All these options do is make aiming that occasional gun less precise, thus ensuring a quick death by dino. And while the physics-based engine is commendable in creating an environment full of objects to be pushed and picked up (but not destroyed), it makes dealing with those endless box staircases a repetitive grind—boxes fall every time you breathe on them.

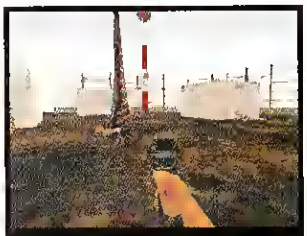
The engine is also slow. Movement is never fast, but once a few objects or creatures start filling up the screen, man alive, does the frame rate tank. And this is on a Pentium II 300 with 3D acceleration and scads of RAM—who knows what it'd be like on the game's alleged minimum system (a Pentium 166). This slowness is especially aggravating when you're traversing a huge enclosure, futilely searching for a white keycard.

The list of bad design elements and botched technology goes on and on. Collision detection is a joke, letting your character get snagged on walls and in bridges, and letting dinosaurs get tangled in fences until they die. Since you can only store one item on your body, you must always carry a gun in your hand, further bogging down the frame-rate. Your character can lift crates with one hand but can't make simple jumps and leaps. You die frequently, but there's no quicksave or quick-load option. Level transitions are seamless, but you lose all your weapons when a new level loads. Dinosaurs may inexplicably freeze and not respond.

With more problems too numerous to list, the brevity of the game is most noteworthy. Not because it's the most egregious gaffe, but because its mere eight levels ensure that anyone unfortunate enough to play TRESPASSER can make the hurting stop sooner than most games. CGW

Robert Coffey has actually dreamed about playing TRESPASSER. He's not sleeping much.

NICE RAPTOR, PRETTY RAPTOR With obliging dinos that occasionally freeze in their tracks, TRESPASSER is a better prehistoric petting zoo than it is a game.



HEAD IN THE SAND Bottom of the barrel collision detection will stick you to walls and dump this dead dinosaur underground.

COMPUTER GAMING WORLD

★☆☆☆☆

APPEAL: Gamers who value tedium and frustration over gameplay and fun.

PROS: Physics-based engine isn't too shabby; it's mercifully short.

CONS: Game engine complicates play; ridiculously high system requirements yet is still sluggish; convoluted controls; graphic glitches; simplistic puzzles/key hunts.

DIFFICULTY: Intermediate

REQUIREMENTS: Pentium 166, Windows 95/98, 32MB RAM, 120MB hard-drive space, 4x CD-ROM, 1MB video card, supports Windows-compatible sound card

3D SUPPORT: Most Direct3D cards

MULTIPLAYER SUPPORT: None

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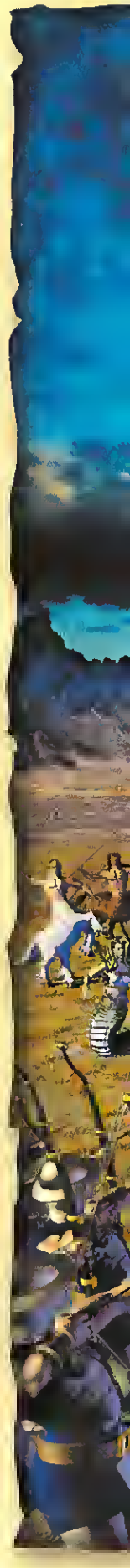

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Third Time's a Charm

You'll Need a Little Help From Your Friends to Really Enjoy RETURN FIRE 2

by Scott A. May

One of the first great 32-bit console games gets a 3D multiplayer makeover with the release of RETURN FIRE 2 from Ripcord Games. Sure, its mix of thunderous action and strategy are simplistic by today's real-time strategy standards, but hey, that's exactly the point.

Led by veteran game designer Baron Reichart K. Von Wolfsheild, Silent Software's original RETURN FIRE became something of a cult hit on both the 3DO and PlayStation back in 1996. Set amid a wartime motif, the game's premise is about as fundamental as they come—be the first to capture your opponent's flag and return it to your base camp. It was simple, explosive, and very addictive. It was only a matter of time until Von Wolfsheild and company caught the 3D bug.

ROCKY MOUNTAIN DIE RETURN FIRE 2's New airborne units let you engage in adrenaline-pumping dogfights like these.

In RETURN FIRE 2 the basics of gameplay remain the same; only the eye candy has changed. Actually, that's not entirely true. A lot of important things have been expanded, tweaked, and added to the game, beginning with its amazing assortment of multiplayer modes.

The More the Merrier

Now up to four players can compete on a single machine, dividing the screen into as many as four active sections. This quartered display is surprisingly clear and smooth, dipping the frame-rate minimally, but you'll probably need a 19-inch monitor to keep your eyes from bugging out. Contrary to the diagram on the game's opening menu, two-player split-screen games are divided horizontally, not vertically. Other new multiplayer options include battles of up to 16 people over a LAN or the Internet (free on MPlayer). Finally, using a combination of two PCs and split-screen mode, up to eight players can compete using either a direct (serial) or modem link.

DECONSTRUCTIVE SURGERY The Green army's base gets a radical face-lift as his adversaries soften him up before stealing his flag.

Here's the gist of the first-person gameplay: Battles take place on islands, with varied landscape including desert, jungle, and urban terrain. Depending on the number of competitors and level of play, fortifications dot each island. Flag Towers guard the colored banner for each side. To grab the flag, players must first destroy the tower, then drive a jeep in to capture and return the flag to home base. The first to do so wins the game.

Six different vehicles are at your disposal, depending on the island. Tanks, jeeps, and ASVs are deployed from your underground bunker. Tanks are used to pound or ram obstacles and fortifications. The ASV, though less armored than tanks, can launch a missile barrage at long range and also lay mines in the paths of unwary ground vehicles. Jeeps are basically good for one thing: nabbing the flag and getting the hell out of Dodge. Though equipped with machine guns, the jeep's main defense is its speed—although control can be tricky. I found it too easy to get stuck amid the rubble. So make sure you clear all debris from the flag area before hopping in your jeep.

New to the game are jets, helicopters, and PT boats, all launched from your aircraft carrier (if applicable to the scenario). The jet is primarily used for long-range reconnaissance but is equipped with cannons and missiles. Helicopters are great for fast access to remote sections of an island. Armed with rockets and cannons, they also do considerable damage. Finally, PT boats give you access to waterways, including your enemy's back door. PT boats are armed with torpedoes and cannons.

COMPUTER GAMING WORLD

★★★½☆

APPEAL: Multiplayer action fans.

PROS: Excellent multiplayer support; spiffy 3D graphics; intense action; new vehicles and strategies to explore.

CONS: Single-player mode can get repetitive; confusing control setup; meager manual; split-screen modes strain your peepers.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 133 with 3D acceleration (Pentium 200 without), Windows 95/98, 16MB RAM, 175MB hard-drive space, 4x CD-ROM, mouse, 16-bit sound card; supports joysticks (including force feedback) and gamepads.

3D SUPPORT: 3Dfx, OpenGL

MULTIPLAYER SUPPORT: LAN and Internet (2–16 players), modem and serial (2–8 players), and split-screen mode on one PC (2–4 players)

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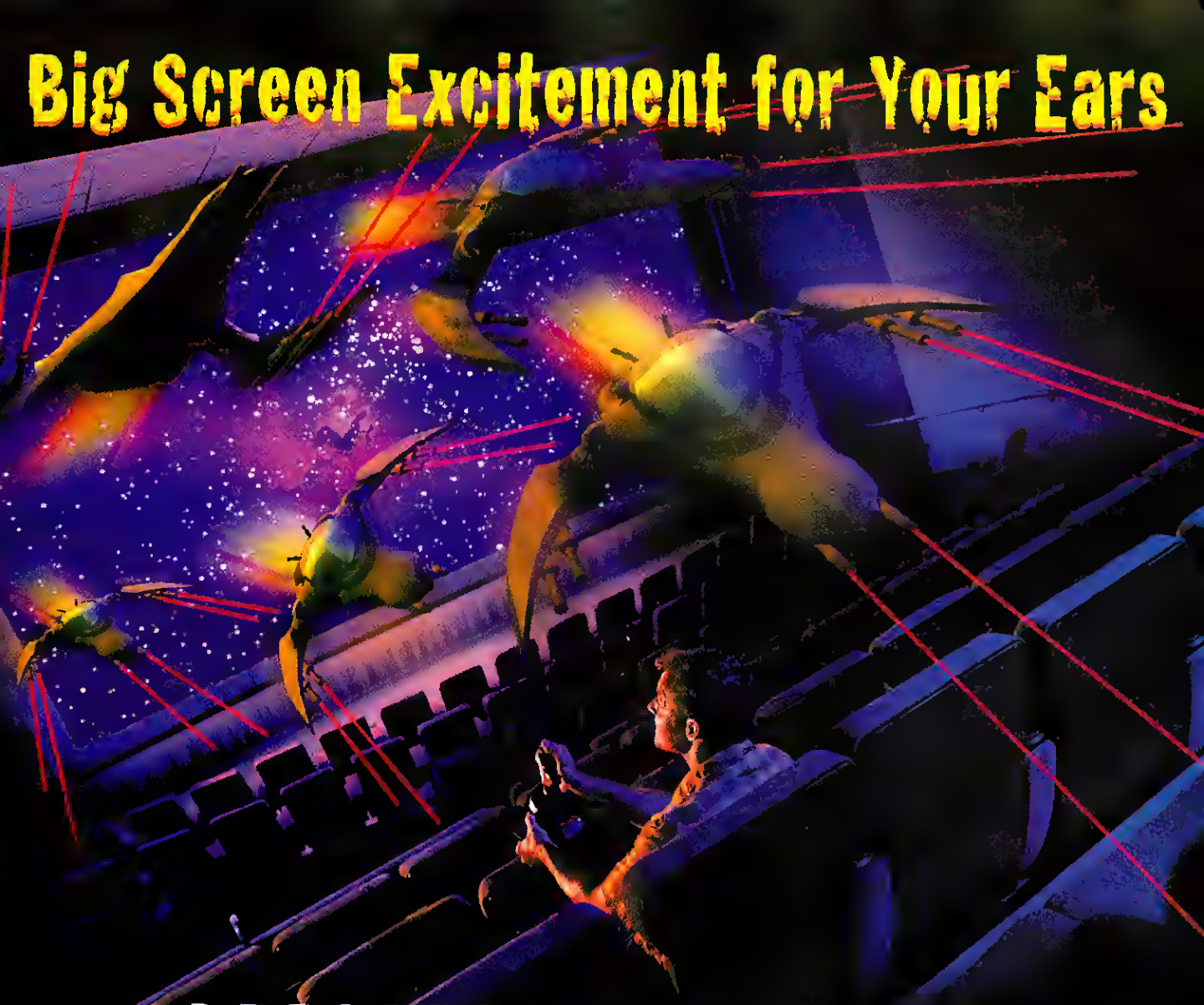

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Wet and Wild

These new vehicles don't just add variety to things that go boom, they also open up whole new areas of gameplay, namely, the sea and the sky. Dogfights and sea battles can be quite entertaining in "rogue" style multiplayer games, though the flight (and float) models are simplistic at best. In team mode, players can even stage an all-out attack on an opponent's aircraft carrier. It takes persistent pounding to sink a carrier, but when you do, the fireworks are spectacular. Plus, your opponent then loses all carrier-based vehicles for the rest of that game.

There are plenty of other complications and tactics, too, like penetrating walled fortresses, eliminating automated defense turrets, and avoiding decoy flag towers. Also keep in mind that while you're busy locating enemy flags, the enemies are doing the same. As in the original, the computer's AI is a tenacious devil, even at medium skill levels. If you get too far ahead, the computer will abandon its flag hunt and hunt you down. Since only the nearly defenseless jeep can carry the flag, it becomes a prime target—typically destroyed with a single missile.

At higher skill levels other resources come into play, including fuel depots, power plants, munitions dumps, and radar installations—each with its own primary, secondary, and tertiary stations and substations. For example, knocking out a primary radar site disables all intelligence updates. Destroying fuel or munitions dumps prevents the enemy's ground vehicles from refueling or rearming.

Instead of the overhead view of the original, players now command multiple perspectives, including first-person, chase, and three-quarter overhead. The view you choose depends on the vehicle in question and the current objective. For example, first-person works best in the tank when aiming the turret but is a disadvantage in the jeep when you need as wide a perspective as possible.

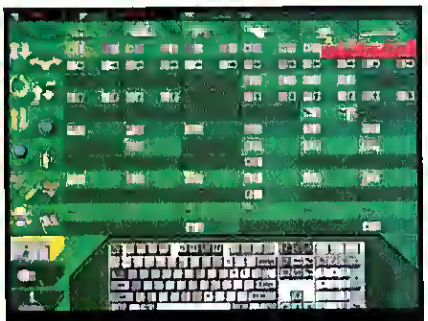
With more than 30 maps, each containing one or more islands, there's plenty of variety. RETURN FIRE 2 is best played against other people since single-player games quickly tend to lose their luster. The computer AI is consistently challenging—but it's also predictable.

Supporting 3Dfx, Glide, OpenGL, and DirectX software rendering, the game's 3D graphics are impressive and similar to—if not quite as good as—those in Rage's INCOMING. Visual highlights include the fiery explosions, variable density smoke, wave effects, and detailed vehicle texture mapping. Extensive setup screens let you tweak myriad gameplay options, including vehicle damage, initial stocks, sound, and video. In a throwback to its console days, the game allows you to listen to your own music CD while playing the game.

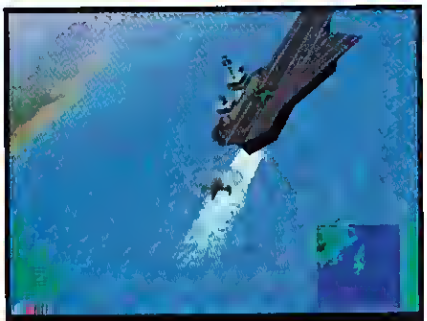
The controller setup screen is particularly detailed—to the point of utter confusion. It takes time to learn how to configure controls—either with keyboard, mouse, or joystick—no thanks to Ripcord's inept user manual, which offers the gamer no help at all.

Overall, RETURN FIRE 2 offers instant arcade gratification and long-term multiplayer appeal. Played solo, however, it rapidly loses appeal. Throw away the bells and whistles and you do have old-fashioned, rock-solid gameplay. The best things never change. CGW

Scott A. May is currently stuck in retro mode, playing SENTINEL RETURNS, MONTEZUMA'S RETURN, and LODE RUNNER 2.



HOW DO I DO THAT? The control setup in RETURN FIRE 2 is extensive, but needlessly complicated and poorly documented.



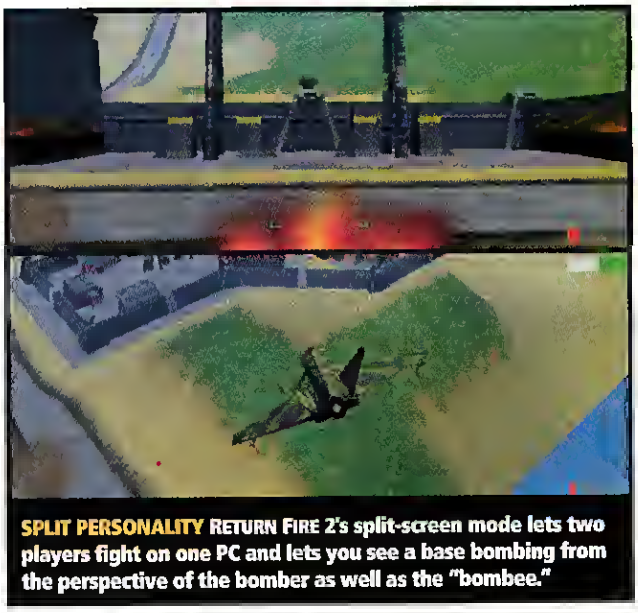
SEA BIRD A helicopter, one of several new vehicles in RETURN FIRE 2, prepares to land on the deck of an aircraft carrier.

Blast From the Past

What good is age and experience if you can't spread wisdom around like fertilizer? That said, gather 'round, kids, and learn a little video game history:

Most action-game addicts remember the original RETURN FIRE, which was hastily ported to Windows 95 from the 3DO and PlayStation consoles. Many of today's gamers, however, aren't aware that RETURN FIRE was actually a remake of a cult Amiga game called FIRE POWER, designed by Silent Software and released in 1987 by visionary publisher Microlllusions. And the creator of FIRE POWER and lead designer for Silent Software? None other than (Baron) Reichart K. Von Wolfsheild of RETURN FIRE and RETURN FIRE 2 fame. Practice makes perfect.

Among FIRE POWER's groundbreaking innovations was modem-to-modem multiplayer gaming. Chugging along at a whopping 1,200 bps, modem gaming at the time was relegated to nonaction games like chess and turn-based wargames. FIRE POWER was one of the industry's first real-time, remote multiplayer action games, a feat Von Wolfsheild would later repeat with TURBO, the first modem racing game (never released and quite a collector's item).



SPLIT PERSONALITY RETURN FIRE 2's split-screen mode lets two players fight on one PC and lets you see a base bombing from the perspective of the bomber as well as the "bombee."

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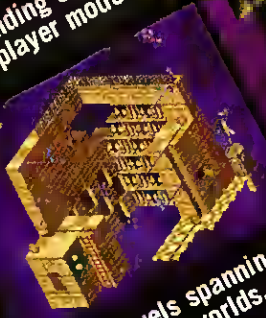

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Thin Air

NovaLogic's Sim Duo Is a Bargain, but Gameplay Is Superficial

by Tom Chick

Remember when a drunken Randy Quaid learned to pilot an F-18 over the course of a single afternoon in *Independence Day*? If you want to relive that experience, check out Novalogic's F-16 MULTIROLE FIGHTER and MIG-29 FULCRUM sims, which are available bundled together for the price of a single sim (for an unspecified time). These sims are definitely an easy entry into fighter combat, but they may leave you wishing for something more substantive.

At first glance there are some impressive graphics in both F-16 MRF and MiG-29 FULCRUM. The landscapes are drawn with vivid and detailed textures. The terrain elevations vary nicely, allowing for cat-and-mouse games among mountain ranges. The featured aircraft are sharply modeled with visible weaponry and moving control surfaces. Other aircraft are a bit blocky but are sharp and colorful.

Raptor Redux

Under closer scrutiny, however, this graphics engine is similar to the one used in F-22 RAPTOR, with extra detail and smoothing thanks to 3Dfx acceleration. There's no Direct3D support, so owners of non-3Dfx cards must use the software mode, which looks great for a software engine but can't compare to hardware 3D. As with Novalogic's earlier game, there's still an abrupt rendering limit that leads to mountains rising from the horizon as if they'd been called forth POPULOUS-style.

The 3D virtual cockpits and reflective canopies are a great framework for the scenery. They offer an immersive sense of being wrapped in a bubble of glass and avionics. Unfortunately, this splendor is little more than interior decoration. There's no need to look at anything but the HUD and the god's-eye window in the corner of the screen; the MFDs and finely detailed gauges are almost entirely superfluous. Furthermore, some important parts of the HUD data don't work in the cockpit view. It's ironic that Novalogic sculpts a beautiful true-3D cockpit and then features it in a game best played without it.

Actually, both games have features that will never be used. The radar modes in F-16 MRF are entirely redundant. There are so few targets and the target designation is so simple that it's ludicrous to imagine anyone actually needing to tinker with radar modes; all the information is integrated into the Attack Display and splashed onto the HUD anyway. The passive infrared search-and-track mode in MIG-29 FULCRUM is similarly useless since it doesn't work. Lock onto an enemy plane and this "passive sensor" will still set off a warning in your target's cockpit.

BUZZ CUT The terrain is smoother than in previous Novalogic titles, but mountains still pop up magically in the distance.

Zoom Zoom Zoom-a-Zoom

Despite claims of authentic flight models, there are rudders here that defy physics, rocket boosters used for engines, a gliding capability of balsa wood models, and planes that hold their noses high and proud, even in a stall. Just for giggles, you can play Lunar Lander with your MiG. Cut the throttle while your plane is going vertical and control your fall by applying thrust until you gingerly crash tailfirst into the ground.

You can count the concessions to realism on one hand. Drag is modeled for

ON THE BEACH Other than scaring off seagulls, flak is pretty harmless in these games.

COMPUTER GAMING WORLD

★★½☆☆

APPEAL: Novice flight-sim gamers who don't mind blowing up a lot; gamers who are looking for aerial deathmatches.

PROS: Easy learning curve; exciting, free online play; smooth and detailed graphics.

CONS: Overly simplified flight model; redundant gameplay; shallow multiplayer missions; 3D support for 3Dfx cards only.

DIFFICULTY: Easy.

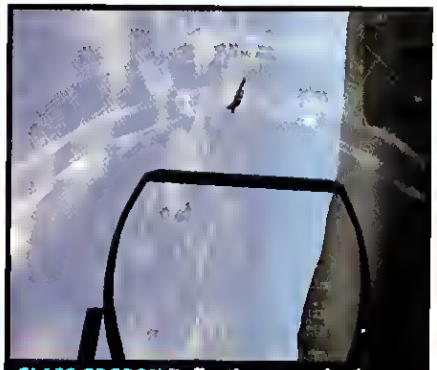
REQUIREMENTS: Pentium 133, Windows 95, 16MB RAM, 313MB hard drive space.

3D SUPPORT: 3Dfx Glide.

MULTIPLAYER SUPPORT: IPX, TCP/IP, serial, modem (2–16 players), NovaWorld Internet (2–128 players).

Price: $44.95
Publisher: Novalogic
Calabasas, CA
(800) 858-1322

www.novalogic.com

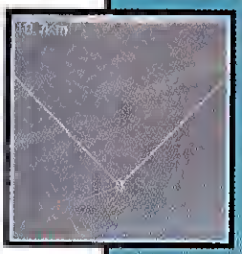


GLASS COCOON Reflective canopies in padlock mode help you keep up with your plane's orientation.

heavily loaded aircraft. Turns bleed airspeed (almost a moot point considering the overpowered engines). There's less lift at higher altitudes, but the tiny combat arenas will rarely take you above 10,000 feet. One supposedly realistic touch demonstrates the developers' misguided stabs at the fine art of simulation: Drop a single bomb from your F-16 and the aircraft will bank to one side to reflect the weight shift. Rather than demonstrating attention to detail, this shows disregard for contemporary fly-by-wire controls, which would automatically compensate for the aircraft's imbalance.

Novalogic's version of a spin is a similar touch of unreality. Pull up into a very slow 45-degree climb then stomp on the rudder. You'll gently drift to the ground like a leaf, spinning as furiously as a pinwheel in a wind tunnel.

This "fun with physics" wouldn't be as hard to swallow if it weren't for Novalogic's continued insistence that its games are realistic sims. Note the first bulleted point on each box's feature list: "Authentic Lockheed Martin Approved Flight Model and Avionics" and "Authentic MiG-29 Flight Model" they scream in capital letters. As proof, the names and endorsements of Novalogic's hired consultants are splashed across the boxes. I can only imagine that these gentlemen are blushing furiously. It doesn't help that Novalogic chose to quote their Russian consultant in twisted idiosyncratic English.



For Fun's Sake

The most damning indictment I can offer of these titles is that they just aren't much fun. The gameplay is superficial, frustrating, and repetitive. In spite of excellent scripted radio communications (with optional Russian for the MiG), the single-player missions are lifeless, offering very little variety or flavor. Shoot down your primary objectives and linger for secondary or bonus objectives if you want a higher score. This structure was contrived in TIE FIGHTER, and it's still contrived in Novalogic's games. At least the campaign allows you to skip missions after you've tried them once—a welcome change from previous games in which missions you couldn't complete were brick walls.

There's a nicely flexible loadout screen on which you'll juggle limited munitions for each of the campaigns. The real challenge comes once you've run out of AMRAAMs or R-77s and you have to go in harm's way with short-range missiles. An option for novices lets you "double" your weapons load, evoking the mental image of a fast-food drive-through. Pilot: "Uh, yeah, I'll take the 2,000-pound GBU, an order of HARMS, and a pair of Sidewinders. And I'd like some extra fuel with that." Crew chief: "Okay, do you want to double that order for an extra $4 million?"

As long as you have enough longer-range missiles, most of the missions are a cakewalk. Your wingman, who only fires one missile at a time, will be little help. Enemy planes don't actively evade, but some have a Mr. Magoo-like

THE FULCRUM HAS LANDED The MiG's ability to rest on its afterburners may make you think the imperiled Russian space agency is testing the MiG-29 as a lunar landing module.

Miss-less Missiles

Although the missiles in these games were toned down in the first patch, they still home in with all the tenacity of a six-year-old girl after a Beanie Baby. If you thought the student loan agency was bad, try the business end of Novalogic's AMRAAMs.

The patch, which is downloaded automatically when you connect to NovaWorld, will also make your life a little easier by adding a red line to the Attack Display. This line connects the missile to your location in the center of the display. Zoom in the display and you'll get a clear picture of an incoming missile's distance and bearing.

The best defense against these pests is several thousand tons of God's good earth—a mountain. When a missile is launched at you, try to duck behind the nearest mountain or dive into a canyon. But since there's no way to determine the missile's relative altitude, this can be tricky; a launch from on-high may clear any obstacles.

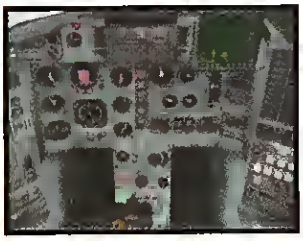
The next best defense against missiles is speed. Put the missile at a right angle to your aircraft, kick in the afterburners, and dive. If you have time to build up enough speed, the missile will sail right by—even if you're out of countermeasures. Forget the conventional wisdom of pulling a high-G turn at the last minute. In these games this will just slow you down and make you easier to hit.

MEET YOUR MAKER Evading missiles is extremely difficult to do in both games.

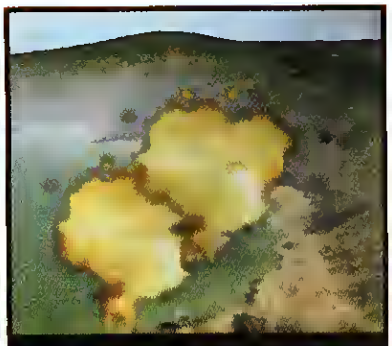
MOONLIGHTING The F-16 has a helpful LANTIRN targeting pod for night flight, while the MiG-29 has to feel its way around.

ability to fly blithely past missiles. The most significant challenge in these games is trying to stay out of the firing range of enemy planes and SAMs; once a missile is launched, the fun is quickly sucked out of the game. Missiles operate by some kind of alternate-reality physics, in that they seem to decide they're going to hit you 75 percent of the time no matter what you do (see sidebar, previous page). Short of a realistic flight model and a 300-page manual, I can't imagine a quicker way to turn off casual gamers than to send them down in flames every time a missile targets them.

The games ship with a rough-hewn mission builder to extend their single-player life beyond the roughly 100 missions. But Novalogic's Fixed Wing Mission Editor is more complicated than the mission builders in complex sims such as JANE'S F-15 and HORNET: KOREA. From the confusing treatment of vehicles and their waypoints as separate objects to the lack of graphical feedback on the map, it's obvious it hasn't been honed for ease of use. You'll find far less flexibility than in more user-friendly mission builders. And the documentation isn't much help.



FINE CORINTHIAN LEATHER The cockpit views in both F-16 and MIG-29 are lovingly crafted and finely detailed. Unfortunately, the games are tuned to play in full-screen HUD mode with the cockpits hidden.



TWO SPACE INVADERS MATING? No, it's an explosion, one of the less flattering aspects of the graphics engine.

Aerial Deathmatches

The bundle's excellent multiplayer support on the free NovaWorld service comes close to redeeming the two sims, but they ultimately fall prey to their own flat gameplay. Often it's a matter of flinging AMRAAMs and Adders, camping out over the respawn airfields, and dodging around the terrain. In fact, if you play on Novalogic's server, it feels like a typical QUAKE server, complete with 13-year-olds calling each other "punk bitches" and "losers." It's a lot of fun at first, but once you get into the groove, there's not much to do. Take off. Fire. Get shot down or land. Repeat as necessary.

The Raptor Air War (RAW) games (Raptorless pending Novalogic's upcoming update of F-22 RAPTOR) provide slightly deeper gameplay. RAW divides players into two sides and allows pilots to choose a fighter or bomber loadout. Unfortunately, these hard-coded configurations exclude some of the more interesting air-to-ground toys. A tactical map screen gives a convenient overview of the visible action against a numbered grid, so gamers can coordinate their efforts. The single-player missions would have been much more enjoyable if they could have been flown in this sort of cooperative multiplayer connection.

Let Them Eat Cake

There's no questioning the wisdom behind the mainstreamed targeting of Novalogic's latest titles. After the astonishing success of its featherweight F-22 games, the company knows where the money is. If Wal-Mart shoppers are buying DEER HUNTER at $19.95 a pop, they'll surely be willing to spring for a pair of flight sims in different colored boxes for about $40. Like the writers of romance novels, the producers of cloned sitcoms, and the directors of bloated-budget summer blockbusters, Novalogic is giving the masses what they want.

There's no doubt that new pilots will flock in droves to Novalogic's simplicity, but they'll have little frame of reference to know what they're missing. These games' repetitive gameplay, frustrating combat, wasted detail, and disregard for their subject matter do not make for a good introduction to the world of flight sims. Instead, FIGHTERS ANTHOLOGY and ISRAELI AIR FORCE would have offered new pilots ample variety; JOINT STRIKE FIGHTERS does an excellent job of making the details of jet combat accessible to beginners; there's gratifying and simple combat in RED BARON II; and TEAM APACHE is a great example of an easy sim with an obvious affection for its subject.

But the developers at Novalogic don't seem to have a proper appreciation for the mechanics, the machinery, or the miracle of flight. In fact, this is hardly flight. This is a hollow pageant with airplanes—as thin on substance as the air itself. Novalogic's bundle is like biting into a pretty cake and getting a mouthful of icing: sugary, insubstantial, and terribly unsatisfying. CGW

Tom Chick blames flight sims for dragging him into a life of computer gaming. His latest addictions are RED BARON 3D, JANE'S F-15, and anything with a Messerchmitt.

THE MIG CHILL Perhaps because they're still in search of a warm water port, the other Russian campaigns take place in Africa and Southeast Asia.

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- 50 single player missions.
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RATING PENDING RP CONTENT RATED BY ESRB

Go to #234 @ www.computergaming.com/infolink

World War Toolkit

Impressive in Its Own Right, Unsurpassed Expansion Potential Makes This Sim Shine

by Denny Atkin

KILL AND BE KILLED This P-47 is about to fall victim to your FW-190's guns. But the flames coming from your nose indicate you have problems of your own.

After a long drought with no new WWII flight sims, Microsoft's COMBAT FLIGHT SIMULATOR (CFS) is the first drop in the upcoming deluge of prop simulations. Not only is it the first to hit the shelves, it's likely to be the last to head to the bargain bin. The game is not only a superb simulation of what it's like to fly a WWII fighter, it also features unparalleled expansion capabilities. Buy it now as a WWII Europe sim and you'll probably be able to play it later as a Pacific, North Afnca, Russian Front, or even Korean sim.

The key to this flexibility comes from the fact that CFS is an evolution of the engine used in FLIGHT SIMULATOR 98 (FS9B). However, CFS has little resemblance to its pacifist predecessor. Along with the requisite guns, damage model, and AI, Microsoft has pumped up the engine with a dramatically faster frame-rate, top-notch terrain graphics, working instruments in virtual cockpit view, and a host of other improvements. The result is a program that—with a couple of notable exceptions—feels like a whole new sim.

Admiring the Scenery

CFS includes five modes of play and multiplayer. Free Flight lets you take to the skies without fearing attack—think FS98 in much cooler planes. A full-featured Quick Combat mode lets you face wave after wave of various enemy planes over an airfield of your choice. You can select specific types of enemy craft to face, such as Axis Fighters, or let the computer toss a completely random mix of opponents at you. The Training Missions introduce you to basic flight and air combat through AVI demonstrations and an interactive instructor. These are nicely done but would have been even more useful had the instructor demonstrated each maneuver once before turning over the controls.

Many of the 25 missions in Single Mission mode have a 60s WWII action film feel. While some are historically accurate, others involve tasks such as destroying a staff car parked *under* the Eiffel Tower, killing a French resistance spy as he escapes in a speedboat, or shooting down a Hurricane over London as it performs an air show for Churchill.

Finally, there's the cream of the simulation—Campaign mode. There are two campaigns, the Battle of Britain and the Battle for Europe, each of which can be flown from either the Allied or Axis perspective. The 72 campaign missions are historical in nature and do an excellent job of conveying the changes in the air war from 1940 to 1945. In the Battle of Britain missions, allies are primarily flying

COMPUTER GAMING WORLD

★★★★☆

APPEAL: WWII air combat fans; FLIGHT SIM 98 pilots tired of playing nice.

PROS: Amazing expandability; excellent mission design; top-notch flight modeling.

CONS: No exterior plane damage; no wingman commands; shallow multiplayer support.

DIFFICULTY: Moderate.

REQUIREMENTS: Pentium 133, Windows 95/98 or NT4/SP3, 16MB RAM (32 recommended), 230MB hard-drive space, 2x CD-ROM, SVGA graphics.

3D SUPPORT: Direct3D.

MULTIPLAYER SUPPORT: Modem, direct cable, IPX or TCP/IP LAN (2–255 players), MSN Gaming Zone (2–8 players), 1 CD per player.

Price: $54.95
Publisher: Microsoft
Redmond, WA
(800) 426-9400

www.microsoft.com/games

Multiplayer: So Much Potential...

COMBAT FLIGHT SIMULATOR's multiplayer mode is frustrating because it's *almost* very good. We played a number of aerial deathmatches with smooth performance and little warping. In addition to LAN and TCP/IP support, you'll also be able to find other players on the MSN Gaming Zone.

What's *there* in multiplayer mode works well. The problem is what's *not* there. You can't fly any of the sim's built-in missions with other players. You're limited to free-for-all and team deathmatches, which eventually become boring.

Worse, even these modes aren't fully realized. With melees all starting at about 2,000 feet, combat almost always ends up as turning fights on the deck. In addition, while you can disable unlimited ammo (which we quickly did here at the *CGW* offices since the QUAKE II crowd was spraying .50 caliber bullets as though from a fire hose), once you run out of ammunition you can't land and reload. Your only alternative is to crash into the ground, giving a kill credit to the last person to get a bullet into you. This game desperately needs the ability to repair and reload upon landing at an airfield. It's a shame that multiplayer isn't more thoroughly implemented because the ability to set up dogfights like Sabres vs. Sopwiths is a sim pilot's dream.

STUKA AT 10 O'CLOCK! The virtual cockpit and padlock views are much improved from the version we previewed; both feature working instruments.

defense for various British cities and factories. By the time you reach the latter Battle over Europe missions, you'll be flying long-range, high-altitude escort missions for bombers attacking Germany.

In general, the missions are historically accurate (save perhaps the appearance of Stukas during the Normandy invasion) and include random enemy waypoints, which keep them from being predictable during replay. Nicely done battle chatter helps add to the atmosphere, but the lack of wingman commands (especially "help me!") sometimes makes you feel as though you're tagging along with the mission rather than being an integral part.

I appreciate not having to refly missions over and over until success—after all, in real life many combat missions fail. But perhaps the designers should have at least required you to *survive* to move on. There are incentives—in the form of medals and promotions—for successfully completing missions.

Campaign missions are always flown from takeoff, but an optional "time jump" key lets you advance to the next waypoint if you want to jump right into the action. You can also accelerate time; but with no autopilot, it can be tricky to handle planes at 4x speed. You can't skip out of a battle while the enemy is around.

Model Flight Models

It's in plane handling that CFS stands out. I'm not a big fan of the flight models in FS98—handling is twitchy and trimming is imprecise. But CFS's developers have enhanced the flight modeling dramatically here. The various planes handle very differently: Mustangs are supremely maneuverable but can easily get away from you; Hurricanes are nice, stable gun platforms. Get into a low-level turning flight and the realism of the flight model is likely to kill you early on: You'll bleed speed, and the lack of lift at a 90-degree bank will see you heading sidelong into the ground. The details are excellent—planes shudder when a flak burst explodes near them, early Merlin engines start to cut out when you push negative Gs or fly inverted, and control response is dramatically different at 3,000 feet versus 30,000 feet. There are some curious omissions, such as a lack of drop tanks. There are also some glitches, like bailouts that work at any altitude.

VULCANIZED METAL You can import a 60s-era RAF Vulcan jet bomber from FLIGHT SIMULATOR 98.

Instrument panels are nicely rendered, and the virtual cockpits (with working instruments) look dramatically better than those in beta versions. Full AIR WARRIOR/WARBIRDS-style keypad views, an enemy padlock, and a unique cone-shaped enemy direction indicator do a very good job of keeping you situationally aware.

The aircraft look good and when shot will shed parts in a good recreation of gun camera footage. Damage modeling is well done, with dozens of systems that can affect performance when hit. Unfortunately, until a wing comes off, the only indicators of damage you'll see are excellent smoke and fire effects. It would be nice to be able to look out at your wing and see *why* your damaged P-47 suddenly handles like a pig.

The Real Flight Sim Toolkit

The lack of aircraft damage textures is likely to maintain compatibility with FS98 aircraft. In addition to the built-in flyable aircraft (Hurricane, Spitfire Mk. I and Mk. IX, Bf-109E and G, FW-190D, P-47D, and P-51D), you can also import the hundreds of shareware and freeware FS5, FS95, and FS98 aircraft and incorporate them in Quick Combat or custom missions. Planes you bring in are automatically equipped with guns and a generic damage profile; technical users will be able to edit these to more closely fit the specs of the real aircraft. You can also import FS98 scenery.

With the ability to create custom missions (using Excel spreadsheets available on Microsoft's Web site), you have an engine that can be used to re-create virtually any WWII-era air battle. It's also very likely that the Internet community will respond quickly with some fascinating re-creations. Third-party add-ons, including a Pacific disk, are also in the works.

Other than the lack of damage textures and underwhelming explosions, the CFS engine is a great foundation for add-on sims as well as a thoroughly enjoyable experience out of the box. The terrain is the best we've seen in any flight sim, with unmatched photorealistic 3D texturing. And Microsoft has included a superb 184-page manual. Frame-rates are dramatically boosted from FS98. But don't believe the absurd Pentium 133 minimum spec listed on the box. You'll need a minimum of a Pentium 200 to enjoy this sim, and it takes a Pentium II to make it shine. CGW

Denny Atkin has been living in COMBAT FLIGHT SIMULATOR and betas of three other WWII sims. He may never fly jets again.

WINDOWS ON PARIS You can open multiple view windows for better situational awareness; on Windows 98 systems you can even use multiple monitors for different views.

Flight Instructor in a Box

A Great Practice Tool for Real and Wanna-be Pilots

by John Nolan

Sierra's original PRO PILOT was hyped as a Giant Killer that would totally blow away Microsoft's FLIGHT SIMULATOR. It failed miserably in that mission, once again proving that *any* program rushed to market will have glaring deficiencies. The flight model was poor, graphics were average and slow with no 3D capability, and the initial release required an immediate patch to debug the program. Fortunately, Sierra's Dynamix division didn't give up; after an overhaul, PRO PILOT '99 is definitely an improved program.

COMPUTER GAMING WORLD

★★★½☆

APPEAL: General aviation student pilots; nonviolent flight simulator fans; enthusiasts seeking an inexpensive, well-executed training simulation.

PROS: Superb introduction to civilian aviation; excellent training videos and flight handbook; runs well on slower systems; great sounds; good air traffic control audio.

CONS: The "easy" flight model needs an additional "realistic" option; graphics are average for the genre with little detail in terrain.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 133, Windows 95/98, 32MB RAM, 200MB hard-drive space, 4x CD-ROM, SVGA graphics. *Recommended:* Pentium II 233MHz, 64MB RAM, 550MB hard-drive space, 8x CD-ROM, 3Dfx graphics card, joystick/yoke, throttle, rudder pedals

3D SUPPORT: 3Dfx, Glide.

MULTIPLAYER SUPPORT: None.

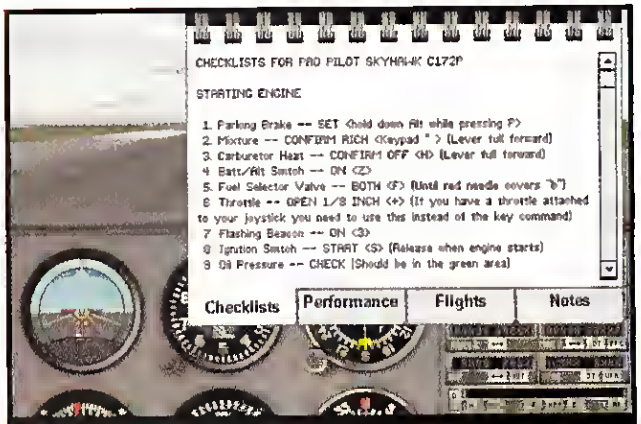
Price: $49.99
Publisher: Dynamix (a Sierra Company)
Eugene, OR
(541) 343-0772

www.dynamix.com

Voodoo Magic

PRO PILOT '99 improves on the first release's mediocre visuals with support for 3Dfx Voodoo and Voodoo² video cards. All of the usual 3D special effects, such as sun glare, unsurpassed cloud depictions, transparency, and image smoothing are here, with surprisingly fast frame-rates. Even a relatively modest machine, such as a Pentium 166 with 64MB of RAM and an original Voodoo card, has no trouble handling the video demands due to the lightly detailed landscapes.

The entire United States, Western Europe, and a few cities in Canada are included in the terrain modeling using U.S. Geological Survey data to model elevation. Most of this terrain is pretty generic, with predominantly green landscapes; 35 major cities receive relatively "high-detail" environments. But "high-detail" is in the eye of the beholder. Most major landmarks are here; famous buildings, statues, and stadiums are easily recognized. But overall, there aren't many structures in these areas. The presentation is adequate but doesn't begin to approach the detail provided by the satellite imagery used by FLIGHT UNLIMITED 2. You're not going to locate the neighborhood gas station in any city in this sim.



CHECK IT OUT The new Pilot's Operating Handbook provides vital checklists, performance data, and flight tutorial information in a movable text window.

If you don't have a 3Dfx-based video card, the unaccelerated graphics show little change from the previous version's unremarkable visuals. You can still navigate and pick out landmarks, but the tiled appearance of the terrain is pretty unappealing. If it's precise, detailed sightseeing you're after, this isn't the place to look. Overall, the 3D graphics are average, and the unaccelerated display is like stepping back in time. Still, either presentation is more than sufficient for the main focus of this program—flight instruction.

TWILIGHT ZONE This King Air is over Topeka, Kansas, at about 2,000 feet on approach to Billard Airport. Alas, if you live outside the 35 areas modeled in detail, this is what downtown will look like.

Want Wings?

There's no doubt that flight instruction is the strongest point of PRO PILOT '99. There's no other program that even comes close to delivering the detailed information available here. It begins with the excellent Flight Companion Manual, a good overview of the basic components of general aviation. With chapters on basic maneuvers, aircraft, navigation, and much more, this book is an easily understood asset to the beginning student pilot.

Next, the animated video tutorials of the 31 Ground Lessons (also carried over from the previous version) systematically take you through the various tasks required in flight training. Averaging about two minutes each, this hour's worth of information is time well spent and is interesting to boot.

After this "ground training," you'll be ready for the new tutorial flights. The National Association of Flight Instructors worked with Dynamix to develop 48 step-by-step "flying lessons" that take you through maneuvers and procedures in the various aircraft. Lessons are selected from a new pop-up Pilot's Operating Handbook that can be moved

around the screen. The text-based tutorial can be scrolled as you fly the mission. This displays all necessary keyboard commands—a really nice touch.

Aircraft instrument panels and controls are precisely represented, and the equipment is easily operated with the mouse or the keyboard. The lessons increase in complexity as you move on to more sophisticated aircraft. You can even create your own tutorials and share them with others.

Once you've mastered the basics, the improved Flight Plan Wizard gives you the opportunity to generate some realistic cross-country flights that will hone your basic flying, navigation, and instrument procedures. The Wizard has a simple, effective interface that gets you in the air quickly. Informative, accurate, and easy to use, the ground instruction and procedural pilot training aspects of PRO PILOT '99 are absolutely unequaled in a computer program selling for less than $50.

Flight Modeling Made Easy

While the ground and procedures training features lead the pack with regard to other flight simulations, the flight model trails the herd. Available aircraft include two models of the Cessna 172 trainer, three Beechcraft (the Baron, Bonanza, and King Air), and a Cessna Citation bizjet. There are well-documented performance data available for all these aircraft, and, in general, the aircraft meet those parameters fairly well. Control response can be easily tweaked in the menu to give the proper "feel" to each aircraft.

THE FUTURE IS CLOUDY No other sim can match the cloud quality in PRO PILOT '99. The shapes, translucency, and subtle blurring of the rivet heads as the clouds sweep over the wing are unequaled.

The problem is in the general flight modeling, which lacks the refinement that the focus-on-flight training requires. While drag effects have been improved, and pitch/power relationships are better than in the previous release, some old problems remain. There's no torque effect to create yaw when you firewall the throttle for takeoff; you won't need to use your rudders in these aircraft. When practicing slow flight in a single-engine craft (where your rudder is less effective because of slow speed), you can also firewall the power without any resultant yaw. Fail an engine at max power on a twin-prop and there's an incredibly gentle drift into the dead engine.

Stalls are amazingly mild with any pitch or power setting, and there's no way to get these aircraft to spin. Generally speaking, this is all "negative training"; students are led to believe that they can leave their feet on the floor in a prop and that a 50-degree nose-high/turning full-stall at takeoff power is easily recovered.

It's one thing to encourage people to fly with a good instruction program. It's quite another to make them think flying is a simple, forgiving pursuit based on a simplistic flight model. Graveyards are full of people that failed to give aviation its due respect. This program begs for a realistic flight model in addition to the present overly simplified version. It can be done; there are several air-combat sims available with fairly realistic flight models. Given the focus of PRO PILOT '99, this needs to be done.

On the Bright Side

A few other aspects of this sim deserve special mention. The engine and aircraft sounds were recorded from the actual specific aircraft you're flying. These sounds are almost perfect, from the engine cough on start-up to the sound of the gear coming down. An audio air traffic control system provides weather, clearances, and other flight information that's pretty realistic. This should make student pilots much more comfortable upon their entry into today's crowded skies. If you fly a filed flight plan, air traffic control will give you clearance to each waypoint along the route. If you are flying without a filed flight plan, you'll receive air traffic control instructions near airport areas. You can select a talking copilot to handle the radio calls, greatly simplifying approach procedures. The air traffic control AI is much improved as well—you'll no longer receive repetitive instructions to do something you've already accomplished, like to climb to a certain altitude.

Buy Now, Save Later

PRO PILOT '99 should have been the first release of PRO PILOT. Unlike its predecessor, it's a usable, finished product that sets new standards for inexpensive computer flight instruction. In this area, there is no equal at anywhere near its price. In almost all other respects, however, this is an average, three-star civilian flight simulation. The outstanding, comprehensive flight instruction earns the extra half star. CGW

When John Nolan is not flying 727s for a living, he's totally immersed in EUROPEAN AIR WAR.

POLAROID MOMENT?

PRO PILOT '99 hypes "over 35 highly detailed major metropolitan areas." You can be the judge on how realistic they are. From left to right you see San Francisco from 10,000 feet, 5,000 feet, and 1,000 feet.

Pleasant Dreams

MORPHEUS Isn't Great, but It's a Welcome Diversion

by Scorpia

For those not already aware, Morpheus was the god of dreams So, you would expect dreams to play an important role in Piranha's MORPHEUS, and in fact they are the focal point of the game. This adventure drama opens in 1952, with our protagonist, Matthew Holmes, searching the Arctic for his father, Theodore, who vanished from there 25 years earlier. What Matthew actually finds is the fabled ship *Herculania*, whose remaining passengers lie locked in eternal nightmares

They don't just dream, either. As you explore the vessel, ghostly scenes are replayed in certain locations. They can be a fleeting glimpse of someone slipping through a doorway or extended conversations among two or more passengers. It's hard not to think of this game as being subtitled "MYST Meets 7TH GUEST on the STARSHIP TITANIC."

Like those three games, the setting of MORPHEUS is basically deserted. Aside from the phantom flashbacks, you meet no people during your time onboard the ship. The story of what happened is pieced together from various sources: diaries, notes, kinescopes, recordings, and, of course, the re-enactments.

No Carryall Required

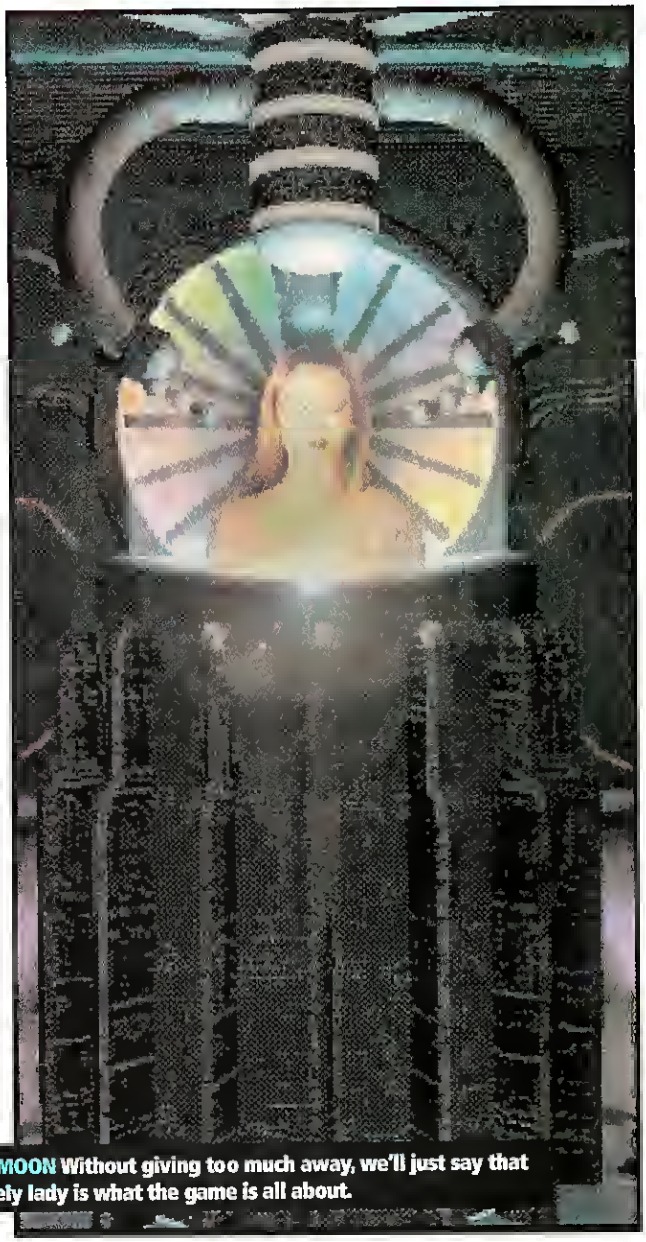
Also as in MYST and 7TH GUEST, puzzles are generally solved without the use of objects; there are few items to find and carry around with you. In fact, you can't carry more than one object at a time. That said, this *is* an adventure game, and there are definitely puzzles to solve. The difference is that you must be extremely observant, take good notes, and use deductive reasoning in a number of situations.

Aside from the relatively minor chores of getting into the ship and restoring full power, the bulk of the game consists of figuring out the private codes to the passenger staterooms and entering the four dreamworlds, which have their own sets of puzzles to figure out

Many of the puzzles are not difficult, provided you've been thorough in your explorations and have taken good notes. Some of the conundrums, though, are rather subtle—if not obscure. You really have to pay close attention to everything around you—especially in the dream sequences—to come up with the answers

Still, the game is quite fair. All the needed clues are present as long as you recognize them as such and can make the necessary connections to arrive at a solution. While some puzzles can be solved using trial and error, the majority require that you to think them through rather than blindly trying one thing after another. This is particularly the case with the dreamworlds. Each is a self-contained sequence, where you must solve three puzzles before you can get out of it. Nothing from the outside is needed; all the essentials are present in the world around you.

Happily, none of this requires excruciating manipulation of mechanical devices or extensive calculations based on ancient lunar calendars. While figuring out an answer may take a lot of thought and deduction, applying the solution is usually fast and straightforward.



CLAIRE MOON Without giving too much away, we'll just say that this lovely lady is what the game is all about.

COMPUTER GAMING WORLD

★★★☆☆

APPEAL: Those who liked MYST, 7TH GUEST, and STARSHIP TITANIC.

PROS: More freedom of movement than RIVEN clones; nice game concept; gorgeous graphics.

CONS: Ambiguous ending; unsympathetic characters; sometimes too dreamy for its own good.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 90, Windows 95/98, 8MB RAM, 4x CD-ROM, SVGA graphics; supports Windows-compatible sound cards. *Macintosh:* PowerMac, System 7.5, 4x CD-ROM, SVGA graphics.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: None

Price $49.95
Publisher: Piranha Interactive
Tempe, Arizona
(602) 491-0500

www.piranhainteractive.com

No Nightmare to Play

The interface is simple. The cursor is a pointing arrow for directions, with which you can move; a magnifying glass for close-ups; a hand with forefinger extended for manipulation; and a ship's wheel, which indicates when you can turn in place for a full view of your surroundings. A button at the bottom of the screen takes you to the control panel.

At the panel, you can save, restore, and quit, and also make adjustments to the sound volume and some graphic elements. Saving is done in the old-fashioned way, in which you specify a regular file name in DOS-convention format (e.g., morpheus.sav). Unfortunately, you can't be too descriptive with only eight characters. But you can save to any directory you wish and thus have as many save positions as you would ever need.

Graphically, MORPHEUS is gorgeous. On the ship in the dream-worlds everything is beautifully rendered. Even the ghostly replays look good. For all that, you don't need a high-powered machine; the game ran just fine on a Pentium 166. In fact, it ran perfectly throughout with only one technical problem. This is a known bug that occurs in the PC version (there is also a Mac version of the game) in the bazaar. If you touch the drum there, the game will crash. Piranha has a patch for this on its Web site (**www.piranhainteractive.com**). You can also avoid the crash by simply not touching the drum; it isn't necessary for solving any of the puzzles.

While the game has no notable game-design flaws, there are some minor drawbacks. For one thing, you can only boot the game off the initial CD, instead of any of the three. This means shuffling disks every time you want to play since most of the game files are on the second and third CDs.

Part of the game is learning what happened to the passengers, but you can do this by simply viewing the four kinescopes. That tells you 90 percent of the story at the start. Anyone can fill in the remaining blanks. Also, the characters are unpleasant people. I'd have felt better about "saving" them if they'd been a bit less harsh.

The most annoying part is the end, which is ambiguous and doesn't come to a clear resolution. I can't say more without giving things away, but it did leave me feeling somewhat dissatisfied.

Overall, MORPHEUS is a nice adventure game, despite occasional unevenness and an ambivalent conclusion. While several puzzles are too simple, others will give your brain a workout. Between that and the superior graphics, most adventurers are likely to find this one a pleasant few days' diversion. **CGW**

Scorpia has finally finished remodeling her dungeon. Woe be unto makers of tepid adventures—cause she's really getting tired of replaying MIGHT & MAGIC VI.

DREAMING IN COLOR

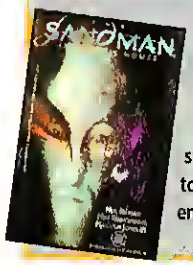
If you're interested in the god of dreams, Morpheus is the central character in Neil Gaiman's *Sandman* series of graphic novels, which has nothing to do with the MORPHEUS game but offers some of the best fantasy available in any medium. After nearly a decade, the series is no longer published. But all of the more than seven dozen *Sandman* tales are widely available in collected editions. The following are some suggestions on where to start. Keep in mind that these "comics" are serious art, intended for adults; don't buy these for your 10-year-old niece.

Dream Country

This isn't the first *Sandman*, but it's where Gaiman really hits his stride. Learn about imprisoned muses, view the dreams of cats, and hang out with Will Shakespeare.

A Game of You

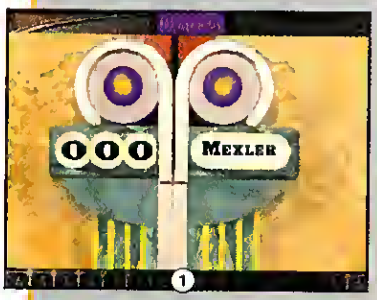
More bizarre, yet likable, characters than you'll ever meet this side of a Lewis Carroll novel, featuring a blonde heroine named Barbie, a female rock star (who just wants to settle down), a chillingly practical witch, and a weird villain, the Cuckoo, who attacks victims in their dreams.

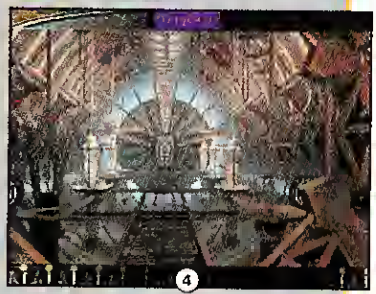


The Doll's House

This can either be read as a fairly straightforward story about serial killers or as a parable on what to do when you make the wrong choices in life—it's enlightening, uplifting...and creepy as hell.

Puzzle Me





MORPHEUS has a nice variety of puzzles, such as (1) this stateroom door lock, (2) a calliope puzzle during a dream, (3) a cadaver, and (4) the Neurographicon (the dream machine).

2ND GUEST Two of the Herculania's resident ghosts have a chat.

Marking Time

HEXPLORE May Get You Through Those RPG Blues, but That's About It

by Tahsin Shamma

For RPG fans, this year has been one agonizing bout of frustration. We've been forced to contend with one delay after another for all the cool, upcoming games. If you're one of these individuals plagued by RPG withdrawal, you'll be interested in HEXPLORE. This modest little game will ease your pain for a while. But if you're expecting it to be the next best cure since aspirin, don't get your hopes up.

If It's Not Scottish...

The medical treatment starts as the game unfolds, with a plot based in the real world circa A.D. 1000, only this time, the magic and monsters are real. You play the role of Mac Bride, a brave adventurer from Scotland off to fight in the Crusades. On your way to the Holy Land, you come across some helpless folks who are plagued by the evil minions of the wizard Garkham. From there you uncover the quest to find the book of Hexplore, an ancient text that leads to paradise.

The good thing about HEXPLORE is that it doesn't deviate much from a tried and true formula. Gameplay is somewhat akin to both GAUNTLET and DIABLO, but the fully rotatable 3D terrain gives HEXPLORE its own feel. The characters you enlist to join you in your quest are also well defined. The game requires you to have only one Archer, Wizard, and Warrior in your party. So calculating the right mix of character types isn't a problem.

You might think that managing four heroes could get complex since most of the action takes place on a small scale, with each character able to move anywhere he or she wants. Actually, the interface for controlling your characters has been designed so well that directing actions among characters and scenes is accomplished through simple mouse clicks. The interface is so well done, in fact, that it makes you wish that other games would use the same system.

Another interesting element is the level to which combat strategy is necessary to succeed. Since each weapon is designed specifically for a certain character class, managing the four heroes and using their weapon strengths becomes a must. Since all this takes place in realtime, the tension is increased even further. If you prefer a slower level of combat, the game provides onscreen speed controls to slow the action down to a crawl.

OLD AND NEW HEXPLORE's 360-degree camera lets you view the action from any angle—which is cool, but the cool views are wasted on dated graphics.

Kill, Search, Repeat

The fun breaks down, however, when you discover that much of the game involves the same thing over and over again: cleaning out a level full of monsters while searching for the object that unlocks the next level. This brand of gameplay keeps your attention for the first few levels, but soon you'll be scrambling for the Valium to help stop you from banging your head into the monitor when you can't find that last hidden key.

The other thing that drags the game down is the horrendous quality of the in-game graphics. Speed is always an issue when dealing with 3D nowadays, and the less detail you have the more machines can run your software. However, the design team really didn't seem to put much effort into making the gameplay art look even remotely up to today's standards. On the other hand, if you still haven't upgraded from a standard VGA card, enjoy!

In the end, if you're looking for something to alleviate your RPG addiction, you'll find HEXPLORE enjoyable, even with its mild side effects. But if you're like the RPG addicts here at *CGW*—with our hauntingly vivid dreams of BALDUR'S GATE and DIABLO II—you'll find that this isn't quite the fix we were looking for. CGW

Tashin Shamma spends his time in the STARCRAFT universe when he's not exploring RPG worlds.

COMMAND AND CONQUER You can command a party of up to four characters, which is made simple through a well-designed and well-executed game interface.

COMPUTER GAMING WORLD

★★½☆☆

APPEAL: RPG fans looking for something to do before Christmas.

PROS: 3D terrain; great interface.

CONS: Gameplay gets repetitive fast; bad in-game graphics.

DIFFICULTY: Easy.

REQUIREMENTS: Pentium 100, Windows 95/98, 16MB RAM, 5MB hard-disk space, 4x CD-ROM drive, supports Sound Blaster–compatible sound card, SVGA video card.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: LAN, Internet (2–4 players); 1 CD per player.

Price: $29.95
Publisher: Infogrames Entertainment
San Jose, CA
(408) 289-1200

www.infogrames.net

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Daze of Mages

Monolith's Rage of Mages Coulda' Been a Contender

by Johnny L. Wilson

Betrayal, carnage, and sorcery abound in Monolith's RAGE OF MAGES, a mission-based role-playing game with real-time combat. The 3D terrain affects line-of-sight and impacts travel. The spell effects are delightful. The story makes sense in an epic way. Natural catastrophe has set off a cycle of endless war. And your hero must travel through a magical portal to the mysterious island (or alloid in the Russian version) of Uimoir to recover the artifact, which will stop the suffering. The missions are short enough to provide a quick game fix, the single-player equivalent of a beer-and-pretzels game. Like the protagonists in the movie *Stripes*, "You get in, you get out. Nobody gets hurt." Yet...

SNAKE HANDLERS My mage had to retreat back to the rest of the party to keep from being killed by this bone snake. Fortunately, the NPC mage was ready to heal me.

The game, which *could* have started a trend—lightweight Monte Haul role-playing where you play fast, advance fast, and get lots of goodies—doesn't start a trend. It has nice plot twists, terrific art, scaling play balance, reasonably intelligent pathfinding and fighting AI, and interesting terrain allowing you to use varied tactics—and there's plenty to do. Yet, RAGE OF MAGES ultimately fails to satisfy.

The Beast

We won't even mention the bad voice-acting. It was better before the English translation. Importantly, RAGE OF MAGES features two design problems that have killed games for eons. First, the game suffers from being too Monte Haul. The generous nature of the wealth thrown at your party and assembled in the course of each mission causes an inflationary spiral within the game world. The costs of your mercenary units, the allies you'll need in most missions, simply keep going up. This requires a boring part of the game that I call the "scavenger phase." You've already defeated the bad guys, rescued the good guys, or recovered the potion, amulet, or cloak. Now, instead of moving to the next mission, you have to run around and retrieve all of the weapons, gold, potions, and armor left behind by your late foes. There should be a "retrieve all bags onscreen" hot-key to reduce the mundane task.

CLOAK AND CHOKE Sure you can heal the NPC with the cloak you have to regain, but can you get past his bodyguard?

Second, the game suffers from single-answer solutions. Need some air support when you break the siege of that castle? You must go to the southwest corner of the map and retrieve that elixir. Then, go to the northwest and make sure that the correct mage has the elixir so that the dragon will talk to you (otherwise, nothing happens). Then, you go to the northeast corner of the map and perform salvage operations after the dragon has wiped out most of the opposition. Another scenario requires the use of a certain spell. If you haven't purchased it, you're dead. Another scenario requires the discovery of "Teleport," but you might have to stretch the truth to get it. Otherwise, you're dead.

The Beauty

If you don't mind playing "Read the design team's collective mind!" in some of the missions, there's lots of pleasure in RAGE OF MAGES. The animated spell effects are delightful; tactical opportunities are interesting; and the story has some interesting surprises. There are hot-keys to speed up play and plenty of options to help you play your way. You can get into the game quickly because there are in-game tutorials on most things. Best of all, you can play for 30 minutes or spend the entire night gaming. It's role-playing that doesn't require a lifestyle change.

It's highly unusual for the person who wrote the sneak preview for *CGW* to also write the review. With RAGE OF MAGES, however, I felt it was necessary. I had hoped it would become the next DIABLO—Monte Haul role-playing with a bit more depth. Instead, it's a game for people with patience. Unfortunately, that doesn't include most of us. CGW

Johnny L. Wilson is the Editor-in-Chief of CGW *but still loses to his colleagues playing AGE OF EMPIRES.*

COMPUTER GAMING WORLD

★★★☆☆

APPEAL: Role-playing fans who want a quick fix of fantasy each night but don't have to give up depth.

PROS: Interesting tactical problems; nice plot twists; great design concept

CONS: Bug doesn't allow completion of one scenario, some puzzle solutions are far too linear

DIFFICULTY: Easy but scaleable

REQUIREMENTS: Pentium 166, Windows 95/98 or NT 4.0, 32MB RAM (recommended), 85MB hard-drive space, DirectX5

3D SUPPORT: None.

MULTIPLAYER SUPPORT: Modem (2 players), LAN or IPX (2–4 players), 1 CD per player.

Price $39.99
Publisher Monolith Productions
Kirkland, WA
(425) 827-3901

www.lith.com

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Blast From the Past

Papyrus Takes Racing Simulations to New Heights of Realism, Difficulty

by Gordon Goble

Papyrus Design Group has a history of developing games targeted squarely at those who will accept only the most realistic PC racing available. The fact that titles such as NASCAR RACING and INDYCAR RACING—with their hypercomplex car models, realistic tracks, and sophisticated garages—have met with huge critical and commercial success proves that there really is an audience for the serious racing simulation.

Recently Papyrus has relented somewhat on the strict authenticity of its products, adding "arcade" features, numerous driver aids, and an omniscient crew chief/spotter to the latest NASCAR. Is this a sign of things to come? Not bloody likely

I MEANT TO DO THIS Handling the cars in GRAND PRIX LEGENDS is going to take every ounce of talent that you have. Plan on spending a lot of time sideways or on fire.

COMPUTER GAMING WORLD

★★★★☆

APPEAL: Serious racers craving realism; historical racing buffs.

PROS: Authentic physics modeling; excellent AI; big-time crashes and outstanding replays; ultradetailed cars.

CONS: Car dynamics may be perplexing for many; possible frame-rate problems; collision detection questions.

DIFFICULTY: Advanced.

REQUIREMENTS: Pentium 166, Windows 95/98 with DirectX5 or later, 32MB RAM, 59MB hard-drive space, 2x CD-ROM, 2MB DirectX-compatible SVGA video card.

3D SUPPORT: 3Dfx or Rendition.

MULTIPLAYER SUPPORT: Internet, LAN (2–20 players), modem (2 players), serial (2 players), 1 CD per player.

Price: $49.95
Publisher: Sierra Sports
Eugene, OR
(800) 757-7707

www.sierrasports.com

GRAND PRIX LEGENDS (GPL) is the latest in the Papyrus/Sierra racing collection, and it is anything but dumbed down. Instead, it will in all likelihood elicit one very serious question from even the staunchest of the Papyrus faithful: Has this realism thing perhaps been taken a bit too far?

Glory Days

Now, make no mistake about it, GPL may well be Papyrus' finest hour. Dave Kaemmer, Matt Sentell, and the usual suspects at Papyrus have fashioned the most astonishing physics model ever to grace a racing game. They've coupled it with heretofore unseen levels of artificial intelligence, intricate graphics, typically bloodcurdling Papyrus crash effects, and a compelling sense of history that focuses on one highly interesting era: 1960s Grand Prix racing.

But at the same time, GPL is so rigorous that even the most skilled sim driver may well find himself several hours into the game before he's managed to turn his first successful hot lap, never mind getting moderately competitive. In short, if you've felt the inherent difficulty of past Papyrus games borders on evil, GPL is a few more steps down that dark staircase to virtual racing hell.

RUSH HOUR GRAND PRIX LEGENDS' excellent replay feature lets you view the results of your race from a variety of angles—which can be a great teaching aid.

The culmination of three years of development, GPL is a study in retro racing from the first moment on. Its conservative menus are decidedly subdued, classic in design, and without the flash and musical explosions of most other auto racing games. As a matter of fact, there's no music to be found anywhere—and for some that will be a step in the right direction.

GPL chronicles the cars, drivers, and races of the 1967 Grand Prix season. It also takes great pains to re-create the storied and oh-so-hazardous racing circuits of the time. These were mean streets that took skill and cunning and, often, life and limb. The design team has done an excellent job on every major element, including each narrow Monte Carlo chute and all 14.2 excruciating miles of Germany's sprawling and nightmarish Nurburgring.

Pedal to the Metal

As for the driving experience, well, there's never been anything quite like it. Mostly though, it's just difficult, really really difficult—a trembling journey into the limits of

track adhesion of period cars (Lotus-Fords, Ferraris, and the like), which were far too fast for the stick their bodies and tires could provide. There's no mistaking that the power is applied through the rear wheels, and there's also no mistake that Papyrus has removed virtually every safety net.

Sure, braking and throttle assistance and automatic transmissions are available, but even with these aids drivers are constantly on edge from green flag to checkered flag. And don't be thinking you'll have some magical on-screen HUD to convey pertinent information. Back then, everything was manual, with the simplest of cockpit instrument panels and no pit communication whatsoever. So it is in the game.

Heck, I *still* find myself going back to the "arcade" rear chase view over and over again, despite knowing that the truly fast times will eventually come through the in-car perspective. I certainly can't perceive subtle in-car sensations quite as well from back there, but it does give me a better grasp of space restrictions, momentum, velocity, and skid intensity—important aspects to consider when you can't confidently regulate the advanced GPL car model.

But those who do manage to come to grips, so to speak, with the complexity of the physics will find their job far from complete. You see, no matter how good you get behind the wheel, it's going to take some extensive mechanical tinkering just to get past midpack, much more so than any other Papyrus product to date. For that, of course, there's the GPL garage, a facility that allows you to tweak virtually every tweakable aspect of these vintage cars.

Yet having the necessary tools and knowing how to use them are two completely separate issues. Unlike previous Papyrus titles, the GPL garage does not stock any "Fast" or "Ace" setups and is brain-numbingly involved, featuring a number of esoteric modifications whose combined effects can be fully understood only through time, experience, and *lots* of patience. The game does come with a thorough strategy book, but it stops short of spelling anything out for you.

SUMMER OF LOVE GRAND PRIX LEGENDS' plain-vanilla setup screens are prettied up with authentic posters from the actual Grand Prix races of 1967.

OLD SCHOOL HEROES Race with some of the, eh, legendary figures of the 1960s in GRAND PRIX LEGENDS.

AIRBORNE! One of the upsides of racing a car that you can barely control is that you'll spend a lot of time doing things you never would survive in real life—like flying, for example.

Saving Grace

GPL features some of the finest artificially intelligent drivers ever plunked in a racing game. I mean, these guys are smart—bobbing and weaving and showing off their collision avoidance time and again during my unimpressive initial forays. I know it's hard to believe, but they'll even veer calmly off the track and back on again should the situation be severe enough. Odd then that a completely *motionless* car may force an entire field to a full stop. The cars line up behind the stalled vehicle just as they did in both INDYCAR RACING games.

Visually, GPL will seem a bit stark at first. Lighting effects are nonexistent and incidental trackside objects are often very 2D and appear to be no more complex than previous Papyrus games. But play the thing a bit, and you'll notice that the game developers have funneled their artistic talents into the things that really matter.

Other critical perks include amazingly intricate cars that are solid and perspectively correct from any angle, suspension that jitters and jumps at *all four corners of the car*, varying degrees and shades of gritty engine and tire smoke to suit each circumstance, and a lovely assortment of sound effects.

Most notably though, GPL is widescreen, with black bars across the top and bottom of the screen and a panoramic perspective from side to side—a great idea for a driving sim. And in quintessential Papyrus style, multipositional replays are both TV-quality *and* a great learning aid.

Time to Die

If you enjoy a little slice-'n'-dice with your wheel-to-wheel action, Papyrus hasn't forgotten about you either. These cars blow apart into a shower of strewn chunks that acrobatically flip through the air.

It's an all-too-real ode to the danger of mid-'60s Grand Prix racing, but one that's muted slightly by collisions that *should* have happened but didn't. You see, sometimes cars can contact without any noticeable result. In fact, I've watched several replays where the wheels of one car have merged through wheels of another like they weren't even there. Of course, I was backtracking at the time hoping for yet another episode of horrific carnage, and maybe the game just isn't set up to handle crashes at a combined speed in excess of 350 mph.

The frame-rates, meanwhile, seemed just fine under normal racing conditions but far less so should mangled cars and smoke fill the screen. Fortunately, Papyrus has included an absolutely enormous graphic options menu.

Hard Sell

Papyrus is to be praised for its commitment to authenticity and the know-how and creativity involved in concocting yet another landmark simulation. However, many will find GRAND PRIX LEGENDS to be almost too realistically tough and will give up before the game's many joys can be uncovered. It's a great game, but the question to ask yourself is: Do you have the talent and patience to handle it? CGW

Gordon Goble is a former agent for a professional racing team.

COMPUTER GAMING WORLD EDITORS' CHOICE

Speed Freak

Beautiful, Realistic, and Intense, NFS III Takes Arcade Racing to the Limit

by Kenneth Johnson

NEED FOR SPEED III: HOT PURSUIT (NFS III) is the latest addition to Electronic Arts' long-running series of driving games, and it takes the series' reputation for excellence to new heights.

The graphics are absolutely gorgeous—perhaps the finest I've seen in a racing game to date. The texture maps used on the cars accurately reflect the surrounding environs. Reflections of trees, buildings, other cars, and tunnel lights flicker across the surface of your car. The effect is really intense at night and in Hot Pursuit mode—flashing blue and red police lights adding to the tension of the chase.

EL DIABLO Y LA POLICÍA If your vice is the desire to speed past the cops in a Lamborghini, NEED FOR SPEED III can help you legally fulfill it.

COMPUTER GAMING WORLD

★★★★★

APPEAL: Fans of driving games and anyone else looking for the ultimate road-racing experience.

PROS: Stunning 3D graphics; ultra-realistic physics model; clever track design; truly cool cars.

CONS: Menu interface is somewhat nonintuitive; some cars not available in Hot Pursuit mode.

DIFFICULTY LEVEL: Easy

REQUIREMENTS: Pentium 166, Windows 95/98, 16MB RAM, 90MB hard-drive space, 4x CD-ROM; supports DirectX5-compatible graphics and sound cards, mouse.

3D SUPPORT: Direct3D, 3Dfx Glide.

MULTIPLAYER SUPPORT: Modem or serial connection (2 players), LAN (2–8 players).

Price $49.95
Publisher Electronic Arts
Redwood City, CA
(650) 628-1500

www.needforspeed.com

But, fortunately, NEED FOR SPEED III is a lot more than just pretty graphics.

Drive-by

NFS III provides several single-player modes and supports multiplayer action over a local network. The most basic mode lets you drive a single race against a single car or a full grid on any of the unlocked tracks. Tournament mode pits you against a full grid of other high-priced road racers across a series of tracks. Knockout mode is similar except that the car placing last is eliminated at the end of each race—until it's just you and one other driver.

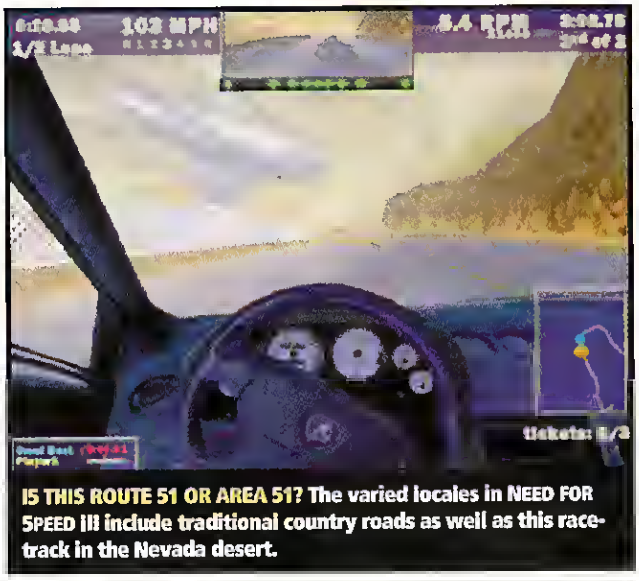
The full-featured multiplayer mode can make for some seriously competitive white-knuckle driving sessions. Playing against the AI is okay for getting familiar with the tracks and unlocking the secrets, but the gameplay really takes off when you go up against other real drivers.

Hot Pursuit mode is where you get to see whether you've got what it takes to run from the cops—or to chase down speeders if you prefer to play the long arm of the law. Each of the tracks presents a different group of police interceptors. The small town cops of Hometown talk and drive like they're straight out of Hazzard County. On the *Red Rock Ridge* track you'll encounter rangerlike officers driving souped-up utility vehicles.

The AI here is the most advanced I've seen. The police set up roadblocks with tire spikes and use realistic tactics, such as trying to box you in and slow you down. They are also not beyond running you off the road—since after all, you're probably armed and dangerous. If your speed drops below 55 mph and a patrol car is close enough, you're stopped and either sternly warned or, after repeated violations, arrested and taken off the street. The complete rush of being involved in a high-speed pursuit is certainly one of the most compelling aspects of the game.

Circuit City

The game comes with four basic tracks—each with its own distinct challenges and ambiance. The



IS THIS ROUTE 51 OR AREA 51? The varied locales in NEED FOR SPEED III include traditional country roads as well as this race-track in the Nevada desert.

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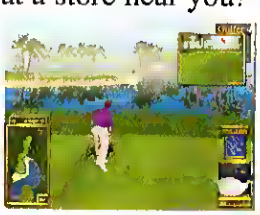

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*Voted 1998 most played coin-operated game of the year by Amusement Machine Operators Association

BUMPIN' UGLIES WITH THE MAN While noticing the smoke, lighting, and rain effects in this shot, also pay attention to the cop here because...

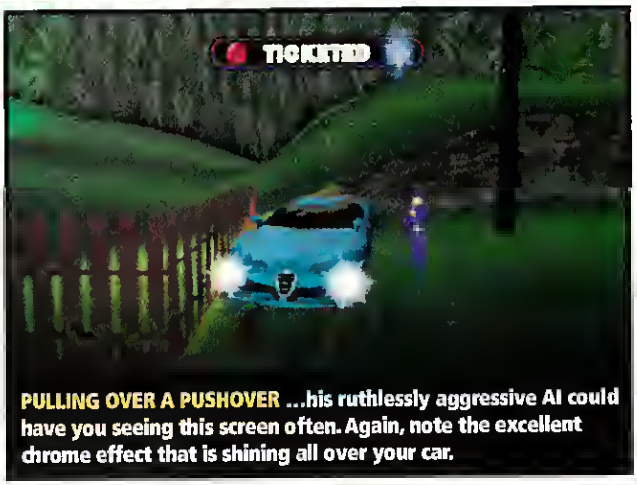
Hometown track is set in farmland located in middle America and features a wicked 90-degree turn right in front of the county courthouse. *Redrock Ridge* is set in the painted deserts of the southwest and is a roadrunner's paradise. *Atlantic* offers a futuristic high-tech cityscape by the sea, while *Rocky Ridge* provides the classic Alpine road racing course with steep climbs and hairpin curves.

If you win in Tournament mode, you unlock extended versions of these basic tracks, which leverage the experience you've gained with each track but are more challenging and expansive. (It will also unlock the Jaguar XK8 or the Mercedes SL600, depending on the difficulty setting.) The attention paid to small details is what really makes these tracks stand out. The environment is completely interactive—anything you might knock over will remain that way the next time you pass. These tracks are real 3D environments, not just pretty backdrops that flash by your car. Each one also offers secret shortcuts and cool jumps to keep things interesting. Sounds—such as barking dogs—as you scream through a town in the early morning add to the game's overall realism.

To unlock the other tracks you must win in Tournament mode and Knockout mode. Winning in Knockout mode unlocks the *Empire City* track, a noirish nighttime inner city with lots of steep hills, freeway underpasses, and hidden jumps.

Auto Shop

NFS III offers a very cool selection of cars. There are offerings from Aston Martin, Ferrari, Lamborghini, Italdesign, Jaguar, and Mercedes. From the fabulous handling Ferrari SS0 Maranello to the powerhouse Lamborghini Diablo SV, the entire gamut of high-priced, high-performance automobiles is well represented. Particularly interesting is the Italdesign Scighera, which is a prototype interpretation of an Alfa Romeo sports car and is not for sale. This could be the closest thing you can get to actually driving one. EA is also going to periodically provide new cars for downloading from the game's Web site (**www.needforspeed.com**). The first car made available at the time this review was written is the experimental Spectre R42—an English supercar with lots of power.



PULLING OVER A PUSHOVER ...his ruthlessly aggressive AI could have you seeing this screen often. Again, note the excellent chrome effect that is shining all over your car.

The Lamborghini Diablo SV is the fastest car in the game and has the best acceleration. Although the curvy nature of most of the tracks makes it difficult to maintain top speed, the ability to accelerate past the pack makes it the best car to use in the single-player modes. In Knockout mode it is always one of the other Diablos that you will be dueling on the final *Empire City* track.

The game's force-feedback support is excellent, and owning this game is reason enough to purchase a good force-feedback wheel. Using a force-feedback wheel lets you really feel the road. When the road surface changes—when you drive over a cobbled bridge, for example—the effect is extremely realistic. You also feel the vibration of the car's engine, and each car has a distinctive response. The amount of feedback for road effects, collision effects, engine vibration, and road grip can be adjusted until the balance feels right.

Finish Line

What distinguishes NFS III from other arcade racing games—besides the sheer visceral thrills—is just how realistic it feels. The combination of near-photorealistic graphics with a relatively accurate and detailed physics model really captures the experience of high-speed road racing. During the time I was writing this review I went driving in the mountains. As I cruised along narrow, twisting roads, I kept thinking about how much the experience reminded me of playing NEED FOR SPEED III—at least as far as handling the car went. I wasn't being chased by the police, and I wasn't pushing my Lamborghini much past 60 mph. Okay, so I don't own a Lamborghini. But after playing this game, I sure wish that I did. CGW

When he's not crashing exotic sports cars, Kenneth Johnson can be found playing WORLD CUP '98 and GRAND PRIX LEGENDS.

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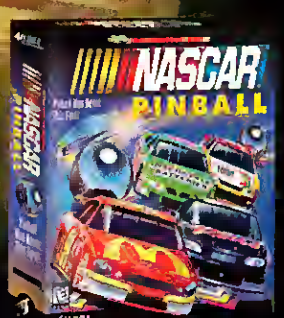

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Maddening No More

EA SPORTS Finally Gets (Almost) Everything Right

COMPUTER GAMING WORLD EDITORS' CHOICE

by Brett Todd

So close yet so far away. That simple sentence just about sums up the checkered history of the MADDEN football series on the PC. MADDEN 96 had so many problems that it never shipped. MADDEN 97 made it to the shelves, but basketball-like scores caused a lot of buyers to wish that it hadn't. MADDEN 98 went out the door incomplete, and required a 10MB patch to bring both the gameplay and the graphics up to par.

This year, however, it's a whole different ballgame. Just when you were ready to throw in the towel, EA Sports and Tiburon Entertainment have produced the Vince Lombardi (sorry, John) of football sims. And I don't use the 's' word lightly. MADDEN NFL 99 is a true simulation that brings virtually every aspect of the pro game to life. Want a pile of current and classic teams? You can pick from more than 120 provided here. Sick of the way that Jim Fassel has been running the Giants into the ground this year? Replace him and draw up your own playbook. Need TV-quality visuals? The Broncos' Bill Romanowski looks almost as mean here as he does on *Monday Night Football*. Up for guiding your favorite club through multiple seasons? Key up franchise mode and you too can have the pleasure of cheating the salary cap. As John Madden says in the intro: "You want big time football? The hits, the boom, the doink, the whap? It's all here."

COMPUTER GAMING WORLD

★★★★½

APPEAL: PC pigskin fans who want a good mix of action, simulation, and management options.

PROS: Accurate on-field action; franchise mode; gorgeous visuals and sound.

CONS: A few problems with the computer interceptions and running game; Internet play too laggy.

DIFFICULTY LEVEL: Intermediate.

REQUIREMENTS: Pentium 166 MMX with Direct3D compatible graphics accelerator card (P200 MMX without), Windows 95/98, 8x CD-ROM, DirectX6-compliant sound card, 16MB RAM.

3D SUPPORT: 3Dfx, second-generation D3D-compatible cards (all major chipsets).

MULTIPLAYER SUPPORT: IPX compliant network (2-8 players); modem (28.8Kbps or faster required, one CD per computer), or serial play with null modem cable (2 players); TCP/IP internet connection (2-8 players).

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www.easports.com

JAGUARS RIPPED MY FLESH Those sad sack Colts aren't much of a match for the powerful Jags this year—on the computer screen or anywhere else. Oh, and accuracy fans should note that Mark Brunell does throw left-handed in MADDEN 99.

She's a Beauty

The gorgeous graphics are what you'll first notice about MADDEN 99. After stumbling badly last year, the designers have responded by crafting perhaps the most gorgeous visuals ever seen in a PC sports game. It's certainly the most stunning-looking football game ever. EA SPORTS boasts that each player contains 1,200 polygons, but you'd never know it. Thanks to excellent use of 3D acceleration (Direct3D and 3Dfx modes look virtually identical, by the way), the players are almost as rounded and as lifelike as what I watched on my TV last Sunday.

BACK TO SCHOOL "The hits, the boom, the doink, the whap"? Hmmm. Maybe Madden 101 should be an English course.

The little touches, such as authentic weather effects, really make this game something special. Dorsey Levens pants hard after every tough run, and you'll even see each puff of his frosty breath if it's cold enough at Lambeau Field. All the atmosphere of stadiums like Soldier Field and 3Com Park (Candlestick) is brought to life courtesy of some beautiful artwork. Uniforms are reproduced in exacting detail, right down to the last shoulder patch.

Animation is equally superb. Players walk, run, juke, and dive exactly as they should. Tackles are as authentic as you'll get this side of NFL Films. Instead of the standard "touch 'em and fall down" approach of football games past, MADDEN 99 players haul down their opponents with textbook wrap-and-rolls.

Let the Good Times Roll

MADDEN 99 is much more than a pretty face. Quite frankly, this game plays more like NFL football than anything I have ever seen. Where past MADDENs leaned so far toward action that they left realistic football behind, this one successfully walks the fine line between arcade and simulation. You really have the best of both worlds. Gamepad pushers get full 10-button support for jukes, stiff-arms, spins, and swim moves, along with a new one-button mode to simplify things (get the timing right and the PC handles everything else) and a directional pass method (point the D-pad

toward the receiver). Strategists can switch over to coach mode and call all the plays with a mouse. Both modes work great.

I've also been delighted with the intelligence of the computer-operated clubs. Whenever the PC has a chance to bury me inside the 10 with a well-angled punt, it does so. Clock management is very good. You can usually count on the computer to work the ticker with all the experience of Mike Ditka in the waning moments of the game (although you'll occasionally see some wasted time). Perhaps most impressive is the way that the AI learns from its human opponent. If I call a half-back push up the middle on first down too often, the PC makes me pay for it with a rather prescient defensive call. Same goes for pump fakes.

These smarts also mean that teams generally behave as they should. Thanks to custom playbooks that mirror the real-world originals, MADDEN 99's Dallas Cowboys run out of the 'I' formation a lot, the 49ers favor a wide-open aerial attack, and the Redskins commit ritual suicide on the sidelines after the coin toss. Virtually all of the decisions made by the digital coach are proper ones.

UP YOURS, MODELL! You can get a jump start on the NFL's return to Cleveland by playing with a fantasy Browns 99 team—it's a lot better than the one that moved to Baltimore, too.

That said, the gameplay is not perfect. Defensive backs and safeties are a little too good with their coverage. I like the fact that MADDEN 99 is tough on QBs who like to throw into crowds, but making this mistake shouldn't result in as many interceptions as it does. Balls that would simply be batted away in the real world usually end up as picks here.

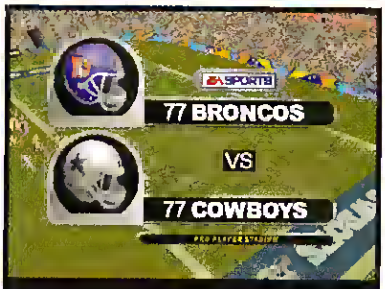
The running game is also flawed at times. While you can develop an effective ground assault, it's overly tough to run to the outside—particularly at the higher difficulty settings. Blocks rarely materialize when you run a sweep, with the result being that even the likes of Barry Sanders has a tough time making it back to the line of scrimmage. The PC sometimes can't accomplish anything on the ground. Even the better running teams like Green Bay and Dallas have it tougher than they should. Porous defenses (that of Carolina, for example) can often completely shut down the Emmitt Smiths of the league.

UP AND OVER Terrell Owens makes like Jerry Rice (or should that be Willie Mays?) with a dynamic over-the-shoulder snag.

Play it Again, John

A huge list of options adds to the replay value. Three skill levels—pro, all-pro, and Madden—allow beginners to work their way up to the big leagues. You can further tweak almost every game condition imaginable, including fatigue, injuries, and penalty sensitivity. Internet play is available for those who get bored playing by themselves. A play editor lets you create and save your own customized playbooks. All of the current NFL teams and stadiums are included, along with every Super Bowl and NFL championship club going back to 1966. There's even special 1964 and 1999 Cleveland Browns squads and stadium on hand for those who can't wait for the league to return to the Mistake by the Lake.

There are a number of different play modes, from practice and exhibition right through to 8- or 16-team tournament, season, and custom season. You can also run customized fantasy draft tournaments, dumping the entire league into a common pool and selecting rosters for 4, 8, or 16 clubs who will duke it out in a single-elimination tourney.



ORANGE CRUSHED...AGAIN Thanks to the huge selection of past teams, you can replay any Super Bowl you'd like. History occasionally repeats itself, though. Craig Morton and crew fared just as bad against me as they did against Tom Landry.

Probably the most eagerly awaited feature is franchise mode. While it won't satisfy the FRONT PAGE SPORTS: FOOTBALL PRO junkies out there, average players will appreciate the added depth in franchise play. Having to run a four-round draft, stay under the salary cap, and win enough ballgames so you don't get canned is also a real challenge. Computer-owned teams add spice to everything by serving as major participants in the action. They'll offer trades to the player and make moves with one another. The only real flaw in all this is a 15-season limit. So if you want to guide the Eagles into 2013 (hey, it'll probably take that long for them to become competitive again!), you'll have to wait for Sierra's FOOTBALL PRO 99.

IN YOUR FACE ACTION Picks get run right into your lap in MADDEN 99. Shawn Wooden almost jumped off the monitor after breaking up a long drive of mine at Pro Player Park.

Of course, there are a few mistakes in execution. Default settings for the Sidewinder gamepad are atrocious (thankfully, they can be customized). The menu and play editor interfaces betray the title's console roots. There's still no way to create or edit a player. Franchise play is limited to the 30 current NFL teams, and, unlike single-season mode, you can't customize any of the divisions. You can't use the fantasy draft in either franchise or season modes. Also, lag is a major problem with Internet match-ups.

Strangest of all is the sub-par audio. For a game that plasters John Madden's mug all over the place, he's rarely heard from once the players take the field. He and Pat Summerall are relegated to providing just the occasional generic comment this year. In-game sound effects are somewhat more effective than the play-by-play, but are little better than average.

Regardless of these minor issues, it's impossible not to give MADDEN 99 an unconditional recommendation. This game delivers on all the broken promises of previous editions in a big way. With dead-on gameplay, career and management options, and ravishing visuals, it is the closest we've come to recreating football on the PC. I don't know about the "boom" and the "doink," but John's sure made good on everything else—it's definitely all in here. CGW

Brett Todd has been enjoying FRONT OFFICE FOOTBALL and is currently planning to murder the guy who designed mission #10 in COMMANDOS.

Front Runner

An Outstanding, Addictive Football Management Sim

COMPUTER GAMING WORLD EDITORS' CHOICE

by Dennis McCauley

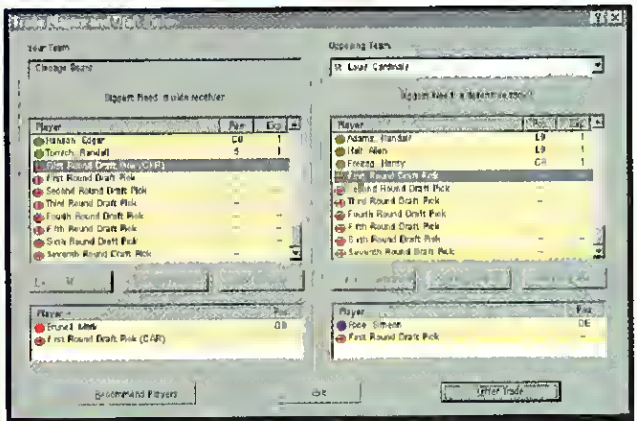
FRONT OFFICE FOOTBALL (FOF), a football management sim from tiny start-up Solecismic Software, is unabashedly inspired by last year's surprise smash, BASEBALL MOGUL. However, FOF takes MOGUL'S winning formula several planes higher. It's an incredibly detailed simulation of the business side of the NFL. After intensive FOFing, I feel qualified to take over the reins of a pro football team.

Show Me the Money

FOF walks you through an NFL season in cycles. As the new campaign begins, your most important task is to conduct the college player draft. For draftniks like me, this game within a game is itself almost worth the price of admission. Your team's draft position is based on last year's standings. However, you can trade up or down based on your assessment of the talent level in the draft. Available players receive a rating number from your scouts. As the draft progresses, your choices mount. Should you draft the most highly rated player? Or should you select a collegian who fills one of your position needs even though he's rated lower? Such quandaries have sent more than a few player personnel directors scurrying for their ulcer medicine.

With drafted players in hand, you'll move into the free agency period. You'll be stunned by sticker shock NFL-style. Players expect signing bonuses on top of annual salaries. The bonuses, which can be huge, apply against the cap. It's your job to conduct negotiations and lock in your key players—all the while keeping costs down.

FOF's negotiation model is the best I've seen in a sports sim. The dickering is truly interactive. You can opt for single- or multiyear contracts, adjust the bonus, or decline to make an offer. The player agent AI is formidable. Virtual Jerry Maguires won't let you "back load" contracts. They understand a ruthless general manager like you will probably release their player in the expensive later years of the deal. While there is some room for salary adjustments, the AI aggressively protects players' financial interests.



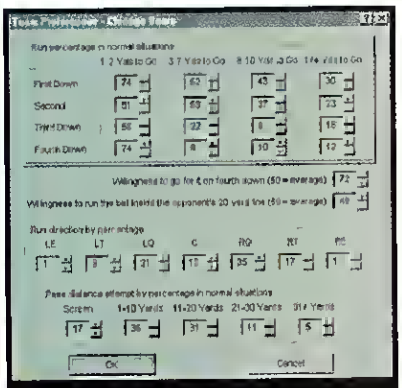
WANNA TRADE? Like everything else in this game, the trade AI in FRONT OFFICE FOOTBALL is realistic and tough.

Trading offers another means of building your team. Deals in FOF can be made for players or draft picks. You can approach other teams or they may contact you. Trade AI is fairly tough, although a team can occasionally be persuaded to ship you a first-round pick for an aging star.

Field General

Once you've set your roster, you can tweak your depth charts or have your staff do it for you. Games can be quick-simmed or played out by the CPU with a text-based, play-by-play accompaniment. The stats and results generated are within realistic ranges. There is, however, no human control during the game itself. The best field generalship you can provide is to fiddle with the rudimentary percentage system that passes for a game plan.

Winning the financial game is paramount, but success on the playing field is also an important consideration in FOF. To win you'll need to accumulate talent. This means solid scouting and coaching. Player ratings are not transparent in FOF, so you'll need to rely on your scouting reports. Scouts and coaches are rated on their ability to evaluate, teach, and motivate various players. If you do feel the need to make a change, there's always a pool of replacements available—at a price.



DETAILS, DETAILS In FOF you can't actually play the game on the field yourself, but you can tweak virtually every detail of your team's on-field behavior for simulated games.

In the Red Zone

Is FOF a perfect game? Not quite. The interface could be smoother, requiring fewer clicks to access various data. Although the game saves career stats, it would be more useful to be able to view yearly stats as well. In the current version once the season ends, the stats and standings disappear.

Despite these few minor flaws, FOF is easily the deepest NFL sim I've ever played. It offers a loving attention to detail that is too often missing in games these days. For hard-core NFL junkies, FRONT OFFICE FOOTBALL is as good as it gets. CGW

Dennis McCauley was caught committing recruiting violations in FRONT OFFICE FOOTBALL. He has been declared ineligible for post-season play.

COMPUTER GAMING WORLD

★★★★½

APPEAL: NFL fans, sports management devotees, control freaks.

PROS: Has the details down; gives a realistic depiction of how money runs pro football

CONS: Interface is a tad cumbersome in places; has no opportunity for on-field leadership.

DIFFICULTY: Intermediate.

REQUIREMENTS: 486 100MHz PC, Windows 95/98/NT, 16MB RAM, 256-color SVGA, mouse.

MULTIPLAYER SUPPORT: None.

3D SUPPORT: None.

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College Try

NCAA FOOTBALL 99 Is Better Than Last Year's Model, but It Could Still Use a Tutor

by Dennis McCauley

Veteran sports gamers will recall EA Sports' NCAA FOOTBALL 98 as one of the few bright spots in last year's computer football debacle. Despite its throwback graphics and poor viewing angles, gamers were enamored of the NCAA's fluid player animations and authentic college football flavor. Small wonder, then, that the football crowd was expecting big things from the NCAA franchise this time around. Does the game deliver? Yes and no.

DEKE LOVE Fluid player animations were one of the highlights of last year's NCAA FOOTBALL, and this year they're even better—thanks to sharper polygonal models.

The Gang's All Here

The old school flavor is still there—with every Division 1-A team represented in authentic uniforms. There are also 123 different stadiums provided, although their level of detail is rather uneven. NCAA's polygonal players look much better this year, especially at 800x600 resolution with 3Dfx acceleration and detail settings at high. Returning are the excellent player animations, which ensure the action in NCAA 99 is impressively realistic. You'll see ball carriers leveled with jarring hits, defenders swiping at the pigskin, and tackled players going down realistically—at times sliding along the turf.

Unfortunately, the game drops the ball with an absurd collection of camera angles. The default view behind the offensive backfield is too constricted to be effective. By failing to show much beyond the tackles, gamers can only guess about what their wide receivers are up to. If a cornerback is cheating up for a blitz, you'll have to remember to sneak a peak with your game pad; otherwise, you're dead meat.

The alternative views aren't much better. Ranging from a helmet cam to a blimp view, there's not one that offers a truly useful perspective. Since the view was a major gripe with NCAA last year, you'd think the EA Sports machine could have devised a better solution. Worse, there's no simple way to switch between cameras. If you're forced to punt, for example, and you'd prefer a perspective from the defensive side of the ball, you'll have to back up to an options menu, cycle through the views, and then return to the play-calling screen. Wouldn't hot-keys have been a much less painless way to accomplish this task? The cynic in me suspects a contagion effect from the console version. After all, PlayStations don't have keyboards, do they?

SNOW DAY Variable weather patterns keep things interesting, as do the 123 modeled stadiums.

Can I Get Some Scouting Here?

NCAA 99 offers several play modes, including practice, exhibition, tournament, and a collection of classic past matchups. Gathering the most attention, however, is the game's Dynasty mode, a feature sorely missed in last year's edition. In Dynasty mode, would-be Steve Spurriers can take multiple stabs at achieving a number-one ranking by recruiting the best high school talent available.

While Dynasty mode is fun, it's little more than a roster-filling exercise as currently realized. That's because your choices are basically which positions to recruit and how hard to recruit them. The intensity of your efforts to impress the high school seniors—all those letters, campus trips, and dates you've arranged with buxom cheerleaders—come down to a simple percentage point expression. How you spread your 100 points around equates to the likelihood a given

COMPUTER GAMING WORLD

★★★★☆

APPEAL: College football fans.

PROS: Great atmosphere; fluid player animations; recruiting system.

CONS: Weird AI tricks, clunky interface, bad camera angles.

DIFFICULTY: Easy

REQUIREMENTS: Pentium 166, Windows 95, 16MB RAM, 1MB DirectDraw 5.2a, 4x CD-ROM; supports DirectX5 2a-compatible sound and video cards, keyboard, and mouse.

3D SUPPORT: 3Dfx Voodoo or Voodoo^2 chipsets.

MULTIPLAYER SUPPORT: Two players on LAN, modem, or serial connections; 1 CD per player.

Price: $49.95
Publisher: EA Sports
Redwood City, CA
(650) 628-1500

www.easports.com

recruit will sign on. It's an overly abstract system. Other than their position, you know nothing about the seniors—not even their names. Is it satisfying? A little. Could it be improved? Definitely.

For example, if I'm recruiting 18-year-old horse flesh, I want to know his size and weight and also where the kid is from. I'd like to know his SAT scores and whether he'd even consider my school before I waste precious recruiting time on him. For an example of how this is done, I'd refer the NCAA 99 design team to GTE's NCAA CHAMPIONSHIP BASKETBALL from a couple years back. Of course GTE is out of the game business and EA Sports is kicking butt—so what do I know?

However, there are some nice touches of recruiting realism. It seems harder, as it should be, to entice blue-chip prospects to downtrodden football programs such as Temple. The service academies, with their high standards and military commitment, also seem to reap a less-talented harvest. Along with recruiting, the game generates an annual report on players who have left the team—be it for the NFL draft or simply because their eligibility has expired. Returning players are rated for their improvement or lack thereof. Using this information as a guide, you can adjust your roster accordingly.

WATCH OUT FOR THAT BAND NCAA FOOTBALL includes 40 historic real-life matchups, including the infamous Cal-Stanford game that took down a few marching band members in the end.

Good Game

Once you've set your roster, play options include arcade, sim, or coach-only. Sims are lightning fast, with scores in the accurate range. An entire week's slate of games can be handled in a matter of seconds, and the game system seems to account for intangibles, such as home-field advantage. Scheduling itself is handled well. The game generates an authentic slate of opponents, including the odd Division 1-AA team.

Arcade play is quite challenging, particularly since it's constricted by the camera angles. For the tactilely impaired, coach mode offers the chance to call the plays without responsibility for carrying them out. Defense is particularly hairy since you have only five seconds to enter your play before the ball is snapped.

Play calling involves selecting a formation and a play from a limited set of choices. Each team has a default offensive and defensive scheme. Navy, for example, offers a Wishbone. Tennessee features a pass-oriented attack even though Peyton Manning has moved on to NFL glory. Within offensive formations, you can choose several looks and can run a dozen plays from each. While the selection of plays is certainly enough to get you through a typical Saturday afternoon, the lack of a play editor severely limits your ability to tweak the Xs and Os.

Despite these shortcomings, NCAA 99 is one hell of a lot of fun to play. Although the interface has rough edges, the game action is right on the money. In particular, the AI does some very nice things, such as having a pressured quarterback throw the ball out of the end zone rather than risk a pick. As mentioned, the player animations are excellent. Running backs duck and cut in an effort to avoid tacklers, and blitzing linebackers sometimes slam quarterbacks to the turf. Penalties, in particular, feel right—both in timing and presentation. It's incredibly frustrating to see your left guard forget the snap count and jump out of his stance just as you were anticipating a big play. Say, can I yank his scholarship?

A BUG'S LIFE NCAA FOOTBALL has a lot of camera angles to choose from, but none are very good—including this view from way back

On the other hand, the AI does some strange things, too. Quarterbacks seem intent on passing to certain receivers, even in the face of triple coverage. Running backs occasionally become hung up on the offensive line for up to 10 seconds—legs churning furiously—before they're either tackled or break loose. On one occasion near the end of the first half, the AI elected not to employ its time-outs even though it was within easy field goal range.

Why are we dwelling so long on the artificial intelligence, you ask? Isn't this the age of Internet play? Well, yes, but not for NCAA 99, which only supports LAN, modem, or serial options for multiplayer. Perhaps EA can recruit some Net play for next year's edition. I'd also be remiss if I didn't point out that a game with a system as rich as NCAA's deserves a decent manual. Once again it shows its console heritage with what appears to be a PlayStation manual on steroids.

Fourth and Long

I like NCAA 99 quite a bit.. Its strong points far outweigh its annoying rough edges. Even more encouraging, at press time a patch was rumored to be near completion that would address some passing issues and add more time for defensive play calling. CGW

Dennis McCauley was caught committing recruiting violations in NCAA 99. He has been declared ineligible for postseason play.

COMPUTER GAMING WORLD EDITORS' CHOICE

Hail Caesar!

Friends, Romans, Countrymen—CAESAR III Is a Resounding Success!

by Tim Carter

Rome. The very name conjures images of grandeur and might, the dominator of the world, the conqueror of vast armies, and truly one of the world's greatest empires. Now, fortunately (and finally), the greatness of Rome has been reflected in a truly impressive game. Rome, if historians are to be believed, was unique in its era; and while CAESAR III probably doesn't stand alone among strat titles, it surely is one of the best, cleanest, and most fun computer games to come down the pipe in recent years

CAESAR III is a game of city construction and defense in ancient Rome. SIMCITY fans (and fans of CAESARs I and II) will no doubt be familiar with the basic concepts of designating land for housing, various economic and social functions, and military defense. As you might expect, your city will also depend on an effective transportation grid (more on that later) and a working economic base of taxes and trade with the rest of the empire.

THE ROAD TO SYRIA Trade is a key to success, and this map view lets you observe and manage your trade routes.

Rome Zones

Cities in CAESAR III revolve around the concept of neighborhoods. In each neighborhood, you must allocate space for the area's primary function (for instance, housing) as well as various related buildings. For the most part, the game makes the process of building a working industrial area quite straightforward, and most gamers will have little trouble arranging the flow of raw materials, storage space, workshops, and the like.

Residential areas, on the other hand, require considerably more planning. All Roman homes must have access to roads and water, and all but the most simple homes must also have access to food. A fully functioning city will require large neighborhoods of high-value, high-density housing, which will, in turn, require health care (baths, doctors, barbers), commercial goods (furniture, oil, pottery), a variety of foods, places of religious worship (a number of different types of temples dedicated to various gods), entertainment (including venues and performers), policing, tax collection, and education (schools, libraries, and academies).

Of course since land is usually at a premium, good planning is a must. Each building you construct sends out a related worker—for instance, markets send out food vendors—who services a limited "route." If you structure your residential neighborhood in such a way that your medical clinics are located too far away from the housing, your physicians will be unable to reach the people, and you'll end up with a health crisis on your hands. When planning, *integration* and *overlap* are two concepts that aspiring emperors will want to get familiar with

Imperial Edicts

The city building core of this game is nice and well executed. What elevates CAESAR III to greatness, however, is the campaign structure within which players operate. (You can build cities just for the sake of building, but I can't see why you'd bother.)

The campaign takes the form of a series of assignments, each with specific objectives set out by Rome. At each step in the campaign, you're given the choice between a dangerous city site and an economically challenging one. Even if you repeatedly select the same

COMPUTER GAMING WORLD ★★★★½

APPEAL: Hardcore strategists.

PROS: Fun, addictive, and clean, nice matching of city building with storyline and plot to give the game variety and direction.

CONS: Quirky AI; may be too daunting for all but the hardest of the hard-core strategy gamers.

DIFFICULTY: Advanced.

REQUIREMENTS: Pentium 90, Windows 95/98, 16MB RAM, SVGA graphics, 4X CD-ROM; supports 16-bit Windows-compatible sound card.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: None.

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scenario type, your path through the campaign will present you with an impressive variety of situations and planning challenges.

This overlay of plot and game direction lends, in my opinion, a much needed storyline to the august series of "building" games that comprise CAESAR III's lineage. Instead of building city after city along the same lines, you must tailor your efforts to the requirements of the scenario. CAESAR III will require different goals from you in terms of how your city looks, while the local situation will present obstacles to be overcome and, if Rome's enemies are around, throw some nasty curve balls at you. (Those Carthaginian elephant troops can be a real problem, if your walls aren't thick enough.) At each new level the designers also throw in some twists (natives, wolf packs, increased dependence on trade) that go a long way toward keeping the game fresh.

On the whole, CAESAR III is a magnificent accomplishment. It comes with a thorough manual, a good tutorial, and useful online help functions. The game ran smoothly on my Pentium 166, even when the large cities created a fairly complicated graphical screen. It never crashed once, which for any program running on Windows 95 pretty much amounts to voodoo as much as solid programming.

Non-Roamin' Citizens

I do have a few minor quibbles, however. For instance, if your warehouses fill up (as mine frequently did), delivery crews will stack up along the road leading to the warehouse itself, blocking the path of any incoming trade caravans. Since most trade-centered warehouses operate on a "fill up, then sell out" basis, this can be a problem—particularly if you're trying to micromanage trade in a big city and want to tee up certain goods at certain warehouses.

Another problem is that the contours of terrain often leave fatally weak flaws in your defensive walls (see "Fighting in Ancient Rome" sidebar), which the computer is only too willing to exploit. I'd have thought that a wall that runs directly into a rock face would be stronger, not weaker. Yet I found myself in several scenarios tailoring my defensive design to counter attacks that repeatedly ran along "seams" in my city walls. Moreover, in some scenarios the terrain will force you to expand your city close to the edge of the map. This becomes a problem if invaders appear virtually in the middle of your city because you will have to build somewhat strange defensive fortifications to accommodate the attack.

In some later scenarios in which you're given higher objective levels, the game can drag somewhat as you wait for your peace and prosperity levels to rise. Gamers sometimes have to sit and wait while their fully functioning city generates the long-standing security and positive balance sheet they need to achieve a high score.

There are also a few design decisions that I'd like to mention. Overall, the "paths" method of attributing influence to a particular building is a neat idea that works well in gameplay. It does, however, encourage some rather strange transportation grid-building tactics. Consider the following: A maintenance worker (prefect or engineer) will leave his workplace and walk in a random direction. At each intersection he'll randomly pick a direction to turn and keep moving outward until he hits the edge of his walking range, then he'll walk back. Generally speaking, this means that four-way intersections should be avoided at all costs. And if you really want to control where your service people go, you'll primarily want to build dead-end streets that feed into residential neighborhoods. Whatever you do, don't build a complete grid because an optimally efficient transportation network will give your workers simply too many choices and will force you to build many more service buildings than is strictly necessary to manage your neighborhood.

Ultimately, these objections are quite minor and don't detract from the fun or addictiveness of gameplay. CAESAR III has that elusive, difficult-to-define quality of "excellent gameplay" that can really only be quantified in terms of the number of hours it shaves off of your sleep patterns. By that measure, as well as most others, CAESAR III is a certified winner. CGW

Tim Carter holds a master's degree in Strategic Studies and is now playing 101ST AIRBORNE as well as THE OPERATIONAL ART OF WAR. His strategy guide for CAESAR III will appear in the February 1999 issue of CGW.

Fighting in Ancient Rome

ELEPHANT UNDERFOOT A Carthaginian elephant unit, having devastated a good chunk of the city, charges into defending troops. If the towers and walls haven't softened up this big fella, those expensive troops are doomed.

Combat plays a relatively minor, but still important, role in CAESAR III. You won't spend all or even most of your time tending to military matters, but neglecting them will get your city destroyed much faster than economic malaise.

To defend your city, you can build fortifications (walls, towers, and so on) and forts that house three types of troops: legions, cavalry, and javelin troops. Towers also house defenders who throw javelins and fire ballistae from appropriately configured walls. CAESAR will occasionally require you to send away troops to fight distant battles, but most of the combat takes place on your city map.

Fighting is quite simple. You assign your troops a formation and move them within range of the enemy—the rest is automatic. Combat is fun, especially since most cases will require you to use fortifications and troops in combination for a successful defense. (Weaker enemies can be fought off using only city walls and towers, but it's not wise to depend on immobile structures for everything.)

HOUSE OF CARDS This big, high-value home is a key sign of success in CAESAR III. Keep the home supplied with items, though, or it won't stay big for long

When in Rome

The AOE X-pack Is More Than the Sum of Its Parts

by Ken Brown

AGE OF EMPIRES is essentially a game of rock, paper, scissors. A good human or computer player can counter any unit or strategy with something else. There's no silver-bullet strategy, and that is, in part, what brings gamers back time and time again.

For the RISE OF ROME, Ensemble Studios sought to add new civilizations, units, and technologies to those of the original game, while at the same time improving play balance. The design team's goal was to add new counters to strong units and to make some of the weaker units more attractive. They've succeeded and, with a few interface enhancements and AI tweaks, the game is now easier to play. It isn't AGE OF EMPIRES II, but it delivers enough cool new features to rekindle your jones.

HANNIBAL'S MARCH One of the campaigns lets you lead Carthaginian war elephants against the Romans.

Friends, Romans, Countrymen...

The biggest features in RISE are the new civilizations and units. The Romans aren't as strong as you might expect, although they do have a construction advantage and fanatical swordsmen. The Carthaginians, however, can open up a giant can of whup-ass on the Romans—or any other civilization, for that matter. They get more of the new units, special naval advantages, and +25 percent hit points for academy and elephant units. The Macedonians offer a new counter to the dreaded priest strategy, with units four times more resistant to conversion. But Macedonians can't research the wheel, limiting their units and productivity. The Palmyrans have *uber* villagers, but they cost 50 percent more than other civs, rendering them vulnerable early on.

The five new units add interesting counters to the units of the original game. Stone-throwing slingers have an attack bonus against archers and fortifications. Camel riders enjoy a +8 attack vs. cavalry and other horse-mounted units. Both the new scythe chariots and armored elephants inflict damage on adjacent units. Once you upgrade to the scythe chariot, you can build them with just food and wood. This can be a major advantage as gold supplies dwindle in the Iron Age. Last, the fire galley is a devastating naval unit that eats triremes for lunch. It breathes fire onto anything next to it, and serves well in coastal defense, although it is susceptible to siege weapons.

Queue Ball

RISE OF ROME's new unit queues made me wonder how we got by without them in the first game. You can queue up as many units as you like, but you'll only build as many as your resources will allow. You cannot queue more than one type of unit within each building, and there are no gathering points, which is unfortunate.

If you play solo, the heart of the game is still the random maps. Several new map types freshen up the field, especially the Mediterranean map, which requires that you control the water to win. Ensemble tweaked the pathfinding and unit AI to make units respond faster to threats. Despite this, units still get stuck sometimes and enemy units occasionally slip by unmolested.

Salty AOE vets will find plenty to dig into here. RISE OF ROME isn't a quantum leap over the original game, but it freshens the experience, improves the mechanics, and beefs up the computer opponents. I certainly recommend it to any die-hard AOE player—it'll keep the Hun fires burning until AGE OF EMPIRES II. CGW

Ken Brown is an avid priest hunter and a master of the phalanx rush. He's also the Executive Editor here at CGW.

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BLADE RUNNERS Scythe chariots are one of the coolest new units. They'll shred weak infantry and they don't cost any gold once you've upgraded.

LESSONS IN CARTOGRAPHY New map types in THE RISE OF ROME add new challenges and ensure that you don't have to keep shedding blood over the same old ground.

COMPUTER GAMING WORLD

★★★★☆

APPEAL: AGE OF EMPIRES fans who can't wait for AOE II.

PROS: Enough new stuff to revitalize the game; unit queues make a big difference.

CONS: No gathering points; only one unit type can be queued at a time; unit AI is still iffy.

DIFFICULTY: Intermediate.

REQUIREMENTS: Windows 95/98, Pentium 90, 16MB RAM, 30MB hard-drive space, 2x CD-ROM drive, 1MB VRAM video card, original AGE OF EMPIRES game.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: Modem, LAN or Internet play (8 players) via the MSN Gaming Zone, 1 CD per three players.

Price: $29.95 ($10 rebate coupon)
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Serf's Up!

Taking the Middle Road Through the Middle Ages

by Pete Scisco

In this trip back to the Middle Ages, real-time strategy fans will have to mellow their pace to achieve the game's objective—rebuilding a kingdom torn by feudal war. As a captain (the last one, mind you) in the Royal Palace Guard, you must reconstruct the kingdom campaign by campaign, ultimately defeating the King's own treacherous son.

Holy Shakespeare! With a classic plot like that and an entertaining display that turns the computer screen into a miniatures playland, this import from Germany's Topware Interactive is not without its charm. The strategies involved, particularly in battle, take some deeper thinking than what's required from many recent real-time action games that follow the mantra "the biggest fist wins."

COMPUTER GAMING WORLD

★★½☆☆

APPEAL: Real-time strategy and empire-building fans who don't expect much.

PROS: Great animated graphics bring miniatures to life.

CONS: Slow pace; micromanaging bogs down strategic play; no wenches.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 133, Windows 95, 24MB RAM, 70MB hard-disk space, 4x CD-ROM, 256-color video card with 1MB of VRAM (2MB recommended), 8-bit audio

3D SUPPORT: None

MULTIPLAYER SUPPORT: LAN (2–6 players), modem (2 players)

Price: $39.95
Publisher: Interactive Magic
Research Triangle Park, NC
(800) 789-1534

www.imagicgames.com

After building an imposing army (infantry at the front of the legion, for example, archers in the rear, protected and positioned to fire on approaching enemy forces), players can experiment with formations and positioning. Attacking an enemy's flank or rear brings huge benefits. In solo play, the game's AI is sophisticated enough to make parrying and drawing the enemy into the open a challenge. In multiplayer games, it adds a thoughtful component to attacks.

It Takes a Village

Unlike so many real-time strategy games, the support structure for military units plays a key role in the game and provides much of the entertainment. None of that shortcut "click on a archer and out he comes" stuff. Here, it takes a village to raise a Bowman.

First you'll need a Schoolhouse, which the game provides at the beginning of each mission, to produce the type of king's subject you'll need. Farms and vineyards produce food and drink. You'll also have to build an inn so your people will have a place to eat.

Back to our Bowman. You'll first need a barracks, which, like all buildings, must be connected to other buildings by a road. The laborers build everything, while serfs haul the supplies. Now you need a Woodcutter's Hut and a Woodcutter to fell trees. Next comes the Sawmill and a Carpenter for making planks. You'll need a Weapons Workshop and another Carpenter to cut longbows from planks.

In addition to the regular farm, you need a Swine Farm and an Animal Breeder for husbandry. You will need two Butcher/Tanner subjects—one to make sausage from the pig and a roll of pigskin; the other at the Tannery to turn pig skins into leather. Your Bowman will need that for his armor, which is made at the Armory Workshop.

PART 1: THE TAVERN GREEN A parade of happy serfs whistle as they work, hauling lumber, stones, and farm goods.

PART 2: JOIN THE ATTACK A unit of Lancers initiates an attack against enemy forces.

PART 3: TIME TO DIE The Lancers break rank under a volley of arrows while the enemy outflanks a squad of infantry. Ouch.

Bedeviling Details

All of these details will satisfy the most anal-retentive empire builder. And watching the little people at work is a charming experience. Still, KNIGHTS AND MERCHANTS is just as notable for what it doesn't provide. Religion plays no role, there's no medical component, and there are no women characters. Another oddity is the constant reference to corn rather than wheat—since corn is indigenous to North America. Players looking for verisimilitude between the game and actual Medieval village life will be disappointed.

The characters and landscape details give KNIGHTS AND MERCHANTS a charm that's hard to resist. But with the real-time strategy elements bogging down in minutiae and the empire-building elements skipping some essential details, it will have to wait for its seat at the round table. CGW

Pete Scisco's interest in the Middle Ages centers on the ramifications of movable type and the spread of information as agents of political change—which means he gets more chain letters than chain mail.

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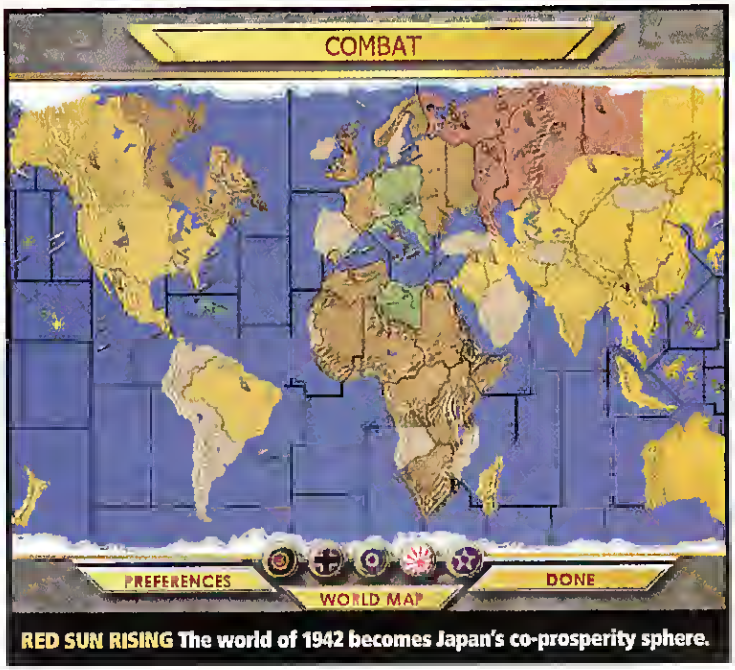
World Conquest Made Easy

AXIS & ALLIES Is Very Good, but a Little Buggy

by Tim Carter

If you're looking to conquer the world in only a few hours (beer and pretzels firmly in hand), Hasbro's AXIS AND ALLIES, a computer conversion of the classic boardgame, nicely fills the niche between games like RISK! and PANZER GENERAL (which is admittedly still pretty simple on the grognard gaming scale). I imagine that the design team approached the conversion of this classic boardgame with both trepidation and anticipation. On the one hand, they already know and respect the aspects of the original that make it popular; on the other hand, there's a devoted fan base out there—fully prepared to judge their product harshly against a much-loved original.



RED SUN RISING The world of 1942 becomes Japan's co-prosperity sphere.

AXIS AND ALLIES, for the uninitiated, is a pretty straightforward World War II global strategy game. There are enough components to make the game interesting and to give players a range of options, but the basic system and rules are simple enough that anyone can learn them easily. It offers a quick, simple game based loosely on World War II but doesn't let too much history or realism get in the way of having a good time. The game begins in 1942 with the Axis (Japan and Germany) at the height of their powers but facing an industrially superior trio of opponents in Great Britain, the United States, and the Soviet Union.

Your forces are drawn from a limited selection of units: infantry and tanks, fighters and bombers, battleships, transports, subs, and aircraft carriers. The world is divided into regional zones similar to RISK!, each worth a certain number of industrial points. Winning requires you to ally in order to dominate the world's economic-rich areas or to overrun your opponents' capital zones.

WHO NEEDS U-BOATS? The AI's fixation with submarines when playing the British can create problems with play balance.

The tutorial system quickly introduces players to the game's system of orders and units and also provides a quick run-through of the strategic problems facing each of the five powers. This, combined with the short manual, should provide gamers with all the technical information they need.

Simple Strategy

Even though the game system is mechanically simple, it allows for quite sophisticated strategy. This is particularly true in a five-player game in which at least one player on either side will have to take the brunt of the opposition's attack, sacrificing their short-term gains for the good of the alliance.

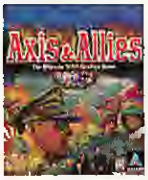
In this respect, Hasbro's computerized version of AXIS AND ALLIES offers a few advantages over the boardgame: It's easier to organize a true five-player game via multiplayer play on the Internet or using the computer AI. It's also fun solo, especially for those late nights when you have neither the patience nor the mental energy for THE OPERATIONAL ART OF WAR.

While you'd be hard put to argue that AXIS AND ALLIES captures the flavor of World War II (but see Terry Coleman's sidebar, next page), it does a great job of re-creating the diplomatic and planning elements of any multiplayer game in which tradeoffs and cooperative operations are required to win. AXIS AND ALLIES also allows gamers to select the Second Edition or Third Edition rules and to add or exclude a variety of other optional rules.

Given the simplicity and fun of the game system, it's a pity that the designers didn't see fit to add

COMPUTER GAMING WORLD

★★★★☆



APPEAL: Anyone who wants a light, replayable strategy game

PROS: Simple, fast, fun, and endlessly replayable, a very good recreation of the boardgame classic

CONS: Some programming woes, erratic AI; it's still a boardgame on a PC

DIFFICULTY: Easy

REQUIREMENTS: Pentium 133, Windows 95/98, 16MB RAM, 40MB hard drive space, 1MB SVGA graphics card, 4x CD-ROM, supports Windows-compatible sound cards

3D SUPPORT: None

MULTIPLAYER SUPPORT: 1–5 players via Modem, serial cable, LAN, hotseat or Internet (through MSN Gaming Zone); 1 CD per player

Price: $39.99
Publisher: Hasbro Interactive
Beverly, Massachusetts
(508) 921-3700

www.axisandallies.com

RUSSIAN BEAR GROWLING An early Soviet attack into Norway/Finland is one of the standard gembits for en eggressive Soviet player.

a map editor or variable setup options to AXIS AND ALLIES (to allow for World War I scenarios, for instance), but I'll admit that's quibbling.

Great Plan, Poor Execution

On a technical level, the conversion of AXIS AND ALLIES to a computer format is largely well done. The game is easy to play, most commands are intuitive, and the game system functions smoothly. Sadly, the programming isn't quite as clean.

My version of the game crashed relatively frequently (about once every game) and didn't interact particularly well with Windows. The auto-install functions failed to create a working shortcut, which I had to do manually instead. In addition, some small but still annoying glitches can cause problems in highly specific situations. For instance, if you stop a game midway through any player's turn and start a new game without shutting down the entire program, you run the risk of starting the new game with units in the same positions they were in the old game. The confusion in orders and placement that results will, eventually, crash the entire program.

Also I found that the AI moved very slowly for so simple a game. I played AXIS AND ALLIES on a Pentium 166, which is hardly top of the line, but the game is neither graphically nor mechanically complex.

On a more subtle level, the computer AI will occasionally do strange things in pursuit of total victory. At the beginning of the game, the computer appears to select opening moves from an array of established strategies for each country. Reliable sources tell me that most of these strategies have been adapted from popular openings in tournament play. This means that at the beginning of the game the computer will generally follow an identifiable, and often very effective, strategy.

Yet, once war gets rolling, this consistency breaks down. Sometimes, the AI will continue with a winning strategy, executing a series of clever moves and providing a serious challenge (or assistance, if it's playing one of your allies). In other games the computer appeared to become fixated on a single path to victory and became stuck in a highly repetitive and completely pointless set of exchanges, which led to stalemate. At other times the AI pursued annoying, self-defeating policies.

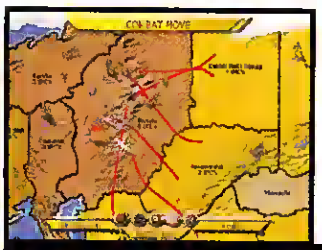
For instance, as the Soviet Union, you depend on immediate and continual assistance from the Western Allies. When playing the Soviets, I helped the British land in Norway early in the game with the expectation that this would facilitate a second front, taking the pressure off my valiant Red Army troops. Instead, the computer-controlled Brits and Americans both began a major submarine-building campaign despite the complete absence of any kind of maritime threat to either of their shores. Aaargh. Needless to say, the Axis conquered all of Europe and Asia and won handily on points.

These glitches aside, AXIS AND ALLIES provides a strong game system (not surprising given the pedigree of the boardgame) that will not only satisfy experienced tabletop gamers but will also give a fun, relatively short beer-and-pretzels alternative to hard-core computer gamers. As with crossover games like SIMCITY, it may also attract a wide audience outside the normal confines of strategy games.

It's fun, fast, eminently replayable, and enjoyable virtually every time—even when you're losing. What more could gamers ask for? CGW

Look for Tim Carter's strategy article on PEOPLE'S GENERAL in PC Gaming Expert.

HAVE DICE, WILL ROLL Ported right from the boardgame, this is a good example of an attack in progress on the Battle Board. Note the Japanese heavy bombers, which pretty much guarantee a victory for the Sons of Nippon.



WAR IN THE FAR EAST You won't see this on the History Channel: Japan attacks through Siberia, ending the war.

Beer-and Pretzels WWII?

While I generelly egree with Tim's assessment of AXIS & ALLIES—it is unreellstic and quite ebstrect—I disegree with his take on the game's historical flevor or leck thereof. For me, AXIS AND ALLIES has elweys offered e very broed view of WWII that, while simplistic, still touches on severel of the mein themes of the war:

• If Russie fells, the Allies eimost elways fell with them.

• If the Axis doesn't win feirly quickly, Jepan end Germeny will eventuelly lose to the overwhelming might of the U.S. Industriel machine.

• It's very difficult to knock Britain totally out of the wer.

• Reseerch is risky end expensive, but getting e super-weepon like heavy bombers (there's no A-Bomb in AXIS AND ALLIES) can turn the geme eround quickly.

And where Tim end I totally egree is that you can get e lot of people to try AXIS AND ALLIES, some of whom mey eventuelly move on to THE OPERATIDNAL ART OF WAR. Long live beer-end-pretzels wergemes! —*Terry Coleman*

Delivering the Goods

CORPORATE EXPANSION PACK Aims to Expand ENTREPRENEUR's Consumer Base

by Lance A. Larka

Have you ever had fantasies about running the world? About being the CEO of an industrial giant? How you could do a better job than, say, Bill Gates? It's time to test your business savvy with the CORPORATE EXPANSION pack for ENTREPRENEUR by Stardock.

Following through on its promise, Stardock has come out with a huge expansion pack for ENTREPRENEUR. Now, in addition to the venerable PC market, you can try your hand at selling aircraft, Internet browsers, cars, cereal, cola, shoes, and soda. If you're finished with the original slew of random maps and real-world maps, you get more fictional maps and some great, detailed real-world markets (including Australia, Japan, and Singapore) to play with.

GREASING THE WHEELS If you're having problems, simply bribe, er, convince the government to lend a hand.

Dog-Eat-Dog World

What sets ENTREPRENEUR apart from other market simulations is a little thing called Direct Action Cards (DAC). These represent the "unmodelable" actions, such as playing golf with rival executives, contributing to a politician's re-election campaign, networking, filing lawsuits, spiking the competition's product line, starting a war, or just a random act of the marketing gods. The CORPORATE EXPANSION PACK doubles the number of existing cards in play and makes certain cards dependent on the market that you're in. For example, the "starting a war" DAC is only available when selling aircraft, not Internet browsers. (Though internal memos from Mitrosoft and rival Nepscape later show this to be false.)

Instead of just adding some new titles and custom maps, Stardock used the EXPANSION PACK to add depth to the game by changing the underlying infrastructure for each product. Each product line now has different components and factors that contribute to its underlying production, research, marketing, sales, and appeal attributes. Some minor changes have been made to the game as well. A lot of players complained that it took too long to expand your company because of the high cost of constructing facilities. Now constructing new sites and upgrading your buildings at the corporate park is cheaper. But to offset this advantage, they hold fewer workers. It's a good balance in terms of gameplay.

CAR WARS Cars are among the new products in the EXPANSION PACK. Good luck selling them in Japan's competitive market, though.

Business as Usual

When you get right down to the nitty gritty, this is still the same game. You're goal is to bring a better product to the people, make the quality of their lives better, foster friendly competition with your "rival" companies, and strive for the best one to win. Yeah, right. You want to manipulate the consumers, gouge them for all you can, and grind the competition into the dust of history with your boot heel as you laugh your way to the big piggy bank called monopoly. It's good to be a capitalist.

You start your company with a basic facility and one sales rep. From there you must expand your region of influence, develop a good marketing strategy to promote your product, engineer improvements, keep your employees happy, sidestep the competition, and, incidentally, make a profit.

The AI didn't lose anything with the expansion. It proved to be a shrewd operator, time and again pulling itself from the brink of bankruptcy, and had me scrambling to maintain my positions.

Speaking of business savvy, Stardock seems to have taken a cue from its own book of corporate jackaldom and priced the EXPANSION PACK at $24.95. That's more than most add-on packs, and it's pretty steep for a game we give only three stars.

Still, if you're itching to see what it feels like to build a company from the ground up, the CORPORATE EXPANSION PACK for ENTREPRENEUR is cheaper than mortgaging your house. CGW

Lance A. Larka is currently reliving his childhood by playing the computer version of AXIS & ALLIES.

COMPUTER GAMING WORLD

★★★☆☆

APPEAL: People who want to start their own company but only have $24.95.

PROS: New products, lots of humor, tough AI, excellent multiplayer support.

CONS: A bit expensive for an add-on pack; graphics are of boardgame quality; doesn't really change the game.

DIFFICULTY: Intermediate.

REQUIREMENTS: 486DX4-75 (Pentium recommended), Windows 95, NT 4.0, or OS/2 WARP 4.0, 12MB RAM, 20MB hard-drive space, 2X or faster CD-ROM, DirectX– (or DIVE- under OS/2) supported SVGA video card, original ENTREPRENEUR game.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: Modem (2 players), LAN and Internet (2–8 players).

Price: $24.95
Publisher: Stardock Systems
Livonia, MI
(800) 672-2338

www.stardock.com

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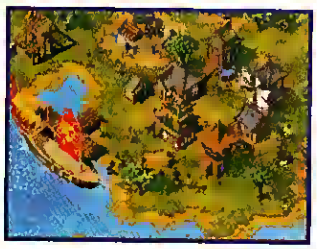

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French and Indian Ware

Neither the French, the Indians, nor the English Fares Well in This Loser

by Bob Proctor

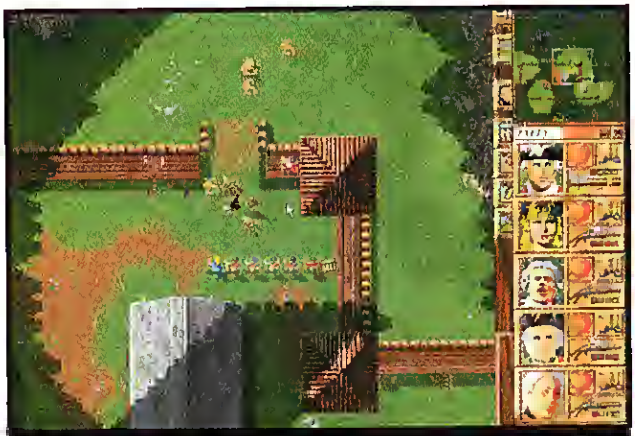
The French and Indian War took place in North America about 20 years before the American Revolution. Europe was embroiled in the Seven Years War, and English and French colonists each saw an opportunity to expand at the other's expense. Had this war remained an affair between professional armies it would have been little noticed. But both sides enlisted the aid of natives who took the war to the civilian populace. This should make for a fascinating game. But nothing about WAR ALONG THE MOHAWK will excite history buffs or gamers.

Who Are You?

After choosing to play from either the French or British side, you select a character from about 20 choices that include colonists, army regulars, and Native Americans. Characters are rated in seven basic attributes: health, morale, experience, intelligence, speed, strength, and shooting. There are 17 skills, and each character starts with one to four skills and can learn a few more. The type of character you choose has a big influence on the skills available to you. For example, only soldiers can have Barricade or Cannon skills, while only Natives can control animals or wear a deerskin to disguise their appearance.

None of the 17 skills involve weapons. Every character uses the weapon he starts with for the entire game. This is a severe limitation since all the characters have to complete the same set of 18 missions. Nearly all these missions involve combat, and if you choose a character with a weaker weapon, it's impossible to complete some missions. The only cure, unfortunately is to restart the game and pick a better character!

How do you improve weapons skill if there's no skill to learn? You buy upgrades at the store, using gold you earn by hunting and selling the skins. Since every character has but eight inventory slots, and when they're full you can't carry anything or develop further.



IMPLAUSIBLE MISSION Here is our party of five soldiers (and a woman) leaving for their mission. Too bad the sentries aren't smart enough to close the gates.

Neither Fish nor Fowl

Despite the copy on the box, MOHAWK is hardly the game "where role playing meets real-time strategy." The game is sort of an RPG in single-player mode and sort of a real-time strategy/wargame in multiplayer mode. The concept for multiplayer is that all players select up to eight characters and fight a war of attrition until only one is left. But in practice it's totally unplayable; as soon as the game starts, all the characters run away and the game ends.

The single-player mode has some elements of an RPG but is nowhere close to X-COM or JAGGED ALLIANCE. The gameplay is like a bad adventure game in which the too-linear missions must be done in exact order. In MOHAWK you must divine whatever trick the designer intended you to perform: swimming past a sentry, finding an NPC with a special skill, or obtaining a needed object like a key. Until you discover it, expect to restart over and over. Native and imported Americans (and Canadians) deserve better than being trapped in such an endless loop of bad history and bad gameplay. CGW

Bob Proctor has been writing for CGW since the first issue.

CASTING CALL The 23 British characters shown here have unique voices, but the acting and the rest of the game's audio is unimaginative at best.

Distressed Damsel

With only a dagger plus Swimming and Language skills, Juliet is never going to win this game. She can coax big, brawny men to do her fighting for her until she gets to a mission that must be done solo.

COMPUTER GAMING WORLD

★☆☆☆☆

APPEAL: Novice gamers with no basis for comparison.

PROS: Novel setting and period; somewhat decent price point.

CONS: Easy to get dead-ended in this woefully underdeveloped, weak design; multiplayer mode doesn't work.

DIFFICULTY: Intermediate.

REQUIREMENTS: Pentium 100, Windows 95/98, 16MB RAM, 65MB hard-disk space, 2x CD-ROM.

3D SUPPORT: None.

MULTIPLAYER SUPPORT: Modem or serial cable (2 players), LAN or Internet (2–4 players), but remember, multiplay doesn't work.

Price: $19.99
Publisher: Empire Interactive
Gaithersburg, MD
(800) 216-9706

www.empirestrategy.com

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They're Dead, Jim

Natural Selection Goes Awry in This Depressing Update

by Dawn Jepsen

Devoted fans of Mindscape's CREATURES artificial life program have anxiously awaited the arrival of CREATURES 2, which promised Norns genetically complex enough to appeal to the likes of Dr. Moreau, as well as a genetic splicing machine for all your mad scientists' needs. I confess I had visions of my own little Galapagos; the strongest and smartest not just surviving, but flourishing, within their changing environment. How little did I realize that these darling, sometimes devilish Norns had minds of their own. And this stubborn independence was going to lead many of these cute little creatures to their demise, despite my best efforts to help them.

THE ROAD TO HELL A Norn finds its way into the Grendel's lair, a dangerous place.

COMPUTER GAMING WORLD

★★½☆☆

APPEAL: Fans of the original CREATURES looking for a greater challenge, sadists.

PROS: The ever-changing and adapting Norns keep gameplay from becoming predictable, despite the constancy of situation and environment.

CONS: Death-prone Norns make gameplay difficult and frustrating; annoying scrolling problems, limited viewing areas make locating Norns challenging.

DIFFICULTY: Advanced

REQUIREMENTS: Pentium 166 Windows 95/98, 16MB RAM, 2MB video card, 2x CD-ROM drive, 16-bit sound card

3D SUPPORT: None.

MULTIPLAYER SUPPORT: None.

Price: $39.99
Publisher: Mindscape
Novato, CA
(423) 670-2022

www.creatures.mindscape.com

A Better Place

The overall premise of CREATURES 2 doesn't differ tremendously from the original; hatch some eggs, help your Norns explore their world, and get down to breeding your very own biodiverse, genetically mutated Darwinian dynasty.

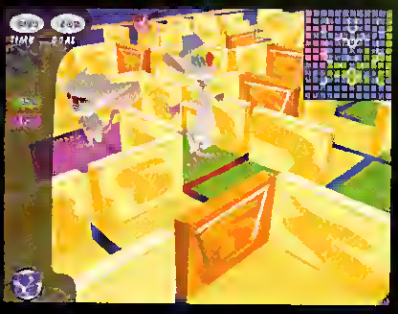
What does differ is the effort needed by the gamer to make all of this happen. The Norns are darling little animals resembling the Mogwai from the film *Gremlins*. Each Norn contains its own "digital DNA," which sets its distinct characteristics—personality, intelligence, and even physiology.

While basically sweet-natured, some Norns possess a mischievous side. They're extremely affectionate and often even attempt to befriend the likes of the Grendel, a disease-carrying and rather violent little monster. In CREATURES 2, the Norns continue to live in lush and Edenesque Albia. This time, though, its surface has been destroyed by a violent volcano. What remains is a much more primitive and challenging arena in which to raise Norns.

The Norns are now far more structurally complex and, as a result, more delicate. The environment is less friendly for dynasty building, but certainly proves more interesting after hours of gameplay. Albia now has seasons, complete with seasonal plants, animals, and variable temperatures that affect Norn activity and health. The addition of these variables does not come without its price. I lost 27 Norns within five Albian hours.

CREATURES 2 is touted as an artificial life program. After several frustrating hours of play, I was bitterly referring to it as an artificial death program. I learned the hard way that the new Norns now possess organs, including hearts and lungs. Norns are curious by nature and unfortunately few have little fear regarding the exploration of

MMM... CHEESE... You can lead a Norn to the cheese machine, but good luck getting him to eat.



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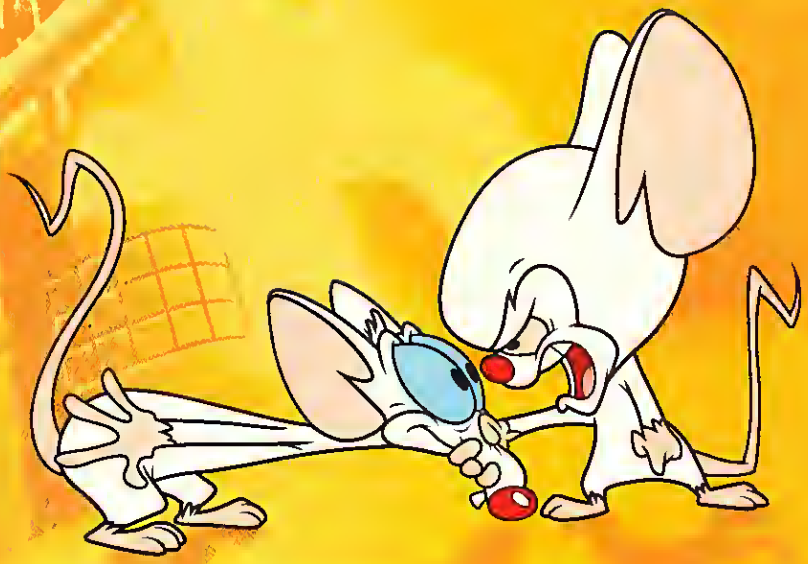

You see Pinky, the plan is to develop a secret hypnotic message that will make humans think I am their almighty ruler, and embed it in an action-packed video game. Naturally we will be the stars. People will play the game by themselves and become horribly addicted. Then they will want to play the game with their friends, and their friends will become addicted. Soon, they will play the game over the Internet, a silly little information infrastructure that humans use to "chat" with each other. Anyway, once we control the Internet, every human being will bow down before me, their rightful master. And by the turn of the new millenium, the world will be ours!

World Conquest™

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Digital DNA

Survival of the Fittest

A rare sighting, (right) of a baby Norn actually eating; you'll lose many generations of Norns with Ally McBeal-like eating habits early in the game.

Wondering how later generations of creatures will differ from their forefathers and mothers? Because of distinctiveness of each individual Norn, the genetics in the game mimic real life. Each creature (including the Grendel and the new Albia inhabitant, the Ettin) has its own DNA. With 550 individual genes to manipulate, there are countless potential Norn varieties.

As in life, stronger traits do seem to be passed on to future generations. Once I had several very healthy Norns, many of their babies would begin eating whatever was nearby without ever being shown to do so.

Norns also come in different colors, sometimes with a contrasting hair color and length. Others have cute little knee boots or unusual hairstyles. These variables all get passed on to create a myriad of distinctly different Norns.

CREATURES has inspired a community to rival that of pet breeders. Some of the most popular CREATURES Web pages offer Norn adoption centers. Here, gamers can exchange Norns of unusual colors, personality traits, breeding abilities, or life spans. Also available on many pages are COBs, (CREATURES OBjects). COBs are items created by both Cyberlife and individual gamers. Players will find toys, food, and many objects designed to make life in Albia easier or more interesting. You'll find links to dozens of sites at **www.creatures2.com**.

READING IS FUNDAMENTAL. You'll use the computer to teach baby Norns words. Once they have a vocabulary, you can converse with them by typing.

water. With several lake and pond areas present in the vast expanse of Albia, it's not difficult to lose a few Norns to drowning. They look quite happy moving about in the water, with no real signs of distress. Eventually however, a drowning Norn will curl up in sleep position and develop little stars over its head. At that point, the science kit can be opened and your Norn can be injected with defibrillate to restart its heart. Usually, a Norn can be resuscitated in this way, but often they seem "off" for a while.

Lemming-like Behavior

Albia now has gravity as well. Some Norns appear to have a rather low self-preservation instinct and have little problem stepping off a cliff. While it's not likely that a Norn will die from this, it may injure him and alter his health status. The average life span of a Norn is supposedly about 10 hours, but they can, and do, die in any number of ways much earlier in life.

Certainly the most frustrating way in which this happens is from starvation. While most Norns learn to feed themselves at a very young age, approximately half of my initial babies never learned to eat. To make matters worse, because of their increased brain capacity, CREATURES 2's Norns have improved speaking skills. They also now understand concepts, and have an increased variety of facial expressions. So imagine, if you will, your beloved Norn looking right at you with its big, sad eyes and turned-down mouth and saying "Emmie extrmly hngry. Get Mamma," all the while dying next to a big piece of cheese. I thought about naming all my Norns after ex-boyfriends to prevent becoming too attached, but eventually I just ended up exporting them from the program while I learned how to help them.

Obviously, I was relieved to learn that I was not a terrible parent. Cyberlife apparently had so many complaints about stupid Norns that the company created new eggs that could be downloaded from the Web. Since I was losing about half of my water-happy Norns to the lake, I also downloaded electric fences for the periphery of all the water in Albia. I named my first new and improved Norn "Hope," on the off chance that her fates may be guided by her name. Alas, she was dead in just 20 minutes.

Hope in the End

Eventually, I did get several seemingly healthy Norns out of the new batch. The "natural birth" second generation of Norns possessed greater survival and communication skills, and started living longer and healthier lives. Several generations later I had very few starving, sleepy, or bored Norns. But I wonder how many people will have the patience to watch generation after generation of cute little Norns die before achieving a species with the basic capability to survive?

At a point, CREATURES 2 does evolve into a game that's a richer, more challenging, more living version of the original. But the Norn graveyard will be so littered with corpses by then that many adult gamers will have given up in frustration—and young children playing the game will probably need counseling after the experience.

Get past that point, though, and you'll find that the new, larger Albia does make for a more interesting place to raise Norns. CREATURES 2's 16-bit color graphics are gorgeous. Exotic plants and animals abound and change with the seasons. Just be careful—the way to Eden is not as safe as it may seem at first. CGW

When not mourning her lost Norns, Dawn Jepsen's been spending her spare time gamelocked on an emulated version of MILLIPEDE.

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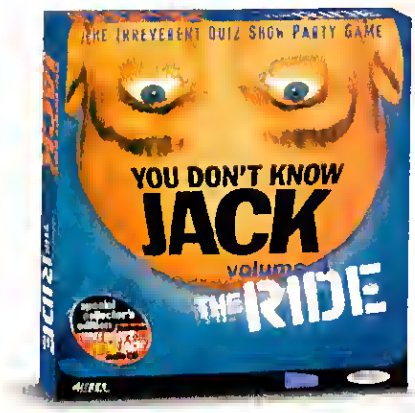
0 00000 078520 2

A game this funny requires a certain degree of preparation.



Prepare to laugh hard. Really hard. The latest YOU DON'T KNOW JACK® mixes high culture with pop culture in a fast-paced, trouser-drenching CD-ROM game. It's JACK like never before. So be prepared to lose it. But be warned: appropriate attire is recommended.

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Rainbow Six

How to Make Terrorists Check Out in Body Bags

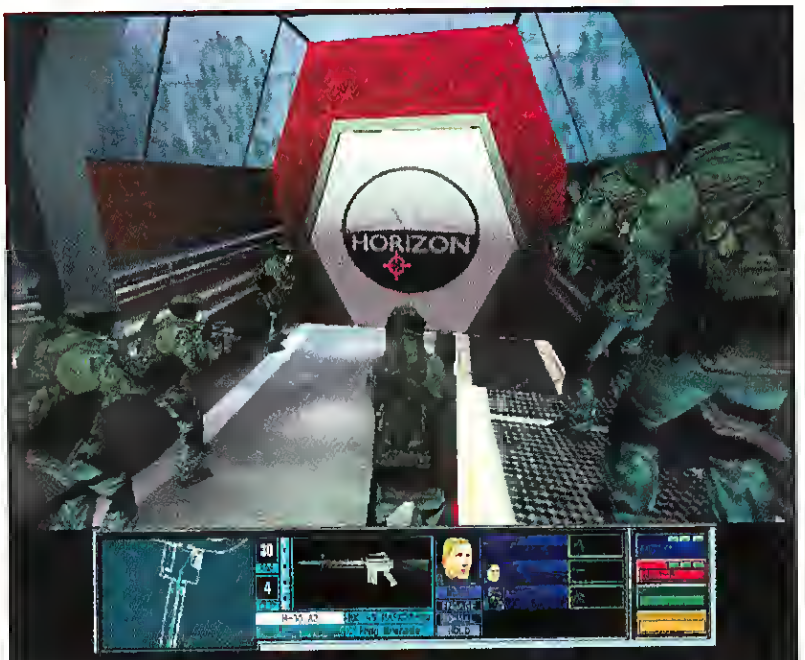
by Robin Kim

Okay, rookies: Listen up. In the brutally unforgiving arena of counter-terrorist operations, there are no small mistakes. With the lives of innocent hostages and the members of your team hanging in the balance, every move must be executed with forethought and precision. To help you new recruits rise to the challenge in RAINBOW SIX, we will run through some of the fundamental skills and tactics you must master to succeed in both campaign missions and multiplayer battles.

Fire and Movement

Each of you has already been trained to maintain maximum control over your weapon as you move so that you can bring it to bear quickly and accurately on targets of opportunity. Nonetheless, there are many ways you can improve your hit percentages in various situations. For example, when sniping from afar, kneel down to improve your aim. And when using an M-16 or CAR-15, always fire short, one- to three-round bursts. The accuracy of these powerful weapons deteriorates so rapidly on full automatic (see "Gun Control" sidebar) that longer bursts are a waste of ammunition unless the target is at point-blank range.

How you move also influences the effectiveness of your fire. Stopping, starting, and changing speeds will all temporarily upset your aim. Accuracy does return if you continue the movement (though the larger and heavier the weapon, the longer it takes to recover). Consequently, when enemies may be present, it pays to glide smoothly out from behind cover—allowing time for your aim to settle before you reveal yourself—rather than proceed a single step at a time. If you happen to know an enemy is around the corner, one extremely effective technique is to slice the pie (see "Slicing the Pie" sidebar) in one continuous motion—opening up with a burst of automatic weapons fire just before the target comes into view, then walking the reticle onto the target. Only the Heckler & Koch MP5SD5 suppressed submachine gun is controllable enough to do this, however, which gives it a huge advantage over assault rifles during close-range combat.



FIELDS OF FIRE By freezing team members in place using the Hold command, then moving team leaders to different positions, you can set up multiple fields of fire prior to entering a room.

Avoid running forward or backward when hostiles are liable to pop up. It takes a long time to stop and steady your aim before you can effectively return fire. Running sideways does not have this disadvantage, allowing you to shoot your target while making at least some attempt to evade return fire. This can be effective in multiplayer combat, but note that AI-controlled Tangos (terrorists) are undeterred by such fancy footwork: They will still gun you down if you don't shoot them first.

Against unarmored targets (or when using a CAR-15 or M-16, whose 5.56mm rounds can penetrate any armor), always aim for the target's center of mass to maximize the chance of a hit. With light weapons against armored foes, head shots are preferred.

Occasionally, you will be fortunate enough to spot the arm or legs of a partially obscured target unaware of your presence. Go ahead and take the shot; damage to those areas can bring down even the best-protected adversary. Make sure you fire off a good long burst, since it usually takes several hits to finish the job. Remember that your goal is to incapacitate,

SENSOR GRID If you position subordinates holding heartbeat monitors at strategic locations, you'll get up-to-the-minute information on all enemy locations in a building under siege.

See the Review
DECEMBER ISSUE • 3.5 STARS

Gun Control

Firearms in RAINBOW SIX are modeled with far greater realism than in any previous first-person shooter. Take a peek inside the text files that define their characteristics, and you'll get useful insights into both the subtlety of the simulation and the practical pros and cons of each weapon. The files are in the Rainbow Six\Data\Kit folder; each has a pw or sw prefix.

The key attributes of each gun are ammo type, magazine size, rate of fire, sniper mode magnification, accuracy, accuracy change with each round fired, and reticle time constant multiplier. Though most attributes are self-explanatory, the last two deserve special attention.

Accuracy change applies mostly to fully automatic weapons: It determines how much the reticle size (probable impact area) grows with each shot in a burst. The larger the number, the more quickly you lose control when you hold down the trigger. As a graphic example, compare the two images above—each of which depicts the effects of an entire clip being fired while smoothly moving the aim point from left to right. Note that the pattern of bullet holes made by the M-16 shows how its nasty recoil effects will reduce your accuracy to almost nil after only a handful of rounds. Contrast this with the very tight pattern of bullet holes made by the much more manageable MP5SD5 submachine gun.

The other attribute—reticle time constant multiplier—determines the speed with which the reticle size shrinks after you fire or move, reflecting how easy a particular weapon is to aim. Handguns are best here, with the M-16 and the shotgun having the slowest settling reticles.

Consider these factors carefully when selecting your armament. Assault rifles are unmatched for long-range, single-shot sniping, and they pack a wallop. But in a close-quarters battle when you don't have much time to aim, the extra control that lighter weapons give you can make all the difference.

not just to wound. Your sidearm generally will not get much use, but don't forget that it's there. If you're caught with an empty clip in the middle of a firefight, you can draw your pistol in a third of the time it takes to reload your primary weapon. The two seconds you save can be decisive. When stealth is not mandatory, keep in mind that silenced pistols are considerably less accurate than their noisier counterparts.

Sound and Fury

Although somewhat tricky to use, fragmentation grenades and flashbangs (stun grenades) are valuable tools for dealing with hostiles hidden behind cover. In RAINBOW SIX Version 1.02A, each has an effect radius of eight meters, except where blocked by walls. When using them indoors, try to bank grenades off doors or walls so that they bounce safely out of your line of sight before exploding. Just be certain you have a clear opening through which to throw first—having your grenade stopped by a doorjamb so it lands at your feet can ruin your whole day. Assuming all goes well, listen for grunts from the other side of the wall after the boom. If you don't hear any, then either the room was empty or the occupants were out of range.

A fragmentation grenade is usually lethal all by itself. For flashbangs, ready a weapon immediately after the throw and charge in if you hear any grunts. In version 1.00, the amount of time the victims remain stunned depends on their state of alertness and can be as short as a half a second. Version 1.02A extends this to three seconds regardless of initial alertness—plenty of time to finish them off. Even if the enemy is too far away to be stunned by the blast, it can still serve as a useful diversion. As the enemy turns toward the sound to see what is going on, you have a chance to move in quickly and take them from the side.

Flashbangs are not commonly used in multiplayer games, which lets you catch many opponents off guard. While the blinding effect lasts only for a moment, shooting accuracy takes seconds to recover. Finish off your stunned opponent from as far away as possible to minimize your chances of getting hit by a lucky return shot. If you see a flashbang tossed toward you, start running immediately. Your hope is that this will spoil your assailant's aim, let you run to safety before he or she can react, and/or bring you so close that your shots can't miss even if you're stunned.

To make the most of your limited supply of grenades and flashbangs and to avoid surprises in general, bring along heartbeat monitors on any mission that doesn't already provide real-time intelligence on terrorist locations from external sources. If you don't want to carry a monitor yourself, give it to one of your teammates for use when the Advance rules of engagement are in effect.

Heartbeat monitors are also invaluable for multiplayer combat in urban settings. With a large team, assigning one person to scan ahead for hostiles can be a great force multiplier. Because any contacts the scanner detects also show up on all other team members' maps, your teammates can concentrate on fighting known enemy positions rather than wasting time clearing every space they cross into in fear of hidden threats. Even if you are on your own, a heartbeat monitor lets you set up devastating ambushes and avoid the same. This is particularly true against misguided opponents who choose not to carry monitors. Despite the heartbeat monitor's utility, it can't see into different stories. So be extra careful around staircases and ladders.

Bombs and Baggage

Aside from heartbeat monitors, the other tools that the eggheads in R&D have put in the inventory can generally be dispensed with. The extensive training each of you has received enables any team member to perform any lock picking, electronics, or demolition task successfully without

Slicing the Pie

Entering rooms and rounding corners requires great caution since these are the most common preludes to confrontations with armed foes. Against an alert enemy, the only safe way to do this is with a technique called "slicing the pie."

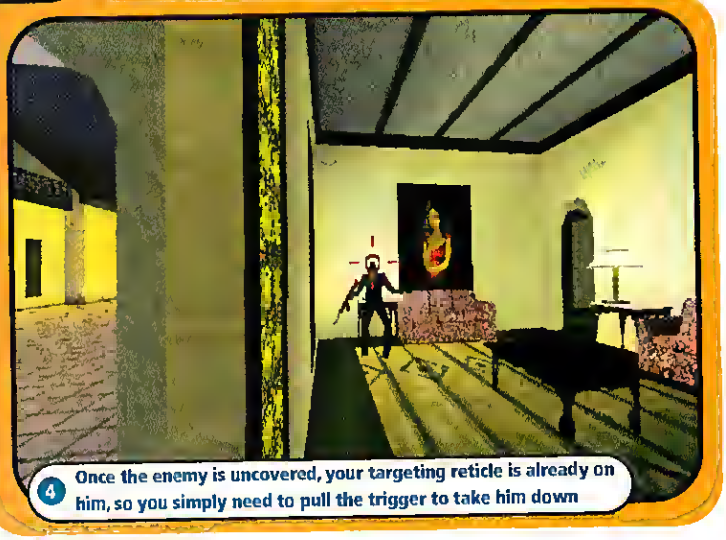
The idea is to sidestep, bringing successive wedge-shaped sections (hence the name) of the room or space beyond a corner into view. By methodically scanning a room from one side to the other in this manner, you can be sure that any enemy present will not be able to see you before you see him. Keeping your aim point right at the edge of your cover allows you to react quickly if a threat is eventually spotted. Compare this to just waltzing straight into a room and having to instantly scan about 180 degrees of space for gunmen—a surefire recipe for disaster.

It is usually best to do this in one smooth motion. Starting from a stop upsets the accuracy of your aim when you need it most. On the other hand, you can sometimes reveal just a part of your opponent's body, like his arm, allowing you to attack from concealment. Which method is best depends on how far you and your target are from the opening. The farther each is, the better the step-by-step method becomes.

1 Start out to the left of the door

2 Sidestep right while rotating left

3 Keep your sights aimed just inside the doorjamb



4 Once the enemy is uncovered, your targeting reticle is already on him, so you simply need to pull the trigger to take him down

special kits—it simply takes a bit longer. Anyone with high skill levels in those areas will usually get the job done fast enough anyway.

Door-breaching charges can sometimes be handy for killing or stunning threats on the other side of a locked door. However, either picking the lock and lobbing in a grenade or simply blowing up the door with a grenade in the first place can be equally effective. As an aside, locked doors can also be shot open by any weapon—not just a shotgun as the manual implies. A shotgun will simply do it the fastest with a mere three blasts (as opposed to 10 blasts for 5.56mm ammo, 12 for .45 caliber, and 30 for 9mm).

We could go on about other strategy apects of RAINBOW SIX, such as the pros and cons of keeping multiple teams close together for mutual support versus splitting them up for multipronged attacks, but we have run out of time. Use what you have learned today, keep your reflexes sharp, and bring those hostages and yourself back in one piece. Dismissed. CGW

CHECKPOINTS Assigning Go codes just short of natural stopping points, such as doorways and corners, allows flexible control of a team's rate of advance. Controlling multiple teams is easiest if you use a unique Go code for all of a particular team's checkpoints (e.g., Go code ALPHA for all of Blue Team's stops). If you want multiple teams to move out at once, you issue all appropriate Go codes simultaneously.

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Scorpia's Mail

CGW's Resident Adventure Expert Returns From Remodeling Her Dungeon

Well, it's been quite a while since we were last here in the mail room. Then again, there haven't been that many games this year, and so far, the autumn isn't shaping up too well in the new products department, either. The way things are looking, *if* all those promised adventures show up, they're all gonna hit at around the same time—namely late October to mid-November. In the meantime, here are some hints for games that some of you are still struggling with.

BLACK DAHLIA

This game, with its multitude of manipulation puzzles, has annoyed a lot of people. Many of those puzzles, however, can be bypassed by using cheat codes (bet you didn't know about that, eh?). Here are three to get you past some of the more irritating ones. For the Raven Room invitation seal: ringding. For the folding invitation card: triangle. And, for the runestone (possibly the most difficult of all): gemstone. Simply type in the word while you have a close-up of the puzzle. Using the codes has no other effect on gameplay—unless you count the number of gray hairs and ulcers you miss thereby.

TEX MURPHY: OVERSEER

On your second visit to the Law & Order offices, you get to play around in the Reception Hall, as long as you're not caught by the video camera. So, you need to block the camera. What you need is something that looks like the room. A lot like it (you'll want to read up on this). And, of course, a handy little item nearby to, ah, heighten the effect, as it were.

STARSHIP TITANIC

Not a vessel I'd like to take a trip on, but sometimes you don't have a choice. Anyway, there's an important item in the broken light in the parrot's room; perhaps you've already noticed it yourself. To get it, you have to be truly hosed as well as Busted. And while we're speaking of parrots, getting his perch is no easy matter. You have to hold the goodie to the extreme left (almost, but not quite, off the screen) and be ready to grab at the right moment. Timing is important here, but so is keeping the yummy as far away as possible.

Might & Magic VI

From our Dirty Tricks department, here is a little (ahem) undocumented feature you can make use of if you need money. Note that this works only in the original, unpatched version of the game, and you'll have to sweat for it. Specifically, after you have found the treasure of the obelisks, the chest always refills with gold once you've left the sector. So if you drop a beacon right there, you can teleport back any time you need a little cash. Very handy for those expensive training sessions late in the game.

BATTLESPIRE

For those hardy souls still playing this one, here's a handy tip. Occasionally, it's possible to repair worn-down items. Here and there around the Spire are restoration chests (empty, of course, when you find them). Putting an item into one of the chests restores it to full durability. A chest can be used only once, but you can carry it with you until it's needed. Many thanks to Ulises Victoria of Mexico for passing this one along.

CURSE OF MONKEY ISLAND

Guybrush has his hands full trying to scare up a crew for his ship (kinda reminds me of the original game, heh). One of these jolly sailors is Haggis McMutton. He's the brawny type, and there's no way our boy can beat him at caber tossing. Well, not unless one cheats a bit. Something lightweight in trees would do the job—if you could just get it into the pile. This is a rum situation, and a little fireworks could be helpful here—especially if you cut to the heart of the matter first.

ZORK: GRAND INQUISITOR

Having a good time poking around GUE Tech? No? Maybe those lockers, or at least one of them, is giving you a little trouble. The one that has no button on the vending machine, for instance. Violent tactics are required here, you'll need to use the rock and roll (or maybe that should be blow) method. Well fizzed (cup not required), the stuff will do the job when it's popped into the right place. Don't hang around in the vicinity, though; we need you alive to save the world. Until next time, happy adventuring! CGW

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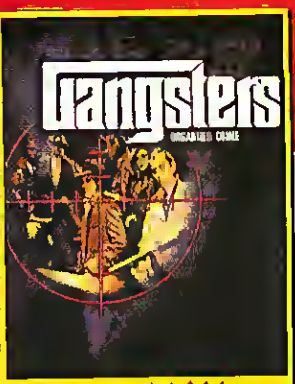

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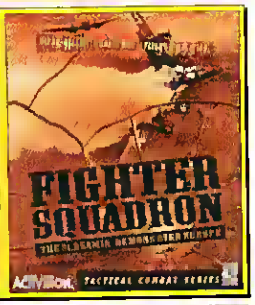

Activision (Simulation)
Release: 11/98
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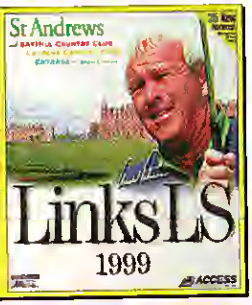
'LINKS LS 1999' Features Arnold Palmer & others at St Andrews Links Old Course, a new tournament environment, 3D objects, internet voice chat, and over 25 new play modes. New options for internet play include spectator mode and real-time voice chat. The more than 25 available add-on courses will still be compatible with Links LS 1999. Includes a new mouse swing "powerstroke"



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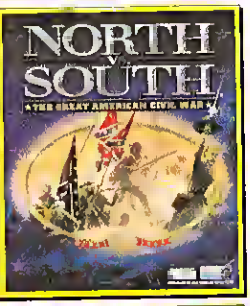

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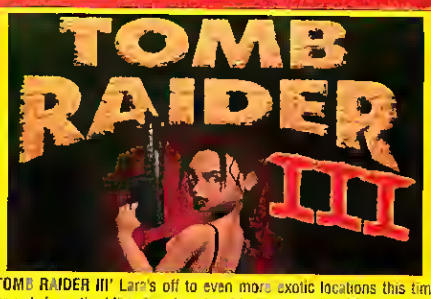

'TOMB RAIDER III' Lara's off to even more exotic locations this time around, from the blistering deserts of India to the lush islands of the South Pacific. Now you can choose your destiny by selecting the order in which you play each of the four adventures. Revamped game engine, new reflection system, vastly improved AI, new special effects (rain, snow, fire, & more).

Eidos (Action)
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'MYTH II: SOULBLIGHTER' is the sequel to the hugely popular Myth: The Fallen Lords & features an improved engine with animated 3-D models, 4x finer terrain mesh, & new lighting model. New special effects include 3-D fire, ambient life, & powerful new spells. Also includes improved pathfinding AI & new units & terrain. More net fun with individual & team rankings and in-game alliances.

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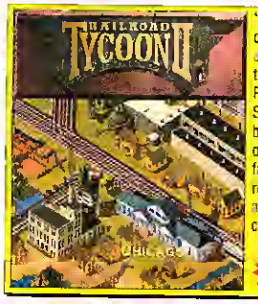

'RAILROAD TYCOON 2' Intricate cargo web and a dynamic financial environment set the stage for you to show the world what a true Robber Baron is capable of. Schedule train routes, lay rail, build stations, trade stocks, & take over companies. An intuitive interface, beautiful terrain, detailed rolling stock & attractive buildings are sure to please the most dedicated train enthusiasts.

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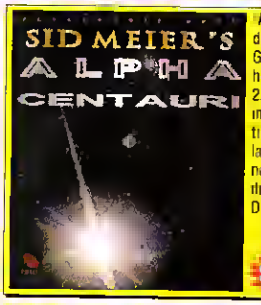

'ALPHA CENTAURI' From the developer of Civilization & Gettysburg. A mother ship's human cargo fleeing earth in the 22nd century splits into 7 factions in route to the self-titled destination. Colonists can terraform land, changing topography to suit needs. Determine your infant civilizations modus operandi. Design your own military units.

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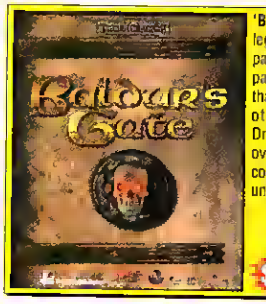

'BALDUR'S GATE' is set in the legendary Forgotten Realms campaign world. It features a transparent interface and gameplay that uses a real-time modification of the Advanced Dungeons & Dragons rules system. There are over 60 monsters to fight, you control a party of six each with unique abilities and personas.

Interplay (Roleplaying)
$44.99 Release: 11/98
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'THIEF: THE DARK PROJECT' Thief's brand-new engine, called the Dark Engine, allows for a high degree of texture detail. This first-person shooter requires more patience than brawn, study guard's patrol patterns, shroud yourself in shadow, & tiptoe stealthily from room to room as you make your way through the levels.

Eidos (Roleplaying)
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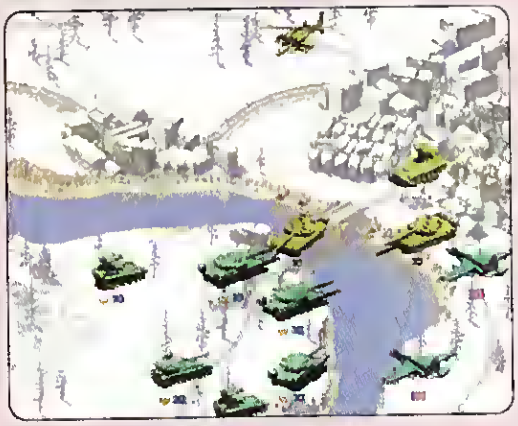


Long-range guns can also provide counter-battery fire, allowing you to start your turn with the other side's artillery already weakened.

Since enemy helicopters are a nasty business, devote some resources to your own air defense and SAM units. Mobile air-defense units are crucial to victory on both sides, and are well worth the expense. Once you have enough artillery and air defense, it's time to invest in some choppers.

The replacement rules now make it critical that you destroy rather than just damage enemy units. It's generally a good idea to hold one or two units in reserve during your turn to mop up badly hurt—but not entirely dead—enemies that will otherwise appear next turn at full strength. Tanks and helicopters are most useful in this regard.

—Tim Carter

THE OPERATIONAL ART OF WAR

Ships can impede movement along coastal roads: Move your task force next to the road and let it sit there. This is especially useful in the *Sicily*, *D-Day*, and *Korea* scenarios.

Massed artillery bombardment can do the work of a conventional attack if you don't have the necessary offensive troops. For instance, the Italian artillery at Tobruk can batter the British garrison during the *Crusader* scenario, even though the accompanying infantry probably isn't up to storming the fortress outright.

Similarly, artillery and carpet bombing by B-29 bombers can damage the North Koreans stacked up around the Pusan perimeter in *Korea* until the Americans can counterattack with ground forces.

A skillful delaying retreat, necessary in many scenarios, requires careful use of mobile troops. Sometimes you may need to dig in and fight for dear life, but more often you only need to slow the enemy, either to beat a deadline or to wait for reinforcements. When delaying, leave your troops in mobile mode and don't dig in. Your defenders should have as many spare movement points as possible and should remain in minimize-casualties mode. You can compensate for the lack of fortifications by locating units on rough terrain or in urban areas. Staying mobile allows your troops to retreat without taking too much damage. If you're worried about engagement, try to plan ahead to have a clear retreat path for your units. If you can, leave a second defending unit behind, thus ensuring a path and also providing support so that if the attackers follow up and hit the now retreated unit, your second defender can take the brunt of the attack. Against a human opponent who's in a rush or suffering from bad reconnaissance, use this technique to give the attacking units a nasty surprise. *—Tim Carter*

Action

To access the cheats:

1) Press t (or the button you have assigned for messages)
2) Type one of the codes listed below
3) Hit the Enter key

Code	Result
Mpclip	You fly and pass through walls
Mpgod	Makes you invincible
Mpkfa	Gives all weapons and full ammo
Mptears	Gives you unlimited ammo

—Terry Coleman

Classics/ Puzzles

CREATURES 2

The Science Kit includes various elixirs that you can inject into unhealthy Norns in an attempt to prolong their lives. Good luck—you'll need it!

The Grendel is back with a new look; beware if your Norns try to befriend him, because he carries disease.

—Dawn Jepsen

Adventure/RPG

FINAL FANTASY VII

Fun and Games at the Gold Saucer

Welcome to the famous Gold Saucer, where adventurers come from all over Sorpigal to race thoroughbred Chocobo. If you breed a gold Chocobo and ride your steed to victory in the S-class races, you will be rewarded with Counter Attack materia. Each Counter Attack entitles the wearer to—you guessed it—one potential counterattack in normal combat. So, grabbing a number of these instantly boosts the firepower of your party. When you win enough races in the S-class, you'll get a prize package that includes a pair of Sprint Shoes, which grant automatic haste in battle. And for our runners-up, there's always Rice-A-Roni, the multidimensional retreat. (*Yes, we're kidding; buy your own vermicelli —Ed.*).

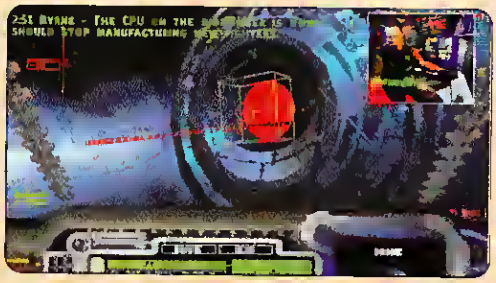
Worthy heroes should also prove their prowess in the Battle Square, earning battle points to buy Speed Plus and Pre-Emptive materia, Cloud's Omnislash manual, and W-Summon (which allows a character to cast two summon spells per turn). Once you have purchased Omnislash and W-Summon and have killed the Ultimate Weapon, have Cloud learn Omnislash, and equip him with his ultimate weapon and W-Summon. Then enter the Battle Square for a special series of battles. If you win, your prize is the Final Attack materia that lets you cast a connected spell before dying: Attach it to Phoenix or Revive.

When you're fighting in the Battle Square, be sure that you have Big Guard, White Wind, and some attack spells; spell effects will carry over from battle to battle. A Ribbon is very helpful in protecting you against most status effects, and you should cast Big Guard fairly early on, then cast Regen when you become worried about hit points.

Other useful materia to equip are Restore, Counter Attack, HP Absorb, and MP Absorb attached to Deathblow or other materia. Steal Mime, HP Plus, MP Plus, and Speed Plus are also helpful if they fit with your fighting style. Remember that all ill effects from fighting in the Battle Square (including death) last only while you're in the arena. —*Petra Schlunk*

Simulation/SpaceSim

INDEPENDENCE WAR



Are you finding that the more realistic physics of INDEPENDENCE WAR are cramping your spacefaring style? During flight, enter cheat mode by typing darkgoat, then type in one of the codes below. As always, you should make sure to back up your save-game files before you try using any cheats. —*Terry Coleman*

Code	Result
Dock with any vessel	Left-shift + k
Explode targeted ship	Left-shift + 0 (zero)
Force next mission event	Left-shift + s
Freeze target	Left-shift + ;
Invulnerability	Left-shift + i
Jump to lagrange point	Left-shift + j
Jump to target	Left-shift + 8
Match target's velocity	Left-shift + 9
Superspeed	Left-shift + a
View previous movie	Left-shift + backspace
Win the mission	Left-shift + w

The two patches to SSI's PANZER COMMANDER have given us more accurate vehicle modeling, better pathfinding, more aggressive AI combat, and even two new vehicles. The most significant change, however, is in how the game system deals with gunnery. You can now toggle the AI gunner and the illuminated reticule, which lets you use the Mark I eyeball to spot a target instead of relying on a glowing beacon. What used to be an intimidating 102-percent difficulty shot thus becomes a manageable 76 percent.

Gameplay is improved, because you have to scan the field more carefully and pop out of the cupola more often than in PANZER COMMANDER 1.0. The restricted width of the magnified gunner's position (the F7 key) and the time used to adjust for range makes the previously little-used F5 position, with its broader field of vision, invaluable. Even when firing the coaxial machine gun, you can now find the range much more quickly than before.

The greater aggressiveness of the computer opponent means that AI tanks open up at longer range, and this, combined with enemy vehicles that sport improved armor, means that your fire discipline becomes more important. Banging away at a target when you first spot it will merely exhaust your limited ammunition. Learn to use cover to close to an effective range, and maneuver for a shot at a vulnerable enemy point. In short, the 1.2 patch adds a lot to an already good game, and I heartily recommend it. —*Jim Cobb*

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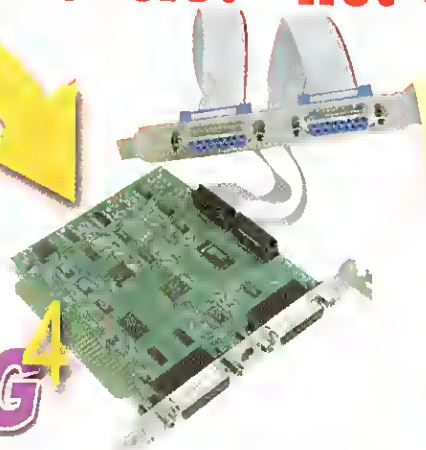
LIGHTNING 4



CHRISTMAS LIST

Dear Santa,
Please bring me the following:

* Red Ferrari
* Golf Clubs
* Big Screen TV
* A PDPI L4 Digital Game Card

PS. Be sure to bring me the L4, I can live without the other stuff. If I have to.

The Lightning 4 features VStick: The Ultimate Virtual Joystick which means you never need to plug or unplug your game controller devices. They're all active with up to 32 individual buttons available. With VStick you can assign any button a Keystroke Macro - with key sequences up to 32 characters per button, with no keyboard cabling required. Check out the L4 at these great sites:

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RC Simulations	www.rcsimulations.com	UK	Combatsim.com	www.combatsim.com	Canada
Simware Solutions	www.simw.com	Belgium	D.B.'s GPL Site	webhome.idirect.com/~drbryan/gpl	Canada
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WELCOME TO THE COOPERSTOWN OF COMPUTER GAMES. Games that broke the records, established the benchmarks, and held gamers in delighted trances for hours untold.

Alone in the Dark (I-Motion, 1992)
Lovecraftian horror goes 3D, with shifting camera angles adding to the creepy atmosphere

The Bard's Tale (EA, 1985)
Pioneered three-point animation, 3D color mazes, and auto-mapping.

Battle Chess (Interplay, 1988)
The Franklin Mint of computer chess games, with violent and funny animation disguising a solid chess engine.

Betrayal at Krondor (Dynamix, 1993)
As rich and imaginative as Raymond Feist's world itself.

Chessmaster (Software Toolworks, 1986)
The Cadillac of castling, it gets better with each version.

Command & Conquer (Virgin/Westwood Studios, 1995) Moved beyond DUNE II with innovative features and multiplayer play, ushering in the current real-time strategy game explosion.

Day of the Tentacle (LucasArts, 1993)
Offbeat sequel to MANIAC MANSION; the interactive equivalent of a classic Chuck Jones cartoon

DDDM (id Software, 1993)
Revolutionized PC action games and network gaming; now surpassed in technology, but not in gameplay

Dungeon Master (FTL Software, 1987)
Trend-setting graphics, digitized stereo, and great hack-and-slash from a decade ago.

Earl Weaver Baseball (EA, 1986)
Revolutionary physics-based baseball game pleased both action and statistics fans; still unsurpassed more than a decade later.

Empire (Interstel, 1978)
WWII in space, this mainframe transplant brought elegant mechanics, depth, and unending replayability to the PC.

F-19 Stealth Fighter (MicroProse, 1988)
A "thinking man's" sim, with great missions, in which sneaking around is as fun as dogfighting.

Falcon 3.0 (Spectrum Holo8yte, 1991)
Tough, detailed jet sim with ambitious AI, graphics, and connectivity to match its realism.

Front Page Sports Football Pro (Dynamix, 1993)
Physics based system, good AI, and unmatched career play make this the ultimate in pigskin play.

Gettysburg: The Turning Point (SSI, 1986)
First variable order of battle changed the look of all American Civil War games on the PC.

Gunship (MicroProse, 1986)
Great character continuity, R&R for fatigued pilots, and even sick leave; best chopper fare until Jane's LONGBOW.

Harpoon (360 Pacific, 1989)
In-depth modern naval battles in realtime, based on the world's Cold War fears.

Kampfgruppe (SSI, 1985)
Its WWII East Front armor battles were a success on multiple platforms

King's Quest V (Sierra On-Line, 1990)
Redefined the graphic adventure with new parser and VGA graphics.

Lemmings (Psygnosis, 1991)
The lovable cartoon Lilliputians were hits on every platform.

Links 386 Pro (Access Software, 1992)
Topped the leader board in graphics and realism for its era

M-1 Tank Platoon (MicroProse, 1989)
Realistic sim that properly focused on armored formations rather than on single vehicles, good mission designs.

Master of Magic (MicroProse, 1994)
The atmosphere of MAGIC. THE GATHERING with the sophistication of Civ

Master of Orion (MicroProse, 1993)
Remarkable diplomatic AI, deep and varied technology tree; aliens required radically different playing styles.

Mech Brigade (SSI, 1985)
Improved KAMPFGRUPPE system for modern armored battles

MechWarrior 2 (Activision, 1995)
A serious treatment of Mech design and resource management, combined with complex and addictive battles, legitimized "giant robot simulations."

Might & Magic (New World Computing, 1986)
First-person, maze-based RPG with huge environment and tough combat

M.U.L.E. (EA, 1983)
A landmark multiplayer strategy game that had no weapons of destruction, just cutthroat competition that made economics fun.

Panzer General (SSI, 1994)
Entertaining wargame with an elegant interface, great campaigns, strong AI, good graphics, and impressive sound.

Red Baron (Dynamix, 1990)
WWI air combat with great graphics, incredible realism, and a versatile replay feature.

The Secret of Monkey Island (LucasArts, 1990)
Comedy that set new standards in writing quality and social sensitivity

Sid Meier's Civilization (MicroProse, 1991)
CGW's #1-rated game of all time; indescribably addictive world-conquest/exploration game.

Sid Meier's Pirates (MicroProse, 1987)
Combines pirate adventure, action, RPG, and strategy to make the most successful hybrid of all time

Sid Meier's Railroad Tycoon (MicroProse, 1990)
SIMCITY meets 1830, with robber barons for emphasis.

SimCity (Maxis, 1987)
Urban planning with fascinating consequences and challenges; the first great software toy.

Starflight (EA, 1986)
Depth, great characters, and a good sci-fi storyline set early RPG standard.

Their Finest Hour (LucasArts, 1989)
WWII sim with great campaigns, realism, and many crew-member options.

TIE Fighter (LucasArts, 1994)
Most satisfying *Star Wars* space-combat game to date, lets you live on the dark side.

Ultima III (Origin Systems, 1983)
Coherency and surprising subtlety emphasized role-playing and set the tone for later ULTIMAS.

Ultima IV (Origin Systems, 1985)
High-concept RPG explored meaning of virtue and put the *role* in role-playing.

Ultima VI (Origin Systems, 1990)
RPG as morality play, replete with moral choices and realistic environs.

Ultima Underworld (Origin Systems, 1992)
The first truly 3D RPG, and still the most convincing, its dungeon walls are nicely "painted" with texture-mapped graphics.

War in Russia (SSI, 1984)
More realistic than EASTERN FRONT, it captured the essence of the largest land campaign in history.

WarCraft II (Blizzard, 1996)
More cerebral than most real-time strategy games, it offered deceptive depth and personality to spare.

Wasteland (Interplay, 1986)
Derived from Mike Stackpole's *Mercenaries, Spies, and Private Eyes*, this is the definitive postapocalyptic RPG.

Wing Commander (Origin Systems, 1990)
A hot space flight engine, unfolding story path, and great characters

Wing Commander II (Origin Systems, 1991)
Darker story, grittier feel, sound card advances, and tougher AI made this a sequel of sequels.

Wing Commander III (Origin Systems, 1994)
Surprisingly satisfying FMV space-opera didn't lose the essence of the space-combat game.

Wizardry (Sir-Tech Software, 1981)
Defined the computer RPG with maze-based viewpoint and atmospheric spell names

Wolfenstein 3-D (id Software, 1992)
Smooth-scrolling action blastfest cleverly updated the original and put shareware back on the map

X-COM (MicroProse, 1994)
Premier tactical squad-level engine combined with alien tech research and pop culture for a sci-fi game nearly as addictive as CIVILIZATION

You Don't Know Jack (Berkeley Systems, 1996)
Fresh and irreverent, JACK turned trivia gaming on its collective ear to become the first mainstream CD-ROM with a gleeful gameplay bite.

Zork (Infocom, 1981)
The progenitor of adventure games on the PC; its humor and challenging puzzles seem timeless. The game has since spawned a number of sequels, none of which has equaled the original

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TOP 100

CGW'S MONTHLY READERS' POLL

Each month, 2,000 *CGW* subscribers are selected at random to rate 100 computer games. The results of that poll are combined with the results of previous months to yield a cumulative average for the best plays in gaming. If you receive a ballot, please return it with your ratings so that other gamers and game publishers can benefit from your feedback.

TOP ACTION GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	Quake II	Activision	8.49	4.5
2	2	Quake Pack 2: Dissolution	id Software/Rogue	8.47	5
	4	Jedi Knight: Dark Forces II	LucasArts	8.47	4.5
4	2	Quake Pack 1: Scourge	id Software/Ritual	8.46	4.5
5	5	Unreal	GT Interactive	8.33	4
	6	Jedi Knight: Mysteries/Sith	LucasArts	8.33	4
7	—	Quake II MP: Reckoning	Xatrix	8.04	3.5
8	7	Tomb Raider	Eidos	7.89	4
9	8	Moto Racer	EA	7.78	4
10	10	Tomb Raider II	Eidos	7.72	4

TOP ADVENTURE GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	2	Curse of Monkey Island	LucasArts	8.30	5
2	1	Sanitarium	ASC Games	7.85	4.5
3	4	Blade Runner	Westwood/Virgin	7.69	4.5
4	3	Twinsen's Odyssey	Activision	7.67	5
5	5	Zork Grand Inquisitor	Activision	7.60	N/R
6	6	Last Express	Red Orb	7.41	4.5
	8	Realms of the Haunting	Interplay	7.41	4.5
8	10	Rama	Sierra	7.38	4.5
9	8	Circle of Blood	Virgin	7.37	4
10	—	Tex Murphy: Overseer	Access Software	7.20	3

TOP CLASSIC/PUZZLE GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	You Don't Know Jack 2	Berkeley Systems	8.22	4.5
2	2	You Don't Know Jack 3	Berkeley Systems	7.96	4
3	4	Smart Games Challenge 2	Smart Games Inc	7.93	5
4	3	You Don't Know Jack Movies	Berkeley System	7.90	4.5
5	5	Worms 2	MicroProse	7.72	4
6	7	You Don't Know Jack TV	Berkeley Systems	7.65	2.5
7	8	You Don't Know Jack Sports	Berkeley Systems	7.48	4.5
8	9	Power Chess	Sierra	7.41	N/R
9	6	Shanghai Dynasty	Activision	7.30	3
10	—	Lose Your Marbles	SegaSoft	6.62	4.5

TOP SIMULATION/SPACE COMBAT

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	Longbow 2	EA	8.47	5
2	2	Wing Commander: Prophecy	Origin	8.37	4.5
3	3	F-15	EA/Origin	8.14	4.5
4	4	F22 ADF	DID	7.78	4.5
5	5	Fighters Anthology	EA	7.71	3.5
6	6	MechWarrior 2: Mercenaries	Activision	7.62	4.5
7	8	Flight Unlimited 2	Looking Glass	7.54	4.5
8	7	M1 Tank Platoon II	MicroProse	7.35	3.5
9	10	Flight Simulator 98	Microsoft	7.26	3.5
10	—	X-Wing vs. TIE Fighter	LucasArts	7.15	3.5

TOP SPORTS GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	NHL 98	EA Sports	8.64	4
2	2	FIFA Road to World Cup 98	EA Sports	8.38	4.5
3	4	NBA Live 98	EA Sports	8.33	4.5
4	6	NASCAR Racing 2	Sierra	8.13	5
5	5	Jack Nicklaus 5	Accolade	7.91	5
6	8	NBA Live 97	EA Sports	7.80	4.5
7	9	Diamond Mind Baseball 7.0	Diamond Mind	7.59	3.5
8	—	Tripleplay 98	EA Sports	7.50	3
9	—	Jack Nicklaus 4	Accolade	7.46	5
10	9	Tripleplay 99	EA Sports	7.44	2.5

TOP STRATEGY GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	Heroes II: Price of Loyalty	3DO/New World	8.97	5
2	3	TA: Core Contingency	Cavedog	8.84	4.5
3	2	StarCraft	Blizzard	8.82	5
4	4	Heroes II	3DO/New World	8.57	5
5	5	Red Alert	Virgin/Westwood	8.48	4.5
6	6	Total Annihilation	GT Interactive	8.25	4.5
7	7	Red Alert: Counterstrike	Virgin/Westwood	8.18	4
8	—	StarCraft: Insurrection	Blizzard	8.03	3.5
9	8	Age of Empires	Microsoft	7.97	4.5
10	10	Civ II: Fantastic Worlds	MicroProse	7.91	4

TOP ROLE-PLAYING GAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	Might and Magic VI	New World Computing	8.85	4.5
2	2	Diablo	Blizzard	8.53	4.5
3	4	Final Fantasy VII	Eidos	8.33	4
4	3	Fallout	Interplay	8.32	4.5
5	5	Hellfire	Sierra	7.89	4
6	7	Shadows Over Riva	Sir Tech	6.60	3
7	8	Lands of Lore II	Westwood	6.16	N/R
8	9	Meridian 59	3DO	5.41	3.5
9	10	Ultima Online	Origin	4.82	1.5
10	—	Battlespire	Bethesda	4.53	2

TOP WARGAMES

THIS MO.	LAST MO.	GAME	COMPANY	SCORE	RATING
1	1	Steel Panthers II Camp. Disk	SSI	8.38	4.5
2	—	Operational Art of War	TalonSoft	8.32	5
3	2	Panzer General II	SSI	8.30	5
4	—	Great Battles of Caesar	I Magic	8.15	4
5	3	Sid Meier's Gettysburg	Firaxis	8.01	4.5
6	4	Steel Panthers II	SSI	8.00	4.5
7	5	Battleground: Napoleon	TalonSoft	7.85	4.5
8	7	Battleground: Antietam	TalonSoft	7.77	5
9	6	Battleground: Bull Run	TalonSoft	7.75	4
10	7	Tigers on the Prowl II	HPS	7.67	4

Games on unnumbered lines are tied with game on line above. ★ = Top game of genre. Red = New Game, **AD** = Adventure, **RP** = Role-Playing, **SI** = Simulation/Space Combat, **ST** = Strategy, **WG** = Wargame, **AC** = Action, **SP** = Sports, **CP** = Classic/Puzzle. Games are retired after two years and become eligible for the Hall of Fame.

THIS MO	LAST MO	GAME/ PUBLISHER	GAME GENRE	POLL SCORE	CGW RATING
★ 1	1	**Heroes II: Price of Loyalty** New World Computing	ST	8.97	5
★ 2	2	**Might and Magic VI** New World Computing	RP	8.85	4.5
3	4	**Total Annihilation: Core Contingency** Cavedog	ST	8.84	4.5
4	3	**StarCraft** Blizzard	ST	8.82	5
★ 5	5	**NHL 98** EA Sports	SP	8.64	4
6	6	**Heroes II** New World Computing	ST	8.57	5
7	8	**Diablo** Blizzard	RP	8.53	4.5
★ 8	7	**Quake II** Activision	AC	8.49	4.5
9	11	**Red Alert** Virgin/Westwood	ST	8.48	4.5
10	9	**Quake Pack 2: Dissolution** id Software/Rogue	AC	8.47	5
	11	**Jedi Knight: Dark Forces II** LucasArts	AC	8.47	4.5
★	11	**Longbow 2** EA	SI	8.47	5
13	9	**Quake Pack 1: Scourge** id Software/Ritual	AC	8.46	4.5
14	11	**World Cup 98** EA Sports	SP	8.38	4.5
★	17	**Steel Panthers II Campaign Disk** SSI	WG	8.38	4.5
16	15	**Wing Commander: Prophecy** Origin	SI	8.37	4.5
17	17	**Unreal** GT Interactive	AC	8.33	4
	19	**NBA Live 98** EA Sports	SP	8.33	4.5
	20	**Jedi Knight: Mysteries of the Sith** LucasArts	AC	8.33	4
	27	**Final Fantasy VII** Eidos	RP	8.33	4.5
21	22	**Fallout** Interplay	RP	8.32	4.5
	—	**Operational Art of War** TalonSoft	WG	8.32	5
23	21	**Panzer General II** SSI	WG	8.30	5
★	23	**Curse of Monkey Island** LucasArts	AD	8.30	5
25	26	**Total Annihilation** GT Interactive	ST	8.25	4.5
★ 26	24	**You Don't Know Jack 2** Berkeley Systems	CP	8.22	4.5
27	28	**Red Alert: Counterstrike** Virgin/Westwood	ST	8.18	4
28	—	**Great Battles of Julius Caesar** I-Magic	WG	8.15	4
29	25	**F-15** EA/Origin	SI	8.14	4.5
30	30	**NASCAR Racing 2** Sierra	SP	8.13	5
31	60	**Quake II MP: The Reckoning** Xatrix	AC	8.04	3.5
32	—	**StarCraft: Insurrection** Blizzard	ST	8.03	3.5
33	31	**Sid Meier's Gettysburg** Firaxis	WG	8.01	4.5
34	34	**Steel Panthers II** SSI	WG	8.00	4.5
35	32	**Age of Empires** Microsoft	ST	7.97	4.5
36	38	**You Don't Know Jack 3** Berkeley Systems	CP	7.96	4
37	43	**Smart Games Challenge 2** Smart Games/Hasbro	CP	7.93	5
38	29	**Jack Nicklaus 5** Accolade	SP	7.91	5
	40	**Civilization II: Fantastic Worlds** MicroProse	ST	7.91	4
40	37	**You Don't Know Jack Movies** Berkeley Systems	CP	7.90	4.5
41	35	**Hellfire** Sierra	RP	7.89	4
	38	**Tomb Raider** Eidos	AC	7.89	4
	39	**Civilization II: Scenarios** MicroProse	ST	7.89	4
44	16	**Sanitarium** ASC Games	AD	7.85	4.5
	36	**Battleground: Napoleon in Russia** TalonSoft	WG	7.85	4.5
46	46	**NBA Live 97** EA Sports	SP	7.80	4.5
47	40	**F22 ADF** DID	SI	7.78	4.5
	45	**Moto Racer** EA	AC	7.78	4
49	47	**Battleground: Antietam** TalonSoft	WG	7.77	5
50	42	**Battleground: Bull Run** TalonSoft	WG	7.75	4

THIS MO	LAST MO	GAME/ PUBLISHER	GAME GENRE	POLL SCORE	CGW RATING
51	54	**Tomb Raider II** Eidos	AC	7.72	4
	55	**Worms 2** MicroProse	CP	7.72	4
53	51	**Fighters Anthology** EA	SI	7.71	3.5
54	61	**Blade Runner** Westwood/Virgin	AD	7.69	4.5
55	47	**Tigers on the Prowl II** HPS	WG	7.67	4
	59	**Twinsen's Odyssey** Activision	AD	7.67	5
57	50	**Battlezone** Activision	AC	7.66	5
58	61	**You Don't Know Jack TV** Berkeley Systems	CP	7.65	2.5
59	49	**MechCommander** MicroProse	ST	7.62	4
	55	**MechWarrior 2: Mercenaries** Activision	SI	7.62	4.5
61	67	**Descent: Freespace—The Great War** Interplay	AC	7.61	4
62	64	**Zork: Grand Inquisitor** Activision	AD	7.60	N/R
63	51	**Diamond Mind Baseball 7.0** Diamond Mind	SP	7.59	3.5
64	66	**Flight Unlimited 2** Looking Glass	SI	7.54	4.5
	72	**Myth** Bungie	ST	7.54	4.5
66	83	**Dungeon Keeper Expansion** EA/Bullfrog	ST	7.51	4.5
67	67	**Triple Play 98** EA Sports	SP	7.50	3
68	64	**You Don't Know Jack Sports** Berkeley Systems	CP	7.48	4.5
69	72	**Jack Nicklaus 4** Accolade	SP	7.46	5
70	51	**Tripleplay 99** EA Sports	SP	7.44	2.5
71	76	**Interstate '76** Activision	AC	7.42	4.5
72	74	**Last Express** Red Orb	AD	7.41	4.5
	78	**Realms of the Haunting** Interplay	AD	7.41	4.5
	82	**Power Chess** Sierra	CP	7.41	N/R
75	55	**F1 Racing Simulation** UbiSoft	SP	7.39	5
76	80	**Dungeon Keeper** EA/Bullfrog	ST	7.38	4.5
	80	**Rama** Sierra	AD	7.38	4.5
78	78	**Circle of Blood** Virgin	AD	7.37	4
79	61	**M1 Tank Platoon II** MicroProse	SI	7.35	3.5
80	58	**Shanghai Dynasty** Activision	CP	7.30	3
	76	**Steel Panthers III** SSI	WG	7.30	3
82	70	**Virtual Pool 2** Interplay	SP	7.27	4.5
	83	**Achtung! Spitfire** Avalon Hill	ST	7.27	5
	85	**Age of Rifles Campaign Disk** SSI	WG	7.27	4
85	90	**Flight Simulator 98** Microsoft	SI	7.26	3.5
86	87	**PGA Tour Pro** EA Sports	SP	7.24	3.5
87	89	**Baseball Mogul** Infinite Monkey	SP	7.22	4
88	85	**Close Combat: A Bridge Too Far** Microsoft	WG	7.21	4.5
89	—	**Tex Murphy: Overseer** Access Software	AD	7.20	3
90	94	**X-COM: Apocalypse** MicroProse	ST	7.19	4
91	87	**Forsaken** Acclaim	AC	7.18	4
	92	**Lords of the Realm II** Sierra	ST	7.18	4
	98	**Leisure Suit Larry 7** Sierra	AD	7.18	3.5
94	94	**MDK** Playmates/Shiny	AC	7.16	4.5
	96	**Black Dahlia** Interplay	AD	7.16	3
96	91	**Uprising** 3DO	AC	7.15	4
	100	**X-Wing vs. TIE Fighter** LucasArts	SI	7.15	3.5
98	—	**Mortal Kombat 4** Midway	AC	7.12	2.5
	—	**FIFA Road to the World Cup 97** EA Sports	SP	7.12	4.5
100	—	**Theme Hospital** EA/Bullfrog	ST	7.08	4

The First Annual Greenspeak Awards

Or, My Big Excuse to Loudly Shout, "I'm the King of the World!"

Happy New Year and welcome to the first annual Greenspeak Awards, hosted by me, Billy Crystal. Let me take a second, before we get to the awards, to apologize for *My Giant*. I won't make any more movies now. I promise.

The Greenspeak Awards were created to recognize significant achievements in computer gaming over the past year—or at least the ones we can make fun of. Winners will receive absolutely nothing. So, without further ado, here's the creator of the Greenspeak Awards, Jeff Green. Please, everyone, stay seated—the exits have been sealed.

Thank you, Billy—nice haircut. First off, please note that these awards should not be confused with any official, important *CGW* awards. This is just another blatant attempt to draw attention to myself in hopes, once again, that someone will notice me. Should anyone want to put this award on their game box, remember—I'm cheap and easy.

Okay, on with the awards.

Boneheads of the Year

Apple Computer It takes Apple's perfected blend of arrogance, stupidity, and flat-out delusional thinking to top themselves year after year, but hey, you don't reduce yourself to a sub-5 percent market share without a lot of effort! This year's Darwinian move was releasing the otherwise kinda cool iMac *without a floppy drive*. Because, you know, they're archaic now. Brilliant, guys. Next year, try leaving out the monitor, hard drive, and CD-ROM drive too. That'll make the machines easier to lift when we toss them into the garage.

Geniuses of the Year

WizardWorks, for making DEER HUNTER. They saw a void, they came, and they filled it. And, boy, did they clean up. Everyone in the industry spent the first half of the year making fun of it, then the second half trying to copy it and cash in. You don't have to admire the game itself, but you gotta love anything that makes the entire gaming industry, press included, look stupid.

JEFF GREEN

Bummer of the Year

Blizzard's cancellation of WARCRAFT ADVENTURES: LORD OF THE CLANS. I admit my bias. I am a WARCRAFT freak. I dream of being in Azeroth. I have been known to wake up screaming "I've got a flying machine!" I almost named my daughter "Zug Zug." So the cancellation of the WARCRAFT adventure game hit me hard. I actually plan on remaining in a permanent bad mood about it until WARCRAFT III comes out. So until then, just keep away from me.

Worst Trend of the Year

Big-breasted gun-toting babes. You know, if we were talking about real big-breasted, gun-toting babes, I might have called this the *best* trend of the year. But guys, Lara Croft and all these other computer chicks? They're not real. Please stop drooling over them now. It's pathetic. Let's all make a resolution right now to talk to some real girls in 1999. I know they're scary and are shaped different than Lara Croft, but, on the plus side, they'll actually talk back to you, and they'll always know where your keys are.

> Let's all make a **resolution** right now to talk to some real **girls** in 1999.

Cheapskates of the Year

Microsoft, for failing to include written manuals in a number of its games, including MICROSOFT GOLF, 3D BASEBALL, and MOTOCROSS MADNESS. Hey, guys, now that you practically own the entire world, try taking a crowbar or stick of dynamite to Bill Gates' giant money vault and pony up for manuals so that gamers can learn to play your games after buying them, okay? I think you can afford it. And while you're at it, slip Bill an extra $50 to get a decent haircut.

Please Put Your Clothes Back on and Go Away Award

Gillian Bonner, the former *Playboy* Playmate responsible for RIANA ROUGE, the most embarrassing, awful game of the year. Imagine Janet Reno in a butt thong, and you're just beginning to get an idea of what a cold shower this supposedly erotic adventure game was. Yeeeesh.

Pathetic Weasels of the Year

All the jerks who got on battle.net to play STARCRAFT pretending to be newbies, for the sole purpose of padding their rankings by beating on real newbies who were trying to learn how to play the game. This is called being a bully. This is called being a coward. You hear me, "Sean Yves"? I hate you. CGW

What Jeff doesn't realize is that "Sean Yves" is actually the pseudonym of his mother, who enjoyed routinely kicking his butt in STARCRAFT all year long. Send Jeff any recommendations for a therapist, which he's now going to need, to jhgreen@zd.com.

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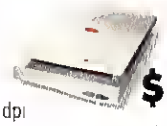

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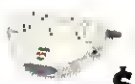

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