

The #1 Computer Game Magazine

Computer Gaming World



JULY 1996
NO. 144

Sports
Games
Spectacular
page 71

First Hands-On
Coverage!

QUAKEN!



It'll Rock Your World!

**3-D
Graphics**

Hands-On With Hot Hardware

- ▶ Creative Labs
- ▶ Hercules
- ▶ ATI
- ▶ S3
- ▶ Rendition
- ▶ Diamond
- ▶ Matrox
- ▶ Yamaha

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**Have you cleared the
streets of Los Angeles yet?**

**Did you tip the exotic dancers
or did you blow a few away?**

WHAT?!

You haven't played it yet??

WHY IS DUKE NUKEM 3D THE BEST?

Even running in super crisp 800x600 SVGA it blasts along faster than every other comparable 3D PC title. It's not pure speed at the expense of versatility either - it is possible to look up, down, or sideways at any time, with the bitmapped scenery undergoing minimal deformation and no speed loss whatsoever. The engine also caters for full interaction, so bullets leave pock marks on walls, enemy's blood drips down crates and earthquakes cause huge sections to shift altogether, thereby granting access to new locations. It all contributes to the feeling of being encased within a grim world as opposed to wandering through impregnable, static corridors. The effect is hugely rewarding and is surely the direction in which such games should be heading.

This potential has luckily been exploited too. So often games fail to capitalize on excellent technologies but each of Duke Nukem's levels are noticeably different, being packed with huge ramps, drops, lifts, jumps and cunningly hidden secret areas. None look the same (indeed there is often a significant variation within a single building) and there is always a feeling that there is a new trick round the next corner. — *Edge Magazine*



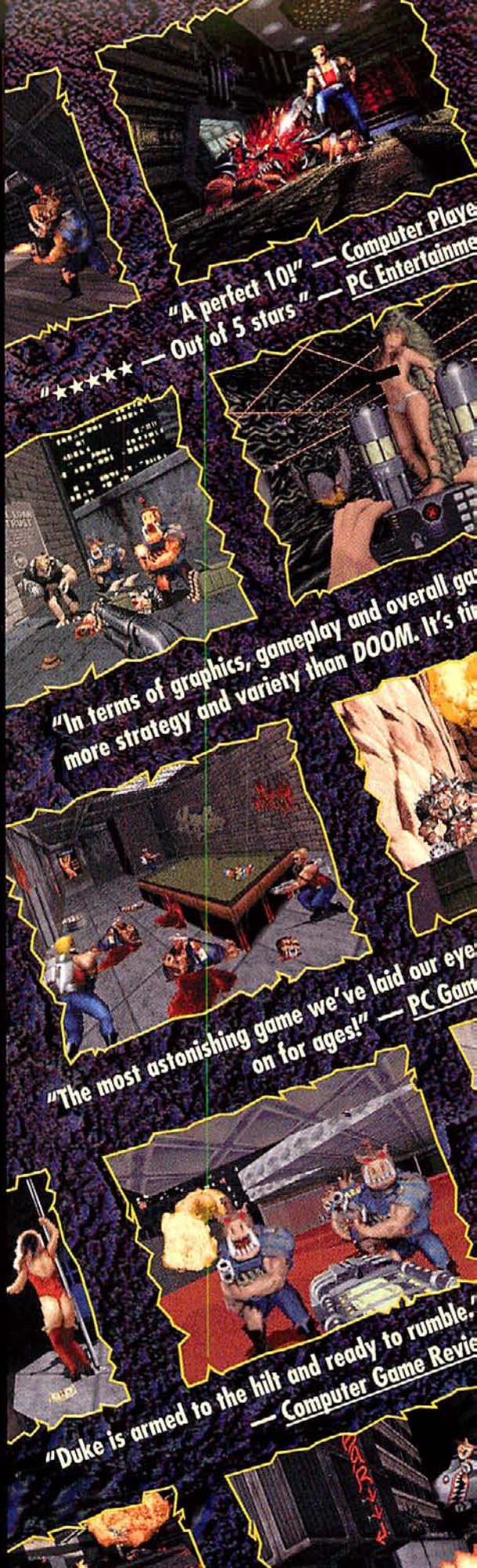
DUKE NUKEM™ 3D



CIS (GO REALMS) • WorldWideWeb (<http://www.3drealms.com>) • AOL (Keyword 3D REALMS)

Mature Players: Violence and Adult themes

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"A perfect 10!" — *Computer Player*
"Out of 5 stars" — *PC Entertainment*

★★★★★

"In terms of graphics, gameplay and overall game more strategy and variety than DOOM. It's the

"The most astonishing game we've laid our eyes on for ages!" — *PC Game*

"Duke is armed to the hilt and ready to rumble." — *Computer Game Review*

Well, what are you waiting for?

...e design, Duke is better than DOOM. The modem/network play is far better and allows
...e to make way for the Duke." — Computer Player

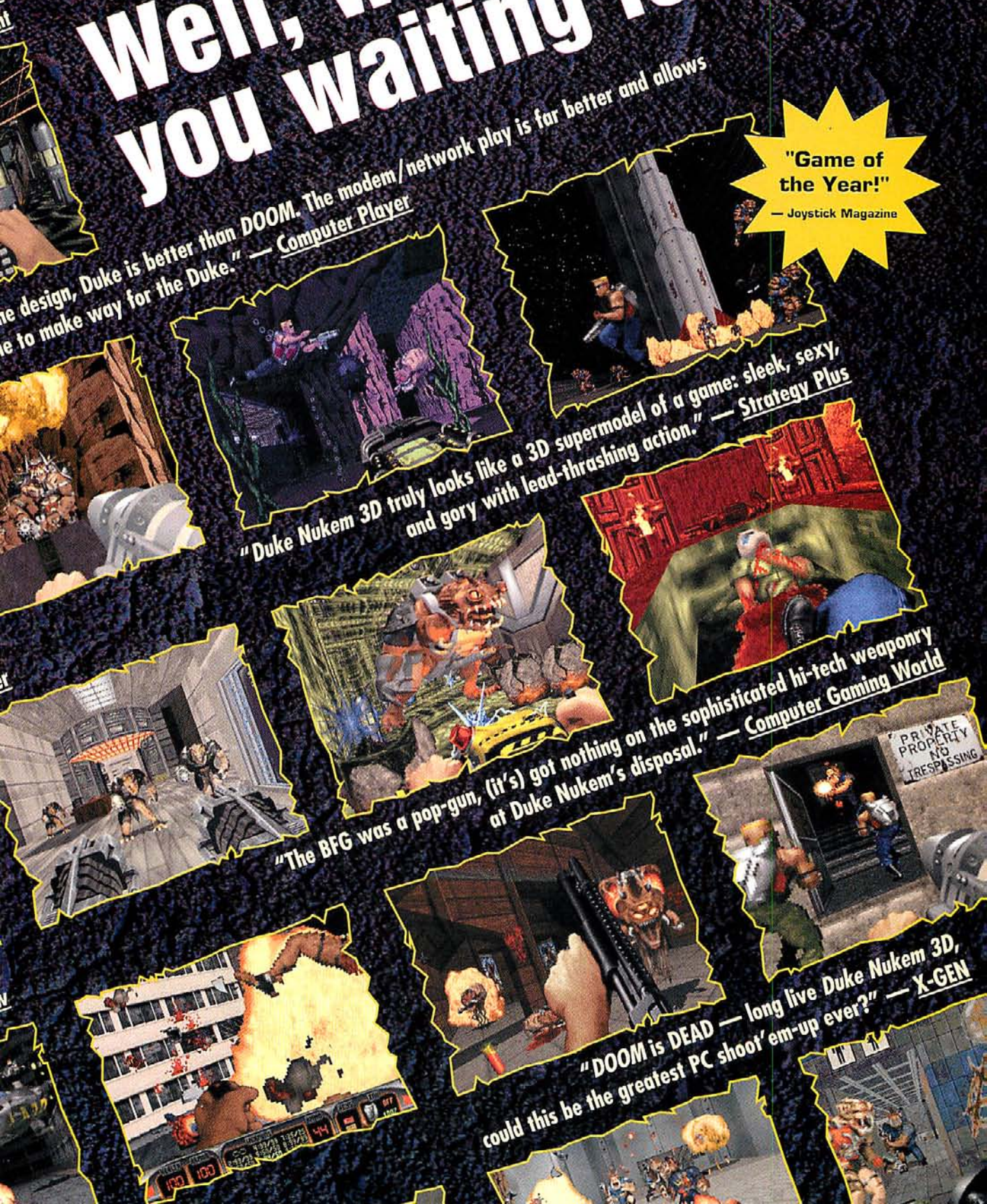
"Game of the Year!"

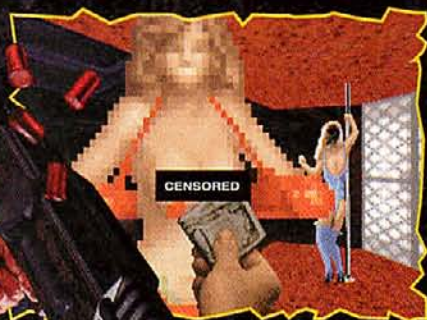
— Joystick Magazine

"Duke Nukem 3D truly looks like a 3D supermodel of a game: sleek, sexy, and gory with lead-thrashing action." — Strategy Plus

"The BFG was a pop-gun, (it's) got nothing on the sophisticated hi-tech weaponry at Duke Nukem's disposal." — Computer Gaming World

"DOOM is DEAD — long live Duke Nukem 3D, could this be the greatest PC shoot'em-up ever?" — X-GEN





DUKE NUKEM™

3D

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DIABLO

THIS SUMMER
**ALL HELL
BREAKS LOOSE.**

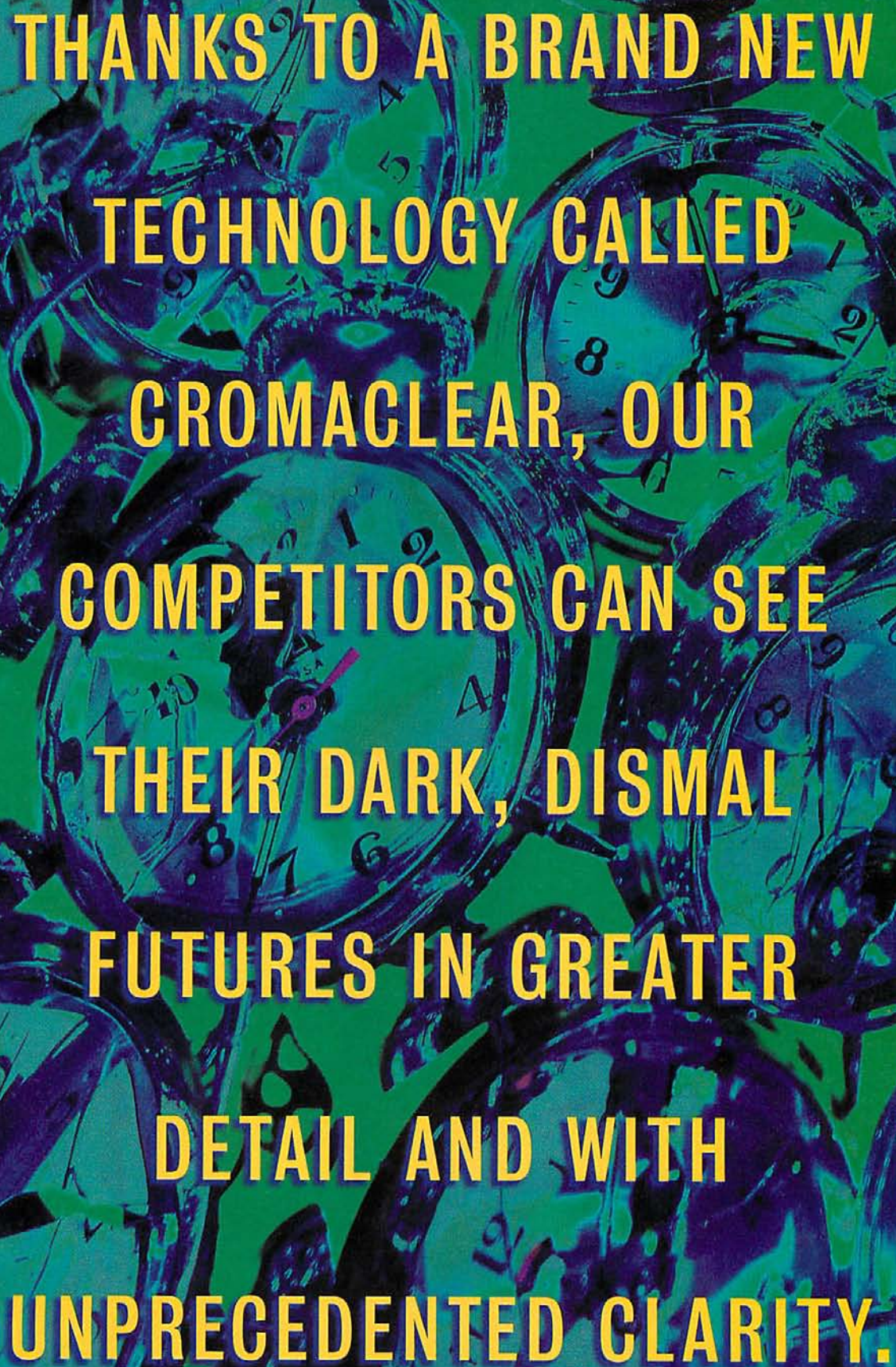


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UNPRECEDENTED CLARITY.**



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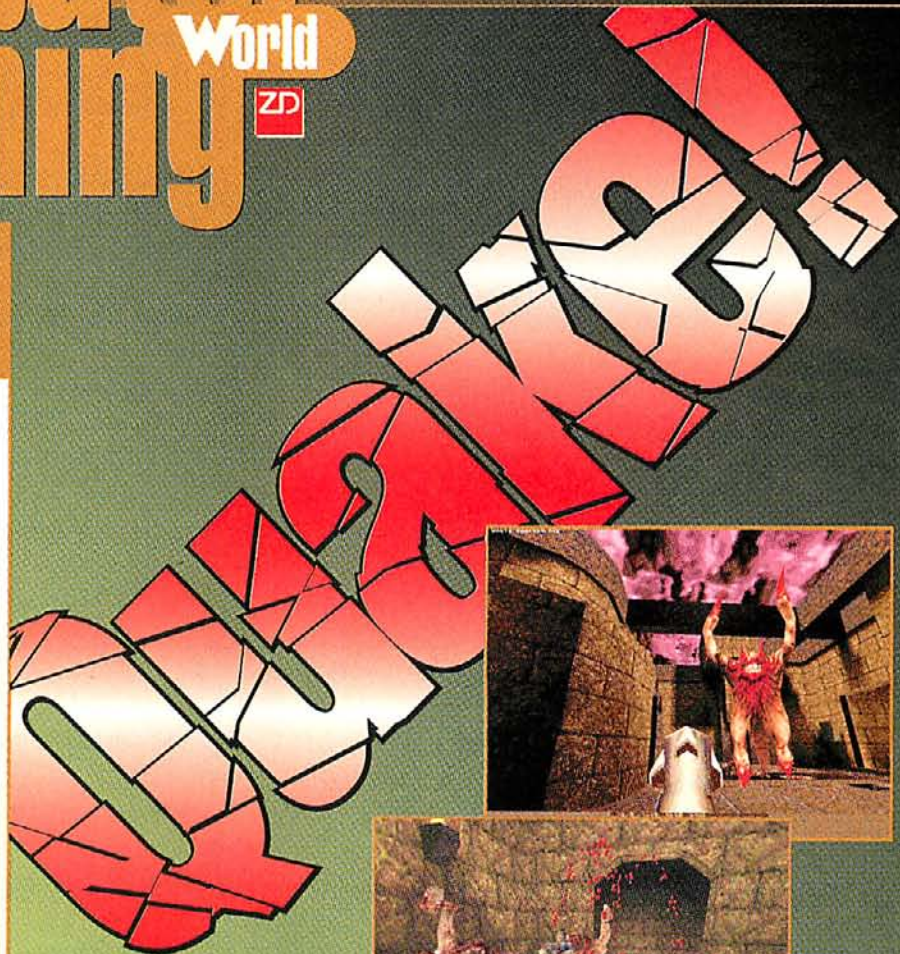
Visit our new web site at <http://www.nec.com>

Computer Gaming World

FEATURES

46 Cover Story: QUAKE!

If you're tired of all the misinformation that's been generated about Id Software's long-awaited Quake, you'll want to check out our exclusive hands-on coverage of the real thing. Don't be satisfied with Norse hammers that won't be in the game when you can read about the actual weapons, monsters and technology in this fascinating article by Vic Long.



55 3D Accelerator Cards

CGW makes you an instant expert on the latest technological buzz—3D graphic acceleration. Loyd Case and Dave Salvator demystify the hype by describing the basics, the players and the results of this year's technological revolution. Find out what's important in a gamer's 3D card and what isn't by reading our "no nonsense" report.

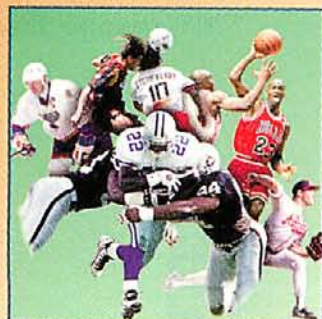


71 Sports Spectacular

CGW's new Sports Editor, Jeff Green, joins his new colleagues in seeking out "A Season for Every Man." CGW's experts check out the sports games which are already on the field and some that are still waiting for opening day in this survey of baseball, basketball, football, hockey and more.

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TAKE IT OUT.**

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MAN ENOUGH TO RUN
THROUGH MACHINE-GUN FIRE
TO GET THE JOB DONE.**

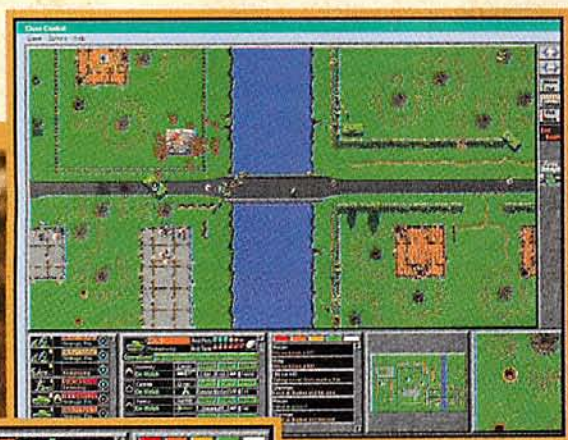
**AND ANDERSON,
THERE COULD BE A MEDAL
IN IT FOR YA.**



Anderson, Chuck. Sergeant. Leads 2nd Platoon's Recon team. Probably gotta wife back home. Damn good soldier. You give him an order and he figures out the best way to get the job done. So what's he doing cowering behind that bombed-out farmhouse?

Saving his own butt.

That's what you should expect if you order him to do something crazy. In



Close Combat everything reacts like it does on the battlefield, from the ripping canvas hiss of the German MG42 machine gun to the screams of the men it hits. It all goes down right in front of you. In real time.

So there's no time to thumb through the manual. You work your mouse like a weapon. Point and click and boom, the shooting starts the second your

men step off Omaha Beach and it don't let up 'til they've taken Saint-Lô. Troops, terrain, situations – if you want to get any more accurate, you'll have to shave your head.

Wanna go head to head with other military geniuses? All you need is a TCP/IP connection. And guts.

So look alive soldier: D-Day happens this July. Which means you don't have much time to kill.

Americans vs. Germans:
Which side you
gonna take?

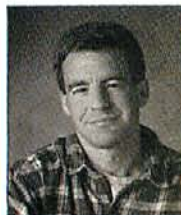
Mac™ vs. Windows® 95:
Which side you
gonna take?

Microsoft

WHERE DO YOU WANT TO GO TODAY?™

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Jeff Green was recently optioned from another Ziff team for a draft choice (Anchor Steam?) and future considerations. Former reviews editor for *MacWEEK* and a book editor prior to that, Jeff joins *CGW* as the new Sports game and Adventure game editor. He claims the rig-

orous training regime began early in life. He graduated from high school with a Master of SPACE INVADERS and majored in MISSILE COMMAND and DRAGON'S LAIR while attending UC Berkeley. Jeff was born in L.A. and is *CGW's* Mac gaming expert, but the editorial staff holds neither against him. Though a child at heart, Jeff retires home to play husband and father—whenever we let him escape.



Peter Olafson is a veteran gamer and *CGW's* action games contributing editor. A former editor of the dearly departed *Amiga World*, Peter was unable to relinquish his collection of the venerable relics. He now secretly harbors

five Amigas in places of high worship throughout his house, which he shares with his wife, Evelyn Nieves of New York Times-columnist fame, and a menagerie of small animals. Peter is the author of the strategy guides, FINAL FANTASY III and THUNDERSCAPE and is currently working on two teleplays.



Mark Clarkson's brain isn't in Kansas, anymore, but his body is trapped there. Denying that he was the inspiration for Spielberg's *Twister*, he claims to have only attracted three tornados in four years of freelance writing in the Great

Plains state. He has penned numerous articles for a variety of magazines, from *Sci-Fi Universe* to *Family PC*, as well as *CGW*. Dabbling in systems administration and game production, Mark professes to be an artist, with particular interest in 3D rendering and animation.



Scorpia is not only the most tenured authority for adventure role-playing reviews, but the industry's longest running "mystery woman," as well. Publishers have been feeling the sting of *CGW's* Adventure Games Contributing Editor since she purchased her first computer, an Apple II+, back in 1981. In 1982, she co-founded the original GameSIG on

CompuServe, where publisher Russell Sipe discovered her and asked her to write for this magazine. Thus began the Scorpion's Tale in 1983, and the rest, as they say, is herstory. Arguably the most experienced, most outspoken critic of unimaginative or sloppy adventure game design, her loyal audience wouldn't have her any other way. Aside from her monthly columns here, Scorpia can also be found online on GEnie, Delphi and AOL.



Jill Anderson wears two hats as *CGW's* News Editor and CD-ROM coordinator, but fortunately she is a master quick-change artist. Jill cut her teeth on technology journalism while working as an associate editor at the late *Morph's Outpost*, a magazine for game and multimedia developers. When Jill joined the predomi-

nantly male staff of *CGW*, we had our concerns how an honors graduate from an all-female college would fit in. Those fears were put to rest when Jill won the beer-chugging contest at her first staff bar crawl, arm-wrestled the editor-in-chief, and told enough off-color jokes to earn the nickname Barnacle Jill. She is as close as you can get in computer industry journalism to Karen Allen's role in *Raiders of the Lost Ark*.

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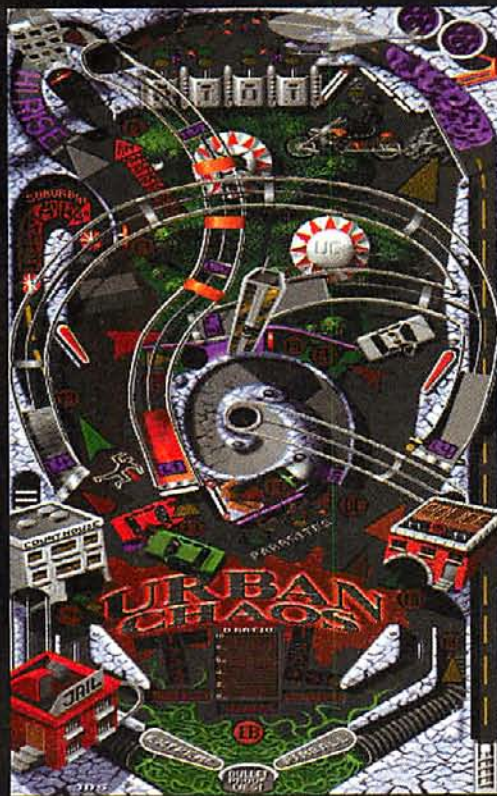
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Who's on first? What's on the silver disc I had to pay extra for? Why can't I make enough money to cover my expenses?

es? You've got questions, we've got answers.



What's on the CD?

If the hot days of summer evoke fond memories of ball parks, hot dogs, beer in plastic cups, and the loud crack of a well-hit ball as the crowd leaps to its feet, you've come to the right spot. Welcome to CGW's Sports Arena. With Olympic inspiration, this month's CG-ROM brings you an expansive repertoire of sports games. Wind up with **HARDBALL 5** or **FPS: BASEBALL PRO 96**, an exclusive preview from Sierra. Jump behind the wheel of a stock car in **DESTRUCTION DERBY** for a smashing good time. For a (virtual)-physical workout, we have **VR SOCCER**, **UNNECESSARY ROUGHNESS**, and **FPS: FOOTBALL PRO 96** with an exclusive play developed by CGW contributor Paul Schuytema. If you prefer the safety of ring-side, court-side or rink-side seats check out the **TITLE FIGHT PRO BOXING**, **NCAA**



CHAMPIONSHIP BASKETBALL and **WAYNE GRETZKY HOCKEY** demos—all fully playable. Finally, unwind with some sport fishing in **TROPHY BASS**, all from the comfort and convenience of your PC. So, if sports is your game, prepare for some action. Sorry, no popcorn, peanuts, or Cracker Jacks included. Our Editors' Hot Picks gives a three-gun salute to the Editors'

Editors—three scenario editors for SSI's **ALLIED**, **FANTASY** and **PANZER GENERALS**—and honors the sequel with Interplay's **DESCENT II** and **Blizzard Entertainment's WARCRAFT II**. Other playable demos include Activision's **ZORK NEMESIS**, Time Warner's **RETURN FIRE**, **PHILIP MARLOWE: PRIVATE EYE** by Byron Preiss and many more.

How Do I Use It?

Our CD is a Windows program. If you have Windows 95, installation is simple: the CD is Autoplay enabled. Just "Lock 'n' load." Otherwise, from Windows 3.x, pop the CD into your drive, select **RUN** from the Program Manager's menu and type **D:\RUN-ME** (where D is the letter of your CD-ROM drive) to run it straight from the CD. Then type **D:\INSTALL** to create a CGW program group on your Windows desktop. If you have installed previous versions of the CG-ROM, this disk will use the program group already on your desktop. Point and click to navigate around the CD, just as you would in any other Windows program. You can access any of the "Main Attraction" items (such as Product Demos or Patches) from within the Primary Blunders "Surprise Attraction." And you may exit the "Surprise Attraction" at any time by first clicking on the "Back" button, then clicking on the "Home" button.

How Do I Access The Demos?

To view the demos, first click on



EDITORS' HOT PICKS or **PRODUCT DEMOS**. Next, click on your favorite genre: **Action**, **Adventure/Role Playing** or **Strategy/Wargames**, then click on the title of your interest. Each demo has instructions for its installation.

How Do I Get The Patch Files?

Click on **PATCHES** under the **CGW FEATURES** and then read the text window with instructions on copying the files to your hard drive. You also may access the patches from your DOS prompt by typing **D:\PATCHES** (where D: is the letter of your CD-ROM drive) and copy them directly from there to your hard drive.

How Do I Get The CG-ROM?

Newsstand issues come in two varieties: some with and some without the CD. Each type is clearly marked. If you can't find the version you want in the store you frequent, encourage your retailer to carry it (or subscribe to ensure you get a CD every month). To subscribe, simply call 303-665-8930, and specify that you want the CD-ROM version.

How Do We Classify Games?

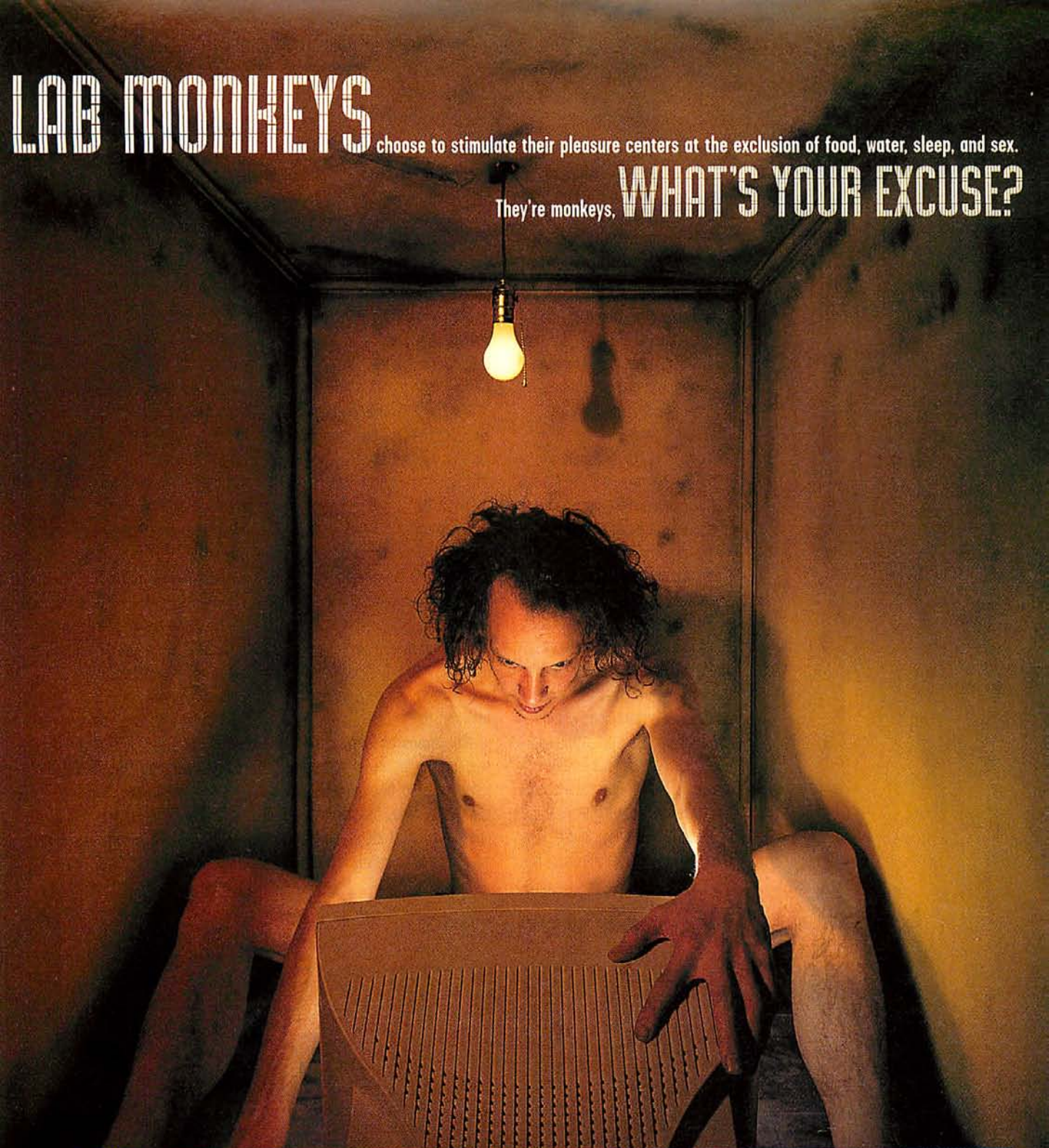
Action/Arcade (AC): The emphasis is on hand-eye coordination and reflexes, usually emphasizing

LAB MONKEYS

choose to stimulate their pleasure centers at the exclusion of food, water, sleep, and sex.

They're monkeys.

WHAT'S YOUR EXCUSE?



BUNGIE introduces *Marathon 2: Durandal*, the highly addictive game for Windows® 95 that will leave you poor, hungry, naked, and cold. Within the ruins of an ancient civilization, you'll uncover long-buried secrets of a lost clan and use sophisticated weapons to battle nasty aliens. Take pleasure in 28 game levels that will churn your brain into foamy gray froth. The SVGA 3-D graphics and active stereo imaging don't suck either. And 13 levels of intense network play may cause you to wet yourself. Not that you'll care, monkey boy. **MARATHON 2: DURANDAL. HOW WILL IT RUIN YOUR LIFE?**

To receive the free more information, call Bungie Software at (800) 295-0060 or visit our website at www.bungie.com.
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MARATHON 2
D U R A N D A L

ing fast play over story or strategy.

Adventure (AD): Games where in you control an alter ego and move through a storyline or sequence of events, where puzzle-solving takes precedence over conversation and combat.

Classics/Puzzles (CP): Classics are old stand-bys and parlor games that appeal to many different types of gamer. Examples include: backgammon, bridge, chess, MONOPOLY, parchesi, RISK, and SOLITAIRE. Puzzle games are computer games which emphasize spatial relationships, word games and/or problem-solving without requiring gamers to follow a storyline. Examples would be: SHANGHAI, TETRIS and ZIG-ZAG.

Role-Playing (RP): RPGs are a subset of adventure games, but stress character development, often through improving stats or other attributes. Conversations with non-player characters (NPCs) and tactical combat are generally more important than in Adventure games. Finally, the game world tends to be large, and the plot less linear, often with some quests/treks outside the

main storyline.

Simulations (SI): Highly realistic games from a first-person perspective: you may drive a realistically simulated race car, fly a military aircraft with a meticulous physics model, or swoop through a detailed sci-fi environment. Usually polygon-filled technology is used to build the simulated world on the fly.

Sports (SP): The sports game category is a broad genre which includes action (NBA Live) and strategy games (FRONT PAGE SPORTS FOOTBALL Pro) based on sports.

Strategy (ST): Problem-solving, short- and long-range planning are the keys here. These games almost always emphasize resource and risk management. This genre includes conflict-based sci-fi and fantasy games (X-COM, OUTPOST, MOO), as well as "pure" strategy games and "software toys" such as SIMCITY.

Wargames (WG): A subset of strategy games, these recreate historical conflicts from a command perspective. They may be tactical, operational, or strategic, and stress anything from logistics and fire-

power to morale and leadership. They may be simple (PANZER GENERAL, EMPIRE II) to incredibly detailed and complex (PACIFIC WAR).

What Is Your Reviews Policy?

1) We only review from the final copy of the game. Though it has become popular among PC gaming magazines to review from late beta copies, we feel that the reader is best served by having the reviewer look at the same copy of a game that the readers will find on the shelves. While we recognize that this causes some delay in coverage, we believe the reader is better served by such caution.

2) We expect our reviewers to finish the game. We want our readers to be assured that we do not review based on immediate or early impressions of a game. Our reviewers give a game ample opportunity to show its quality. In some cases, bugs make it impossible to finish a game, but we identify situations where that has occurred.

3) We make every effort to match the reviewer to the game. We take into consideration the preferences, background and possible biases of the reviewer and, where possible, we find people with actual life experience or special backgrounds that match a game. We believe this policy enhances both the credibility of the review and the enjoyment of gameplay when the real world and the game world are competently compared.

4) We do not accept free travel from software or hardware companies. We believe such gifts have a tacit assumption of coverage attached to them. We will only cover such events/launches as we believe will benefit our readers. ☿

HOW DO WE RATE?



Outstanding:

The rare game that gets it all right. The graphics, sound, and gameplay come together to form a Transcendent Gaming Experience. Our strongest buying recommendation.



Very Good:

A high-quality game that succeeds in many areas. May have minor problems, but is still worth your money, especially if you're interested in the subject matter or genre.



Average:

A mixed bag. Can be a game that reaches for the stars, but falls short in several ways. Can also be a game that does what it does well, but lacks flair or originality.



Weak:

A game with serious problems. Usually buggy, seriously lacking in play value, or just a poorly-conceived game design—you should think long and hard before buying it.



Abysmal:

The rare game that gets it all wrong. This is reserved for those products so buggy, ill-conceived or valueless that you wonder why they were ever released in the first place.

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Auto Combat Arrives in Showrooms This Fall

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ADVENTURE GAME OF THE YEAR

— COMPUTER GAME REVIEW, 1996

"LEGEND HAS PULLED OFF A STUNNING ACHIEVEMENT THAT WILL SET THE STANDARD IN ADVENTURE GAMING FOR YEARS TO COME."

— COMPUTER GAME REVIEW, 1996



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GAME OF THE YEAR

— JERRY POURNELLE, BYTE MAGAZINE, 1996

**"OUTSTANDING AND SUSPENSEFUL!...
BEAUTIFUL VISUALS AND
THOUGHT-PROVOKING PLOT."**

— PC GAMER, 1996

**"A MUST-HAVE FOR
STAR TREK FANS!"**

— STRATEGY PLUS, 1996

"ENGROSSING."

— USA TODAY, 1996

**"IF YOU MISS THIS GAME,
YOU WILL MISS ONE OF THE BEST
ADVENTURES OF THIS DECADE."**

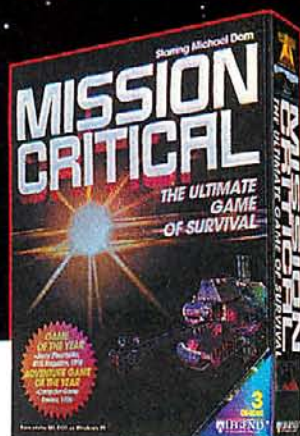
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3D Or Not 3D

That is the Question for Gamers of all Types

If I were "just a gamer" instead of a gamer who covers this industry for a living, I'd be asking myself a question. That question is, "Why does it seem I'm always having to upgrade my machine in order to get to that next level of game experience?" The follow-up question is, "Why don't these next levels happen by programming alone?"

The answer to the second question is that to a certain extent they do. Some fanatic programmers like the guys at id manage to give us a new type of experience and it causes a revolution. As other teams try to raise the ante on the programming breakthrough, they put more and more pressure on the hardware. Eventually, the programmers reach a critical juncture, a point of diminishing returns. They have accomplished miracles, but you can't tell they have because they've caused just enough burden on the hardware to create a noticeable performance hit.

This is when we need hardware to move to the next level. That's part of the answer to the first question. You are constantly being challenged to upgrade your machine because the game programmers are constantly challenging the limits of the available

machines. Why? To a large extent it's because gamers tend to buy the types of showcase products that exploit the newest, fastest and most powerful machines. Game publishers know that gamers who purchase the latest and greatest in hardware are the most likely to buy software products that show off the capabilities of that new hardware. So, they constantly overshoot the mark in terms of machine performance in order to ride that upgrade curve.

Sometimes it backfires when they get too far ahead of the curve (as it did for developers who were first out with Windows '95 native products), but sometimes it can be very lucrative (as it was for Sierra's KING'S QUEST IV and SPACE QUEST III when the first 8-bit sound cards arrived, and for Origin's WING COMMANDER series at each step of the 386, 486, Pentium upgrade cycle). So, the issue sometimes seems like a chicken and egg question.

GAMES IN THE THIRD DIMENSION

We are now at that point with 3D accelerator cards. Many gamers will plunk down several hundred dollars over the next six months in order to get a performance boost on 3D games. Others question whether 3D hardware will be worth the price. They're asking, "Aren't

“ 3D will improve every gaming genre, but it has its price. ”

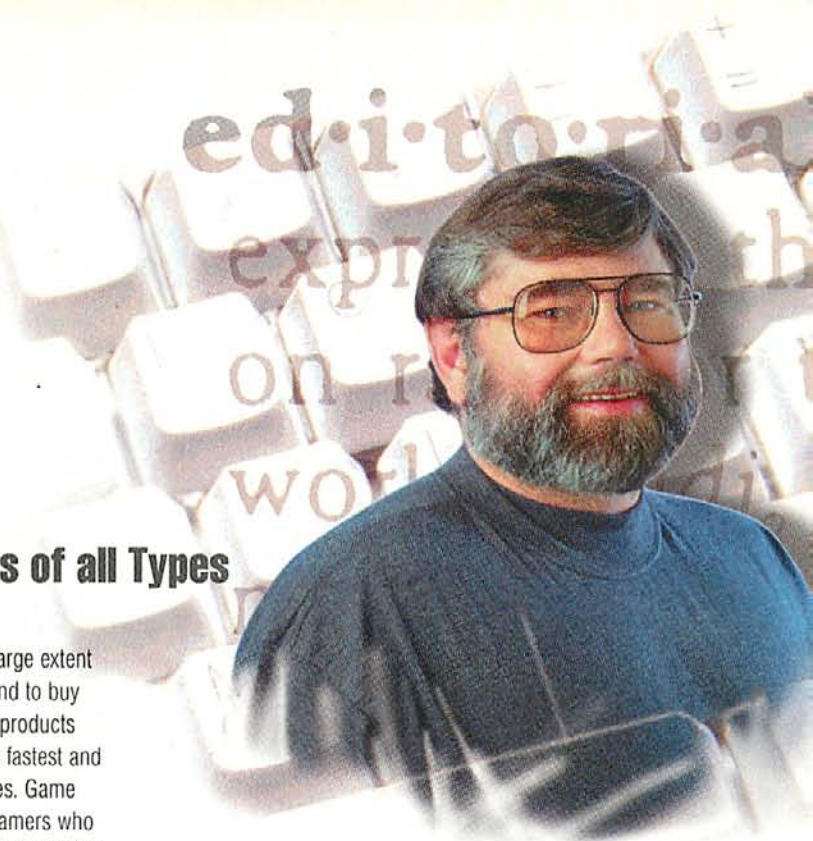
these new cards just a new toy for those flight sim guys?" and "Will these cards enhance the experience enough to justify the price?"

Well, 3D isn't just for flight sims anymore. Action gamers know this. They've seen first-person point of view games (like DOOM and RISE OF THE TRIAD) that use 3D tricks in 2-D space transformed into real 3D products (like TERMINATOR: FUTURE SHOCK and QUAKE). Even the staple of action gaming, horizontal scrolling fighting games, have matured to a point where they have a third dimension. Space combat games like WING COMMANDER and MECHWARRIOR have used 3D to represent space combat for a long time, but new games (like Interplay's STAR FLEET ACADEMY) with more detailed ships and tex-

ture-maps, as well as special lighting effects, are invading the space held by these two leaders. Recently, we even saw a driving/shooting game, once the no-brainer capitol of action gaming, in development that takes place on an ice planet and uses full 3D and a sophisticated physical model to handle friction (and lack thereof), height, slopes, speed, and more. 3D has added tremendous new depth to the model.

Adventure gamers and role-players are beginning to discover that 3D game environments seem more real than the classic 2-D rooms of years past. ALONE IN THE DARK, ECSTATICA and RELENTLESS proved the appeal of 3D in adventure games, but you haven't seen anything, yet. Mindscape's DARK EARTH, Psygnosis' ECSTATICA 2, and Psygnosis' CITY OF LOST CHILDREN are some of this year's titles that will be cutting edge, with Sierra's KING'S QUEST VIII coming along next Christmas with a distinctly 3D emphasis.

Sports gamers will soon discover what a difference 3D sports can



WWII Grand Strategy Game

THIRD REICH

PC



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mean—even to the statistics-oriented, “manage only” crowd. Tired of having a limited number of animated sequences for each type of hit, tackle or slam dunk? 3D graphics built around physics-based models of terrain, atmosphere, and players should provide a variety as endless as real sports. For example, I’m not a soccer fan, but I recently saw a European title on the Playstation that was unbelievable. The different kicks, camera angles and shots are phenomenal. Even though I’m not a fan, the extra element of realism pulled me in. Action-oriented and stats-oriented sports gamers alike will benefit from the emphasis on 3D.

My favorite games are strategy and wargames. I particularly like historical wargames. When you remember that I come from a boardgame background, what I have to say is of particular importance. I used to think that hex-based maps were enough (and sometimes, they are), but the fact is that 3D enhances historical wargames, as well. Now, we can have colorful Napoleonic era troops charging across a battlefield—not lead soldiers on a miniatures table, but animated figures with an AI all their own. Being able to take cover behind 3D terrain and having movement realistically affected by the terrain reflects just some of the advantages of putting strategy and wargames in 3D.

Of course, someone might say that puzzle and classic games don’t benefit from 3D technology. Even that may not be true. When I solved the broken cup puzzle in *RIPPER*, I suddenly felt that the 3D had both enhanced and detracted from the puzzle. The detraction was an interface problem, but the puzzle itself was intriguing. Since many games shops carry entire

lines of 3D puzzles, there may be a new style of puzzle game on the computer that will benefit from the technology. Of course, 3D animation hasn’t hurt classic games. Witness the facelifts 3D has given the multimedia version of *MONOPOLY* and some of the later *BATTLECHESS* products.

HOUSE OF CARDS

The bottom line is that almost every game genre is starting to get its share of 3D products. Many of these games will be written to take advantage of Direct-3D drivers in Microsoft Windows 95 which, in turn, will run faster because of 3D accelerator cards. If you, like me, think that 3D significantly enhances the gaming experience, you know that you’ll need an accelerator card. You’ve already seen how the processor-intensive calculations of new 3D games is starting to hit overall game performance. Imagine what happens as artists try to put more and more details on the textures. Imagine what happens when improved AI routines hit an already overworked processor. Then, what started out as a positive, suddenly becomes a negative.

Yes, if I were “just a gamer,” I’d be wondering if I’m really going to need one of those new 3D cards. As “just a gamer” who covers this industry, I know I’m going to have to have one. As a magazine, we’ve chosen this issue, before many of the cards have actually hit the market, to help get you up to speed on 3D technology, give our expectations on the coming cards, tell you what to look for in a gaming-oriented 3D card, and explain what different features mean to you. We’ve been as practical as we can and we hope our special coverage this month will help you answer the question. ☞

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-Peter Olafson,
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ONE COMBAT PLAY
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LETTER OF THE MONTH

HOOD WINKED

I like the new format, but please bring back "Under The Hood." It has helped countless times in the past.

Dave Bartkowiak
Ogden, UT

We never actually killed "Under The Hood." Loyd Case's column covers the same subject matter and even has helpful hints for setting up your hardware to get the best gaming experiences.



WINDOWS WATCHING

I was cruising through the computer shops the other day and I noticed a weird thing. Most of the games and utilities were for Windows 95. I am not currently a Windows 95 user because I like plain DOS and I think that the computer evolution which Win 95 is currently at is not needed.

So many people have 486s with 4-8 MB of RAM. I tested Win95 and found out that almost 90% of games and utilities would not run or would be very slow due to memory shortage. I think it's not fair to Win 3.1 and DOS users. Windows 95 is taking over the computer market and I think it's currently way ahead of computer technology itself. What I mean is that computers that run Win 95 fast are so expensive and most people have 486s, making it impossible to run and use games. I hope Microsoft would reconsider the RAM and other abilities of computers that most people have.

Mike D Andreyev
Internet Subscriber

Game publishers have to continually aim for a moving target. It is a chicken and egg situation. If game publishers don't plan to support the hottest machines down the line with the hottest new features, most gamers will simply dismiss that publisher as

being archaic and out of date. So, game publishers have to look at the potential machine base around 18-24 months in the future. As they develop these games, I can assure you that they are not thinking of 486 machines with limited RAM. At press time, the average machine "on sale" was a Pentium 133 with more than 12 MB of RAM and more than a 1 GB hard disk (Source: Ziff-Davis' Consumer PC Index). The best use of that power is currently through Windows 95 games. Win 95 is the best transitional tool we have for getting the computer game industry to migrate to: a) standard drivers for sound, video, 3-D; b) true 32-bit computing that will eventually enable us to use Pentium Pros for gaming and go beyond; and c) standard connectivity for multiplayer games with elaborately hardcoding network solutions.

SUPPLEMENTARY,
MY DEAR WATSON

Loved your Playstation coverage in your May issue. As a longtime owner of both PCs and consoles, I felt that there were many console games that were just as good as their PC counterparts. How about some coverage of the Sega Saturn? Considering the recent translations of several Saturn games for the PC and vice-versa (if I'm not mistaken, COMMAND AND CONQUER is being developed for Saturn), as well as the large number of RPGs and strategy games coming out for Saturn (especially by the company Working Designs, which specializes in RPGs and strategy games), it seems that coverage of Saturn is in order.

Walter "PsychoKick" Yoon
Cornell University

Thanks, Walter. We thought it was a marvelous supplementary section, as well. Unfortunately, our opinion was a

minority view. Here are a couple of the negative letters.

10 pages on the bloody Playstation? Why?? Do remember that you are a computer gaming magazine. In fact, you are the finest computer gaming magazine. But if this console schlock becomes a trend, I'll have to rethink that judgment.

Brian Griffin
Bellefonte, PA

Playstation in CGW? Puh-leeze!
What next? GameBoy cover stories?

Kevin Bassler
Atlanta, GA

The Playstation supplement was a self-supporting section which didn't take any pages away from our regular PC coverage. We wanted to gauge the interest of our readers in looking toward publishing our own Playstation book. We feel so good about that market that our parent company, Ziff-Davis, has just purchased Sendai Publishing. This means that you will be able to get console game coverage in our other books, but that there will be no need for Computer Gaming World to duplicate that coverage in our pages. However, to those of you who were angry about the Playstation supple-

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	Eyes: Under Sunglasses	
Hair: Flaming Red		
Age: 20-Something		
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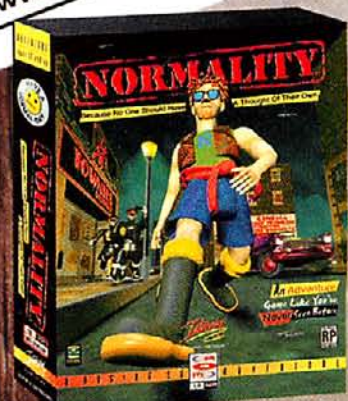


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ment, read my type — "No new console coverage."

LEFT LUGGAGE DEPARTMENT

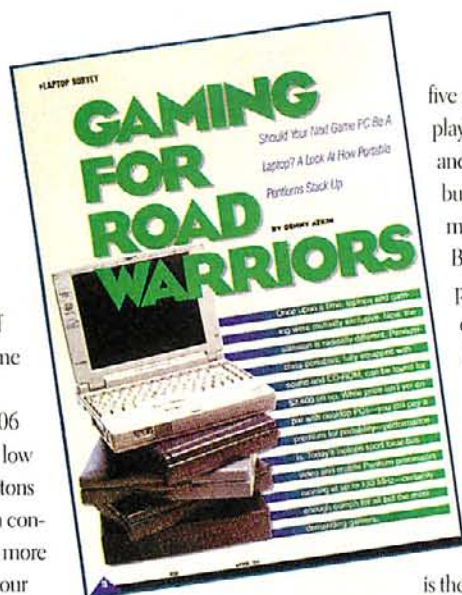
Being a lefty, I feel for John Penner (the reader in CGW #141 who lamented the lack of left-handed joysticks). So, let me recommend a good left-handed joystick, the QuickShot (QS206 Skymaster). The throttle is set low on the left, as are the extra buttons and turbo switch, and the trim controls are set on the right, so no more hitting them with the side of your hand when banking left. The grip is not very special, and only slightly form fitting, but it is symmetrical and fits the hand well, plus it has a rubber palm pad. I hope this helps. Left handed people rule!

Doug Mills

LAP TO THE FUTURE

Having read your laptop-article in the April issue and having played CIV II and CIVNET recently, I'd like to discuss some matters in the computer gaming magazine of my choice. I have a long experience in computer gaming, and I think we have seen a lot of fantastic games. Just take a look at the CGW Hall of Fame. CIVILIZATION is one of those great games of all times, and I think the two successor games, CIVNET and CIV II, are demonstrating the direction gaming should take. Okay, CIV II is a great game and the improvements made in comparison to CIVILIZATION are welcome.

But the improvements in CIVNET are even more welcome, because battling it out with *real* opponents is infinitely more interesting than punishing some computer dogbrains. Better graphics are fine, but better graphics don't mean better game play. Take one really old game from Your Hall of Fame, let's say



KAMPFGRUPPE, and include modem-play. And now compare that game to a - hypothetically -graphically enhanced KAMPFGRUPPE 2 with streamlined gameplay, more units, more maps and some added features. Which game would be the better one?

Or imagine RAILROAD TYCOON with network capability. Great game? Right. What about simulations? Do we really have to wait that long for WORLD CIRCUIT II, which probably won't run properly on a P90-machine, when all we need is WORLD CIRCUIT with network capability? We do need more games like CIVNET, NETMECH OR WARCRAFT II (hopefully MASTER OF ORION II will be of the same kind), in short, games with multi-player capability. And you don't need 64 MB of RAM and a Pentium 200 to make decent games, just look at SPACEWARD HO!, still a first class choice, if you like to have some fun with a few friends. Or take even IS30, where you don't need even a network, but can play it hot-seat.

So the next logical step in computer gaming is the laptop! A Pentium 90 or 100, 16 MB RAM, quad-speed CD-ROM, 1 GB hard-drive, not necessarily a sound-card (who wants to hear the sounds of

five machines, when you are net-playing with your friends, anyway) and a network-card (hopefully build in), That's the gaming machine of the near future! Because you won't find many people among your friends with enough space in their rooms to house four desktop computers with 17 inch monitors, and you will find even less who will want to haul their machines to their friends' houses or clubhouse every second weekend or so. The laptop is the ideal solution, and we need the prices of them to come down to where they are affordable. Maybe next year, when there are Pentium 500s or a new generation of 686-processors and the minimum requirements for getting a new game running are Pentium-133s with 32 MB RAM, those laptops will be affordable. It would be nice, if we then had the right games to play on those "ridiculously low-tech" machines.

Christian Jentzsch
from the Internet

In the words of Laugh-In's Arte Johnson, "Very interesting!" We are seeing lots of laptops beginning to enter the consumer market and, as you probably noticed in our survey, a few of them are useful for gamers. Most of the games we're seeing at press time work relatively well with Toshiba's 410 CDT with P-90.

TIP SHEET

You need a hint and tip section!

Rodrigo Ferrer
Cromwell, CT

How's this for service? Hints and tips may be found in the CG Tips box at the conclusion of each

genre specific columnist's ranting and raving. This way, fans of every genre get something in every issue. We also offer a "Tip of the Day" on our AOL edition of the magazine: Keyword: CGW.

SPOUSAL DISUSE

Are there any support groups for neglected spouses of computer gamers?

Noah Saecker
Oshkosh, WI

No, but our Sex Addicts Anonymous chapter has volunteered to start one.

SAGE ADVICE

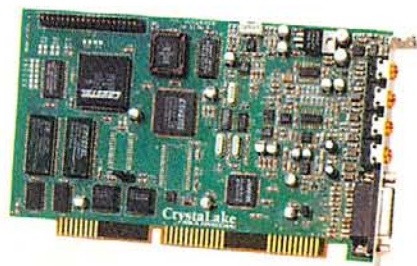
The best advice you could give computer game buyers today is to always wait four-six months after a game's initial release before buying it. This allows: a) time to read the review in CGW; b) time for the v1.1 patch file to be released; and c) time to shop for the best price. They'll have all the fun everyone else has, but much less aggravation!

Jeff Petraska
New Boston, MI

Okay, I'll pass this on, but you have to explain the cash flow problem to the CFOs at the game publishers. They'd shoot us.

CORRECTION

It has come to our attention that the Crystal Lake Series 140 sound card pictured on page 80 of our June issue was not a Crystal Lake Series 140. Here is the correct picture.



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—COMPUTER GAMING WORLD
MARCH 1996

IT KICKS ASS

—PC GAMER

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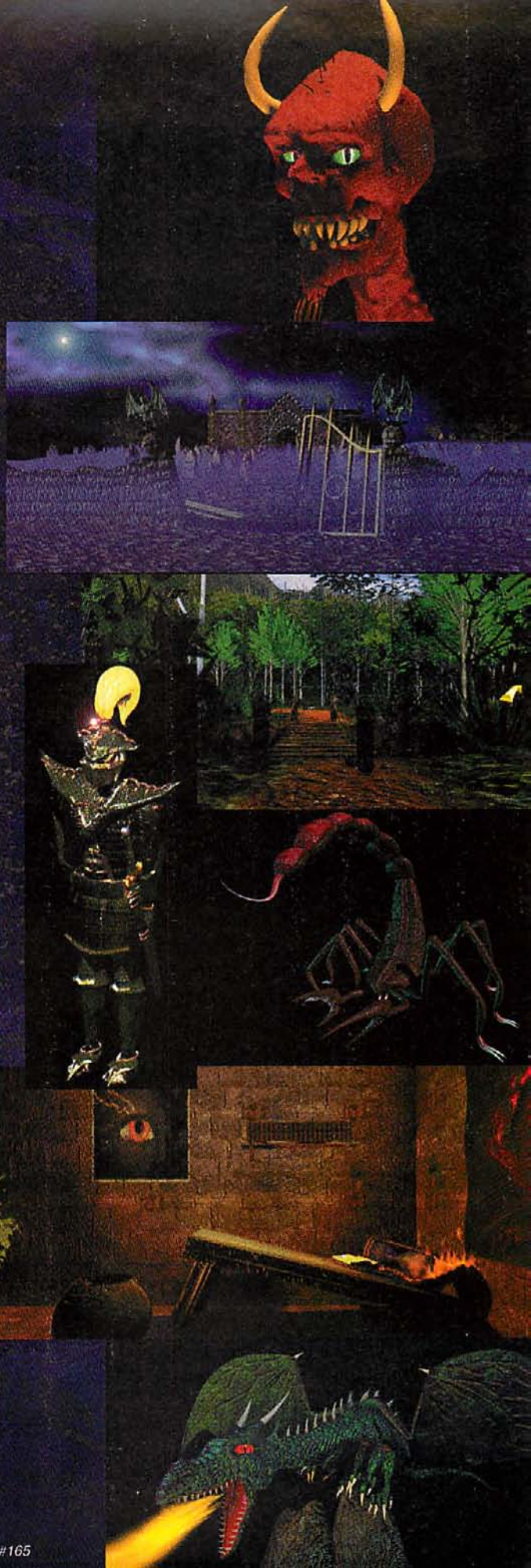
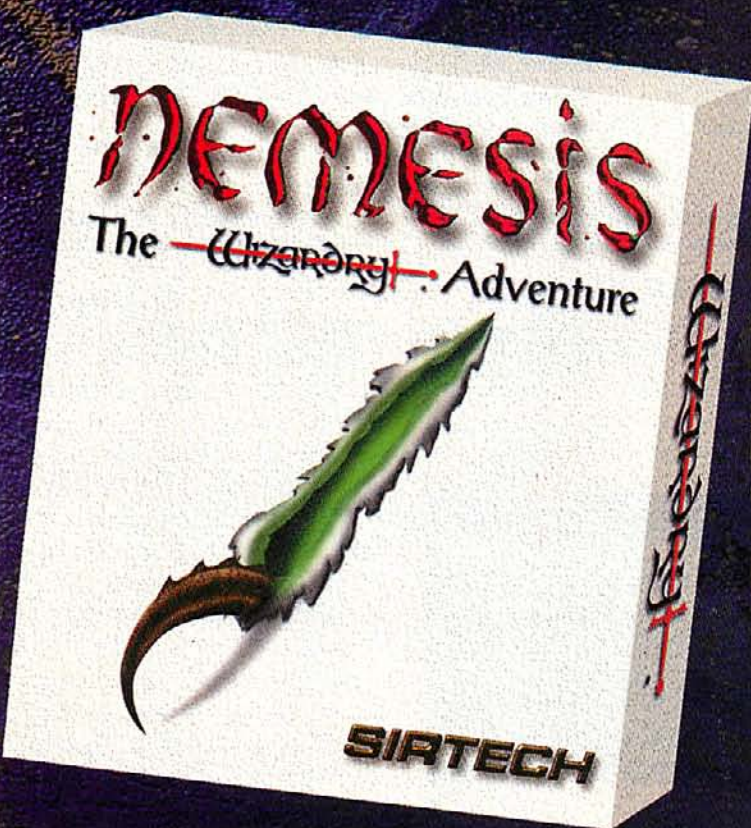
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Attack Of The Game Nets

Over 10 Companies Jostle For Turf In Virtual Playgrounds

Several new teams are hitting the field of on-line gaming, and the battle for players is about to begin. Never before have gamers had so many multi-player gaming options with such a

designs original multiplayer content and offers third-party games on its ARIES server, is now accessible in several new ways. Now, AIR WARRIOR II and BATTLETECH: SOLARIS (two graphical online games) will be available through CompuServe, EarthLink (direct Internet connection), GENie and AOL.

Individual publishers also introduced online strategies at E3. Starwave Productions, the provider of the ESPN Sports Center web site, unveiled its children's product, CASTLE INFINITY. CASTLE INFINITY will be a CD-ROM product which will

connects. In addition, sources close to Mindscape indicated that they will provide a free network server for playing CHESSMASTER 5000 and later games over the Internet.

In a similar vein, Blizzard Entertainment has designed DIABLO with an internet access link built into the interface. One click and you're connected with their *battle.net* server, a free service for gamers who have Internet access.

EA and Origin will expand the franchises of two of their most successful packaged games with ULTIMA ONLINE for fantasy buffs and JAMES' ONLINE for flight sim fans. These will not merely be extensions of boxed games,



BATTLETECH: SOLARIS If you thought MULTIPLAYER BATTLETECH was slow and crude, you should see the frenzied death matches in BATTLETECH: SOLARIS.

but will feature dynamic game worlds with social structures, designed quests/campaigns, and mini-quests and missions that arise from the characteristics of the worlds themselves.

Slightly different is the approach of GTE's *Siege*. This game on GTE's upcoming Internet service will link a multiplayer adventure and strategy game to a CD-ROM which is, in turn, tied to a monthly

continued on page 38 ...



ULTIMA ONLINE
Wired fans of Britannia can converse with others and embark on quests in a dynamic on-line world.

high level of graphics and fast-paced action. This is due, in part, to the efforts of first-rate game publishers such as EA/Origin, Mindscape, Blizzard and Interplay to bring compelling new content on-line. Add greater accessibility to that equation with new networks like TEN, Mpath, Engage and GTE, as well as a myriad of Internet Service Providers (ISPs) to help gamers reach those systems, and you have the makings of a gaming revolution.

At this year's E3 show, even the old-timers had interesting news. Kesmai Corporation has been doing on-line gaming longer than virtually anyone and they had several important announcements. The Virginia-based company, which both

play animated sequences from the CD as it launches to the web or even when there are dis-

ON THE SHELF

Here are some of the hottest products on the market, as well as

the ones that frankly ain't so hot. Reviews for most are coming soon.

BATTLE ISLE 2220

The third installment of the BATTLE ISLE series from Blue Byte, a German publisher, can be fun, challenging and somewhat addictive. But it can also be irritating, frustrating and monotonous. BATTLE

ISLE 2220 comes on two CDs, mostly because this installment comes with over a gigabyte of multimedia film and audio. The music is good, but the acting is amateurish, with some bland dialogue. The plot is banal and doesn't do much for the game. More often than not, it serves only to mislead and confuse the player. In concept, this turn-based game offers strategic planning, tactical-level warfare with 64 different land, air and sea units, weather effects and the ability to manage energy, material and military resources throughout a campaign. In execution, only players who are heavily into micro-management and who are patient enough to repeatedly slog through long, drawn-out bat-



ONE REALLY FAST COW

Gateway Pentium 200 Has The Beef

Intel has upped the processor speed ante again, this time with a 200-MHz Pentium chip. If you recently spent a wad of cash on a 133-MHz or faster Pentium, don't worry, you're not being left in the dust. Due to

an incremental speed update over its recent predecessors.

That said, Gateway 2000's new P5-200CDR is still the fastest PC we've tested yet. And Gateway's not just depending on processor speed to sell this new



the limitations of the Pentium architecture (namely, that no Pentium chip talks to the motherboard any faster than 66 MHz), the 200-MHz P5 chip offers only

\$3,999 tower of power. It's packed (for the most part) with top-of-the-line components that will make this tiger purr when *continued on page 40 ...*

tles in search of a winning solution will find BATTLE ISLE 2220 worth their time.—*Pat Miller*
Blue Byte (847) 534-7950
PC CD-ROM
Reader Service #301

TREASURE QUEST

Sirius is offering a \$1 million prize to the first person who completes this puzzle; and believe me, if you can solve it, you deserve every penny. The problem is that with such a huge prize at stake, Sirius has to make it pretty damn hard for anyone to win. In fact, they're really not giving much away at all. Your first puzzle is figuring out just how to play. The object is to search the house of the late professor Jonathon William Faulkner following some vague instructions left in his will. As you navigate through an extravagant mansion aiming for "hot



spots" that will trigger audio/video hints or lead you into other rooms, you'll find cryptic clues, complicated word puzzles and cryptograms. Deciphering each of these does not in itself solve the puzzle; you must keep note of any other snippets you pick up along the way and piece them together to form an overall conclusion. Gameplay is slow; after a few frustrating hours I felt no closer to the solution. However, the clearly executed

PLAYING LATELY?

Just two months after its debut, **Civilization II** takes the number one spot, knocking **Warcraft II** into second place after four months at the top. While **Duke Nukem 3D** continues to climb steadily, **Panzer General** returns to the chart after a few month's absence and **Fantasy General** enters at number nine. Be sure to send in your poll card, so we know which games are feeding your addiction this month.

READERS'
TOP 10

	Last Month	Months On Chart
1. Civilization II (Microprose)	5	2
2. Warcraft II (Blizzard)	1	5
3. Duke Nukem 3D (3D Realms)	7	3
4. Steel Panther (SSI)	2	7
5. Command & Conquer (Virgin/Westwood)	3	8
6. Wing Commander IV (Origin)	4	7
7. Heroes of Might and Magic (New World Computing)	6	7
8. Panzer General (SSI)	—	16
9. Fantasy General (SSI)	—	1
10. MechWarrior 2 (Activision)	8	8

graphics, including video footage of *Star Trek Deep Space Nine*'s Terry Farrell as your spiritual guide, create a visually compelling experience. Curiosity may tempt me back for another peek, but this challenge is really for dedicated puzzle gamers only.—*C. Panther*
Sirius Publishing, (602) 951-3288;
PC CD-ROM
Reader Service #303

VIRTUAL SNOOKER

If you enjoyed **VIRTUAL POOL**, then chances are you'll enjoy Interplay's **VIRTUAL SNOOKER**, even though (or perhaps, because) the table is more forgiving than the real thing. The mechanics of cue control are very intuitive. Using the mouse and the "S" key lets you simulate the stroking movement of the cue. You can increase or decrease the

Avoid The Traffic Jam

Intel Reroutes 3D Graphics Traffic To The Main Bus

No matter how wide the bus, computer games will find a way to clog it. As 3-D graphics boards head our way, vendors and title developers are discovering that

have graphics accelerators use the main memory/CPU bus itself. Intel is calling the new interface the Accelerated Graphics Port (AGP).

AGP promises to allow graphics accelerators to take advantage of the main memory bus' 450+ MB/sec bandwidth, and alleviate bottlenecks on the PCI bus. An added advantage of this implementation is more PCI bus bandwidth left over for

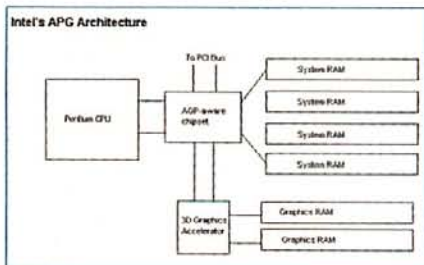
other devices like hard-disk controllers, network cards, and a little down the road, sound cards. Although AGP-equipped motherboards won't ship until mid-1997, they'll allow game developers to build more complex, polygon-intensive scenes into their titles, allowing them to more accurately model real-world scenes.

Intel has inked a deal with

Lockheed-Martin to incorporate LM's Real 3D chip on Intel motherboards in the second half of 1997. The chip will use the AGP interface, and will also deliver 2D graphics as well as digital video. The move is seen by some as hostile toward third-party graphics-hardware vendors, since the LM-Intel solution could obviate the need for add-in graphics hardware. But the AGP specification does have provisions for an AGP slot for add-in cards, and several prominent graphics chip makers have announced their intent to use AGP for future products.

In the meantime, the PCI bus should provide plenty of bandwidth for first-generation 3D games, and AGP will hopefully pave the way for even more compelling titles late next year.

—Dave Salvador



the PCI bus can actually be a performance bottleneck. When an application passes data in the 3-D pipeline from the CPU to a 3D accelerator after a scene's geometry setup, the PCI bus can impede performance—even with its 80- to 100+ MB/sec of bandwidth. To remedy the problem, Intel announced at the Windows Hardware Engineering Conference (WinHEC) a plan to

Ziff-Davis Becomes #1 Game Magazine Publisher with Purchase of Sendai Publishing Group

Adding seven new game magazine titles to its flagship gaming publication, *Computer Gaming World*, Ziff-Davis Publishing has become the dominant force in publishing magazines about interactive entertainment. Z-D announced its purchase of the Sendai Publishing Group (*Electronic Gaming Monthly*, *CyberSports*, *Computer Game Review*, *Intelligent Gamer*, *PSX*, *Internet Underground*, and *EGM2*) on May 9, 1996.

Jon Lane, former publisher of *Computer Gaming World*, will become the Group Publisher of the Sendai Publications Group, while Steve Harris, founder/publisher of the Sendai Group, will become a Z-D vice-president and focus on electronic publishing. Dale Strang, former associate publisher of *PC Games* and publisher of *Amiga World* and *Desktop Video* magazines, is the new publisher of *Computer Gaming World*.

As of press time, Z-D announced that it would no longer be publishing *Computer Game Review* and that subscriptions and ad pages would be rolled into *Computer Gaming World*.

ON THE SHELF



force with which you hit the ball through your mouse movement. Other key combinations allow you to increase the angle of the cue, or move the tip to apply left and right english as well as top spin and backspin to control rebounds. Interplay guarantees that *VIRTUAL SNOOKER* will improve your real game, and we don't doubt it. The tracking option shows

the exact path the cue and target balls will take upon impact, greatly assisting those of us who failed geometry class. The game sports modern play and allows two hot-seat players. Although system requirements advise only a single-speed CD-ROM drive, my double-speed drive stuttered on the helpful FMV tutorials.

—J. Anderson
Interplay, (714) 553-6655;
PC CD-ROM
Reader Service #302

BATTLEGROUND: WATERLOO

In between the assaults at Gettysburg and Shiloh, the General Staff at Talonsoft have decreed that our next wargaming objective shall be none other than Waterloo, arguably the most famous battle in histo-



ry. The interface remains familiar, and the graphics are so polished that even the toughest drill sergeant could scarcely find fault. The march of proud French infantry toward La Haye Sainte, the bitter struggle for the walled *chateaux* of Hougomont, massed musket fire giving way to bayonet charges—it's all here, in a luscious setting that contrasts sharply with the determined

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place where
mercy is not
welcome.



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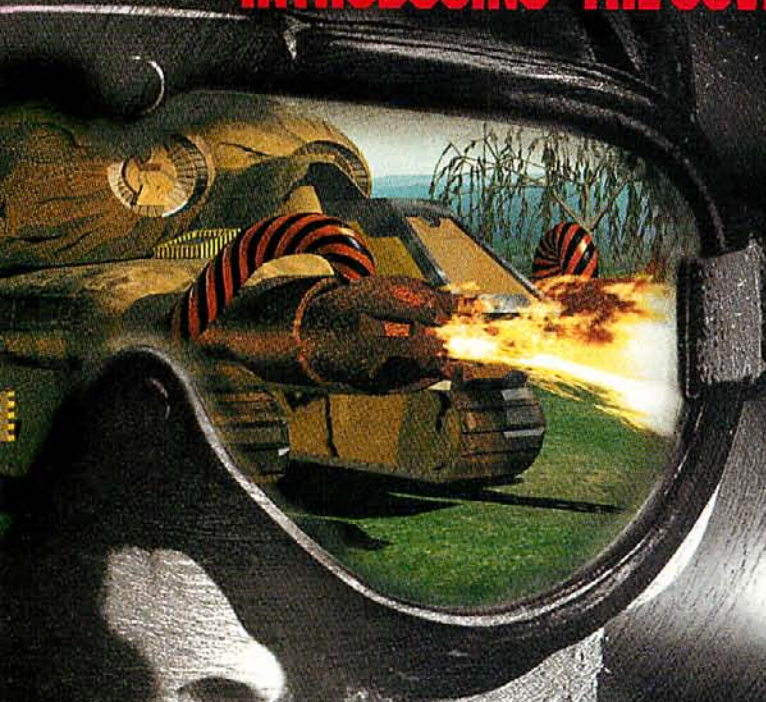
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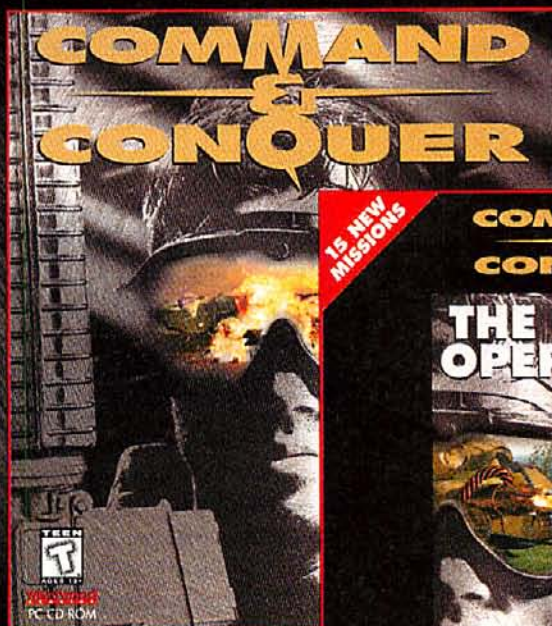
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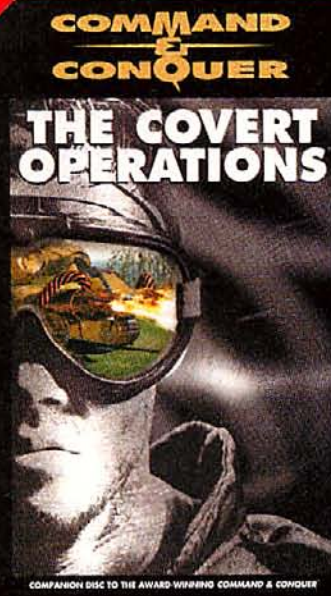
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Circle Reader Service #181

... continued from page 32
comic book. The comic will be written and inked by veteran artist Jim Lee and is



DIABLO
Gamers who purchase Blizzard's hot new RPG can clobber each other online, all they want, for free.

expected to be in the vein of such combat and superhero teams as *WildC.A.T.S.*, *Wetworks*, *Team 7* and *Stormwatch*.

Similar to *ULTIMA ONLINE* are the multiplayer MUD games. These have, by their nature, developed into online communities. One such game is Archetype Interactive's *MERIDIAN 59* (described in this issue's "Hands On" portion of our Game Track section). Recently acquired by 3DO, Archetype hasn't fully fleshed-out its business model.

Game Packagers

A new type of service is the game aggregator or packager. Although some of these services will develop their own games, their early business plan is to gather together a critical mass of pre-existing products and place them on a system where gamers can find ready opponents for familiar boxed games. The newest in the field is Interplay's *ENGAGE*, an online gaming service which will allow access through AOL, Concentric, Prodigy and Time-Warner. Hoping to bill itself as the "HBO of online gaming," *ENGAGE* has deals with Caesar's Palace, MCA, the Improv comedy clubs, Maxis, Blizzard, and of course Interplay to provide content. This includes exclusives on multiplayer *JURASSIC PARK II*, *VIRTUAL POOL*, *CASTLES II*, *SIMCITY 2000* and *WARCRAFT II*, among others.

Mpath plans to allow access through Internet Service Providers (ISPs) like MCI, Netcom, PSINet, and UUNet's Altanet in order to allow gamers to play multiplayer extensions of packaged games

(New World Computing's *CHAOS OVERLORDS* just released with that capability), as well as their own designs. Since SegaSoft recently invested heavily in Mpath, we'll also expect to see a large chunk of action games appearing on the web through this service. One feature Mpath is promoting from the first is their real-time speech capability. The Total Entertainment Network (TEN) allows you to use your own ISP or access them directly for games which are, primarily, multi-player extensions of packaged games. However, TEN has an incredible lineup. They have an exclusive with 3D Realms for several years (*DUKE NUKEM 3D*, *BLOOD*, *SHADOW WARRIORS*) and already have *DUKE* and Blizzard's original *WARCRAFT* up and running. Eventually, you'll be able to fly *FALCON 4* and play *MAGIC: THE GATHERING* over TEN.



MERIDIAN 59 Building a sense of camaraderie and community, many players of Archetype's *MERIDIAN 59* have formed their own secret guilds.

Judge and Jury

Frankly, the jury is still out as to which approach to online gaming will win out. Our suspicion is that the overall mass of gamers will split into predominantly two groups: 1) those who are looking for more competition and 2) those who are looking for more community. We suspect that the former will gravitate toward the game packagers and the latter will be attracted to the game makers. We also suspect that there will always be room for both. Of course, gamer dollars will be the ultimate arbiter. —J.

Anderson and J. Wilson

ON THE SHELF

charges of Bonaparte's best and the desperate defense of the Anglo-Allied forces under Wellington. Better AI, improved leader modeling, a richer tactical feel, and of course, cavalry charges—what more could you want? Old Boney himself would be proud to lead this fine game into battle.—T. Coleman

TalonSoft, Inc., (410) 933-9191;
PC CD-ROM
Reader Service #304

DEATHKINGS OF THE DARK CITADEL

DEATHKINGS OF THE DARK CITADEL is billed as an expansion pack for *HEXEN*. These days where new 3D first-person perspective games seem to appear every other day, each with new features, weapons, and movement directions, I would expect more from




an expansion pack than just new maps. Unfortunately, that is all *DEATHKINGS* has to offer. Don't get me wrong—the new episode and deathmatch levels on this disk are very well done. If you think *HEXEN* is the best game on the market, then you will want to own *DEATHKINGS*. It has the same great graphics, the same eerie feeling, the same spooky sound effects, and the same gruesome creatures trying to pulverize you as the original. The only problem is that the "sameness" completely ruins the excitement of having

new worlds to conquer. Shortly after starting *DEATHKINGS*, I found my initial excitement was gone and a sense of *been there, done that* had taken over. Had this episode contained new enemies, weapons, and characters to choose from it would have been a delight. While changing most of the elements of *HEXEN* would take a lot of development time (which could be used on other projects), one has to wonder why, if you aren't going to do the job right, you would want to do it at all.—G. Fortune
id Software, (214) 613-3589;
PC CD-ROM
Reader Service #307

CYBERIA 2

Like a bad moment from the movie *Groundhog Day*, Zak's back in this sequel that promises more of the same. Exactly





You blasted your way through an onslaught of undead marines and

hell-spawned hordes in Doom, Ultimate Doom and

Doom II. Now you can ~~KK~~ retire, right? Wrong.

Seems flesh-eating mutants have the mortality rate of a cockroach and are alive and kicking in Final Doom—the last of the ~~AI~~ legendary Doom products. It's two new 32-level episodes complete with

new stories (Evolution & The Plutonia Experiment), new frighteningly realistic graphics and new pulse-pounding music. It's time to finish what you started.

OLD SOLDIERS NEVER DIE,
THEY JUST TURN INTO
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MUTANT ZOMBIES

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id **GT**
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**FINAL
DOOM**

End of story.

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... continued from page 33
running the most demanding games.

Along with the 200-MHz Pentium chip, the P5-200CDR also uses the newest Intel Pentium support chips and SDRAM (Synchronous Dynamic RAM) memory chips; the memory is in DIMM packages, so you can expand one DIMM at a time, instead of in pairs as is required with SIMMs. You'll also find 512K of synchronous cache memory.

All this adds up to give the system processing performance about 20 percent faster than our baseline Zephyr Onyx 166-MHz system, but only about 10 percent faster than the blazing Falcon Northwest P166.

The peripheral list is what makes the P5-200CDR stand out. The most original addition is a 4X CD-ROM reader/2X writer that can be used to create your own CD-ROMs. Whether you want to create a quick-install backup of your hard

drive, create your own audio CDs, or get that 400MB download collection off your hard disk, you'll find the CD-ROM writer a valuable tool. Of course, 4X speed is passé as far as gamers are concerned, so Gateway has also included a conventional Wearnes 8X CD-ROM.

Although Wearnes isn't exactly a household name, Gateway hasn't skimped on the other components. Video is provided by a speedy 2MB Matrox MGA Millennium card, known for providing top-notch Windows and DOS performance. Audio is provided by an Ensoniq SoundScape VIVO card, which sports wavetable audio (and sounds pretty good considering it has but 1MB of ROM).

Wrapping up the package is a 17-inch Vivitron monitor, 104-key keyboard, and room-shaking Altec Lansing ACS 400 speaker and subwoofer pack-

age. It's game-ready with a Gravis Gamepad, but you'll likely want to replace that with a real joystick.

The pre-production unit I evaluated was very impressive for the most part. Unfortunately, driver problems kept the Wearnes CD-ROM from working under DOS, and the CD-R wasn't ready in time for the preview, so our tests were limited to Win 95. Performance there was exemplary, though, even when running DOS games under Win 95. The only other glitch was a jumpy joystick reading—likely the SoundScape card not liking the system's blazing speed. But considering the amount of stuff you're getting here for \$3,999, another \$25 for a dedicated game card doesn't seem unreasonable. Assuming the CD-ROM driver problems are worked out before the machine ships, this looks like a new contender for the Ultimate Game Rig title.

—Denny Atkin

Performance Comparison: Gateway vs. Zephyr

Benchmark	Gateway P5-200CDR	Zephyr Onyx P166	How Gateway Rates
CPUmark 16	366	305	20% faster
CPUmark 32	367	300	22% faster
Graphics WinMark 96 (800x600x65K)	24.7	25	1% slower
Disk WinMark 96	1000	657	52% faster
CD-ROM WinMark 96	790	609	30% faster
Price	\$3,999	\$4,080	2% less

ON THE SHELF



like its predecessor, *CYBERIA 2* requires you to shoot through a series of rail-riding action-arcade sequences to reach the next "milestone." Again, there is no Save function. As in the movie and *CYBERIA*, if you fail, the sequence begins again; each time starting with the title screen to drive home that reiterative feeling. The game play is limited to aiming and firing the gun, and (in the brief moments when you actually control Zak) deciding which direction to turn. If you choose the wrong path, Zak's immediately killed, and you must start the sequence again—yes, back to the title screen. Through the mundane process of trial and error, you eventually make the right decision or learn the exact firing sequence and advance to the next mile-

stone—not a very rewarding experience. The graphics and animation are once again fluid and beautiful, but that didn't make a good game the first time around.—*J. Anderson*
Xatrix Entertainment, (800) 531-2343;
PC CD-ROM

Reader Service #308

CHAOS OVERLORDS

Gang warfare comes home to your PC in New World Computing's latest strategy title, *CHAOS*

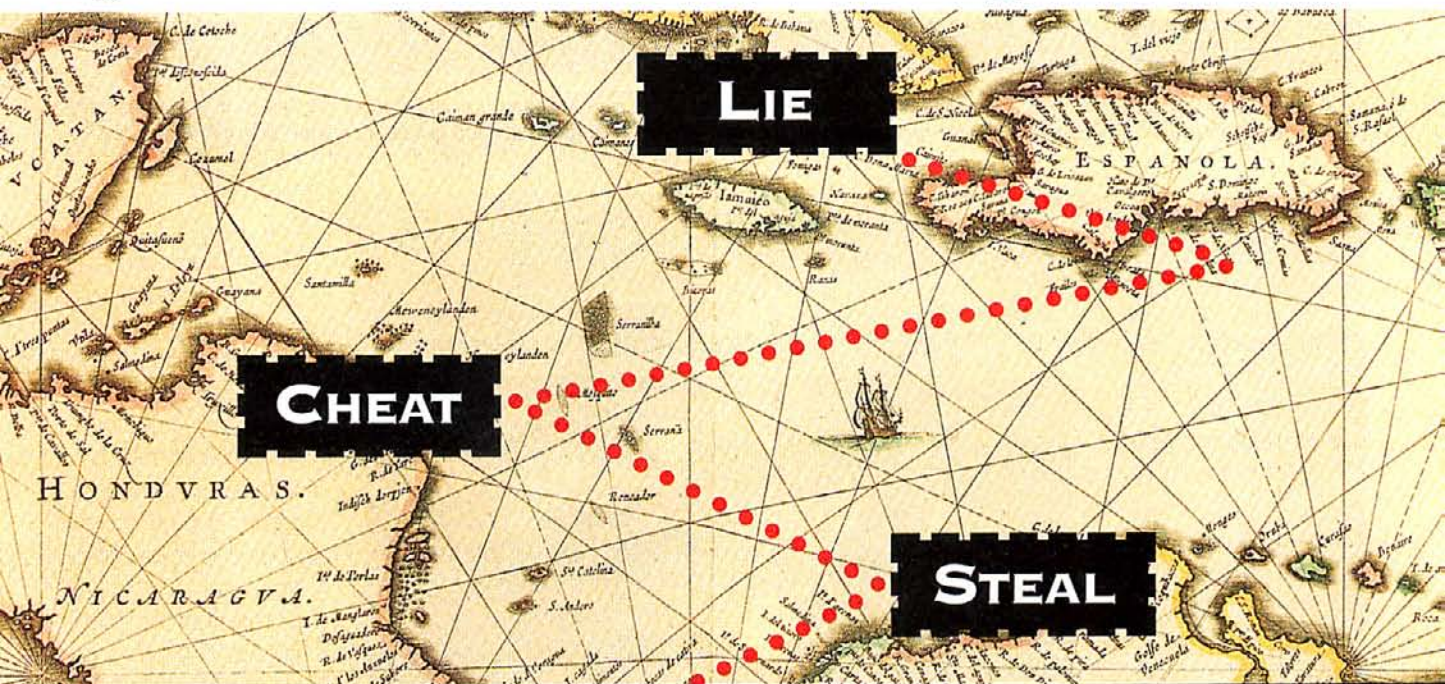


OVERLORDS. The story is simple: In the future, law and order disintegrates, leaving cities under gang rule. As one of the gang lords, you've got to be the last one standing when the dust settles. Since we previewed the game in February (Hands On, *CGW* #139), not much has changed. The interface is still confusing and very daunting to newcomers. You'll have to read the manual to find out how to play, but even the manual doesn't explain gameplay mechanics adequately. The game also starts out fairly slow, which, combined with the cryptic



interface, will turn off many players. In fairness, *CHAOS OVERLORDS* has all the ingredients of a strategy title, such as combat, tech research and conquest of different sectors in the city grid, but it just isn't that fun. Hard-core gamers and those enamored with the idea of playing a ganglord might find the will to trudge through this title (and in so doing find a decent game under all the problems), but most will find the experience less than thrilling.—*E. Chin*
New World Computing, (818) 889-5600;
PC CD-ROM and Mac
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Circle Reader Service #63

CQP1

SIGHTINGS

Here's an early look at the space invaders that will be vying for room on your hard drive. Some of these games are still months away, and they aren't even playable yet, but at least you can see what they look like, and get an idea what their intentions are.

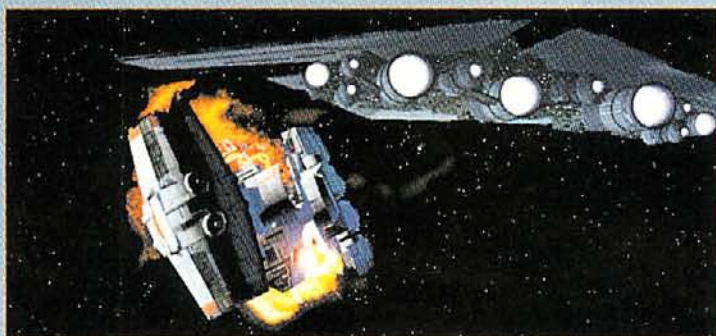
Jedi Knight: Dark Forces II

In this stunning sequel to *Dark Forces*, LucasArts has pulled out all the stops to create a truly awesome 3D experience.

LucasArts showed us a pre-alpha version of the game on a P166 equipped with a 3D graphics board, and the visuals were incredible. The environment and characters are constructed completely of 3D, texture-mapped polygons, and the game takes advantage of 3D boards to eliminate jagged lines or pixellated graphics at close range. The 3D boards also

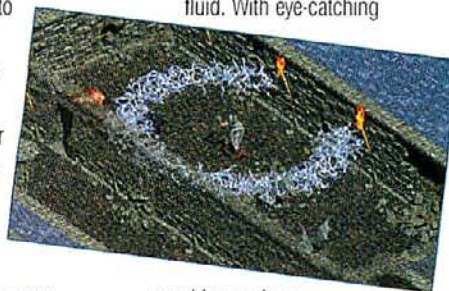
enable dynamic light-sourcing which illuminates darkened corridors with laser fire. Even the unenhanced version is graphically appealing, with visuals comparable to *DUKE NUKEM 3D*. Apart from the beautiful graphics, *JEDI KNIGHT* should bring more enemies to the table, including an intimidating

Walker, so we'll have more to shoot at than Storm Troopers. *JEDI KNIGHT* continues the story of Kyle Katarn, the mercenary from *DARK FORCES*, as he trains to become a Jedi. As he progresses in training, new powers of the Force will be available to him, including the



ability to wield a light saber. In addition to the new weapons, new monsters, breath-taking graphics and a full 3D environment, *JEDI KNIGHT* is multi-player capable, over network, modem or direct link. And last but not least, you will actually be able to *save your games*. Will wonders never cease?—*E. Chin*

experience while roaming through dark, undead-infested corridors. In Blizzard's tribute to the classic dungeon romps like *Rogue*, several key features separate this RPG from others in the genre are: its isometric look, similar to *CRUSADER'S* interface; graphics that look like beautiful prerendered artwork; and multi-player capability. While RPGs have previously been strictly single-player, *DIABLO* lets you explore its dungeons with up to three others. For those who loved old table-top RPGs where interaction with other players was key, *DIABLO* looks like it could be the RPG that finally captures the true feel of those classic D&D adventures. *CGW* was able to see the first few levels of *DIABLO*, crammed with treasure chests and monsters, and even with all the complicated elements and lush graphics, the action was still smooth and fluid. With eye-catching



F-22 Lightning II

In the coming glut of flight simulations based on the Lockheed's new F-22 fighter, NovaLogic's looks to be a surprise standout. Terrain that looks even better than *EF2000's* is complemented by the best looking texture-mapped aircraft



yet seen in a PC sim.

F-22 LIGHTNING II is geared at both beginners and experienced sim pilots. Like *EF2000*, NovaLogic plans to use this 21st.

century jet's sophisticated pilot aids to keep it simple, rather than dumbing down the sim.

Look for a series of canned missions here, as well as a US NAVY FIGHTERS-style quick mission editor. The stand-out feature, though, may be the network play. If you're the ultra-serious sim type who wears a green bag flight suit to net games, you'll probably want to look elsewhere. In the alpha version we flew, being killed in a net game would only disable your aircraft's controls for a few seconds, rather than sending you back to the runway for a long flight back to the action. Score one for the fun factor, at the expense of a little believability. Mixing it up with other humans flying F-22s (and who have smart F-15 wingmen),

while simultaneously fending off computer-controlled MiG-23s and Su-27s, was a blast. Two-player cooperative missions are also planned.

We're anxious to fly this again, but you'll have to wait until the fourth quarter of the year to find it ready for takeoff.—*D. Atkin*

Diablo

What before was a drought in PC RPGs will soon be quenched by a Blizzard ... or rather, an RPG from Blizzard. *DIABLO* is a role-playing game with a hefty action element. You are a lone hero who begins play in a dungeon, collecting items, finding spells and gaining expe-

graphics, a clean and intuitive interface (complete with an on-screen information bar that gives immediate data on all items and monsters), and the welcome ability to roam dungeons with friends, *DIABLO* looks like it could be the hit RPG to revive this weak genre.—*E. Chin*

Into The Shadows

INTO THE SHADOWS is one of the most impressive new 3D titles wending its way to market, and it *doesn't* require a 3D graphic accelerator. Boasting a true 3D engine with impressive light-sourcing and high-res graphics, it's a remarkable advancement over previous dungeon romps. The D&D-style adventure/action game is set in a convincingly detailed castle, laced

with shadows and light, where the player battles ugly denizens with a variety of medieval weapons. Dynamic panning has been used to deepen the sense of immersion, to better effect than that seen in *ALONE*



with shadows and light, where the player battles ugly denizens with a variety of medieval weapons. Dynamic panning has been used to deepen the sense of immersion, to better effect than that seen in *ALONE*

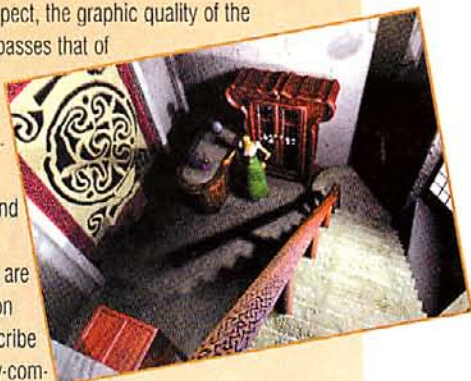
IN *THE DARK*. Although some of the gameplay involves searching for keys and special items, the main focus is action: large, motion-captured characters hack enemies in a variety of thrusts, swings and crushing death blows. Not only are the movements fluid and realistic, but special doubling techniques create the illusion that the polygonal characters are more detailed than they really are. The game's graphics engine has been in development for three years, and it looks superb. There's only one problem: there isn't a drop of blood anywhere. Perhaps it will be added later, but our understanding is that Scavenger doesn't have the stomach for it. Despite this, the game looks incredible, it's very fast, and it will reportedly support up to eight players on a net. Keep your eyes on this one. —K. Brown

Return to Krondor

BETRAYAL AT KRONDOR fans who felt betrayed by Sierra's decision to abandon the property can finally look forward to a sequel. 7th Level, designers of *MONTY PYTHON'S COMPLETE WASTE OF TIME* and *MONTY PYTHON & THE HOLY GRAIL*, is working on the next adventure in Raymond E. Feist's world of Midkemia.

As you'd expect, the graphic quality of the sequel far surpasses that of *BETRAYAL AT KRONDOR*, with rendered backgrounds and real-time 2D and 3D animation. The designers are also working on what they describe as a "tactically-complex," third-person, turn-based combat system, although we haven't been able to see its implementation yet.

This playable scene depicting a pretty shopkeeper is an example of the game's graphic detail. Her shop, the Golden Grimoire, offers rare mystical herbs, potions and books to aid players in their quest to recover the Tear of the Gods. Players will have to solve the mysteries of the Tear's disappearance to finish the game, but—like many of Krondor's inhabitants—she conceals deeper motivations. Feist is reportedly pleased with the character development in the game, and if that's indeed the case, his fans probably will be, too. —K. Brown



HANDS ON

These are the products in development we've actually spent some time with. They represent some of the most interesting

titles in the Pipeline, and they are complete enough to actually tell how they're going to play. Most should be released soon.

Shadows Over Riva

When Sir-Tech Software discovered Germany's Attic Software, it was a perfect match because one of the founding companies in the computer role-playing genre was partnering with the computer publisher of one of Germany's favorite role-playing games—*Das Schwarze Auge* (*The Black Eye*). Sir-Tech has been regularly publishing the series of German role-playing games as the *REALMS OF ARKANIA* series in the U.S. *SHADOWS OVER RIVA* is the third installment in this series. Playing the German version of the demo, we've discovered that the game system is still intact while the graphics and sound effects have improved. This time, an Ultimate Bad Guy named Holberker



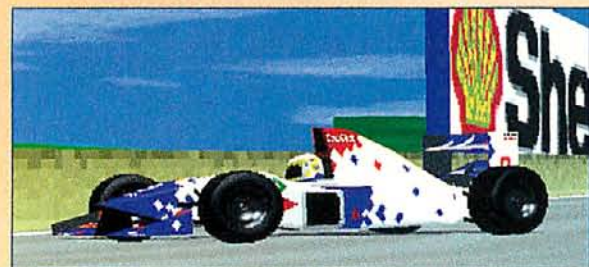
seems to be inciting the Orc population toward violence. Some claim that Holberker is the product of a dark mage who crossed a half-elf and an orc. By exploring a two-and-a-half dimensional world (it usually acts like true 3D, but you occasionally get hung up on texture maps where the collision detection doesn't quite work correctly), the party must stop Holberker in order to stop the orc incursions.—J. Wilson
Sir-Tech Software,
(315) 393-1525;
PC CD-ROM

HANDS ON

▶Grand Prix II

We've been getting a steady feed of increasingly imposing Papyrus racing sims since the release of the Geoff Crammond-designed *World Circuit* nearly four years

ago, but race sim fans will soon be served an appetizing change of fare. Crammond and his team have been cooking up a Formula 1 racing brew in *Grand Prix II*.



ago, but race sim fans will soon be served an appetizing change of fare. Crammond and his team have been cooking up a Formula 1 racing brew in *Grand Prix II*.

Reminiscent of its revered predecessor, but with a refined driving model and ridiculously good AI for more authentic flavor, *GP II* is a sure-fire winner. Not so difficult as to become

frustrating for journeymen, and still driveable with a joystick, *GP II* nevertheless is a tougher experience than *World Circuit*, with an accent on driver consistency and wheelspin control.

Tires break away and slide under heavy braking and sudden acceleration, cars drift through turns before suddenly grabbing, and opponents really seem to interact with you. This may include drivers who "crack" and spin off the track when you've been riding their rear wing, and backmarkers who politely let you by! The beta version isn't rife with blow-apart machinery or smoke, but does feature speed-killing sand traps, curbs that'll momentarily elevate tires, and

collisions that launch vehicles skyward. (Buyer beware: This effect often had me flipping above the track for half a minute or so, and needs to be toned way down before release.)

A multitude of options range from ultra-advanced control device preferences to in-depth car setup elements such as spring stiffness and anti-roll bar tension. It's a thorough and complete package, with an exquisite SVGA mode that's hellaciously fast at low detail (a satisfactory VGA alternative), real drivers and teams, and many of the cherished *World Circuit* elements (monitoring from the other guy's cockpit, instantly posted fast laps, one-joystick multi-player mode, flag-waving turnworkers) left intact. With some late-beta tweaks, *Grand Prix II* should be one scorching hot product indeed.—Gordon Goble

World Circuit Racing/
MicroProse, (800) 695-4263.
PC CD-ROM

▶Meridian 59

This 3D adventure game by Archetype Interactive currently has around 12,000 avid players worldwide. You determine your character's appearance, expressions, attributes, and magical skills. And, as you exercise your talents, they improve and mature. Hunt for treasures, fight monsters, cast spells and join secret guilds, all while exploring the Great Halls, the countryside and the Underworld.

The game has several small quests that help initiate the new player and prepare him for the

larger, "real" world. You can choose to be good or evil, with different consequences for each. Your actions affect the community; therefore,



every visit to this on-line environment promises to be a different experience. In the true sense of community, Guilds of player characters have emerged: some which protect new players, some

which savagely pillage and plunder, and still others which will safeguard your treasures. In constant development and growth, *Meridian 59* currently consists of five cities separated by forests, plains, rivers, and mountains. The text-based interface is straightforward and easy to learn. However, you'll need at least a 14.4 modem and a SLIP/PPP Internet connection. Archetype and 3DO plan to release the final version in July of 96.—J. Anderson
Archetype Interactive, (510) 849-4045.

Windows 95/NT CD-ROM and Internet Connection

PIPELINE

9 Tribeca	Summer 96
10th Planet Bethesda	9/96
Age of Rifles SSI	8/96
Aide De Camp 2 HPS Simulations	Summer 96
American Civil War Interactive Magic	Summer 96
Battleground: Shiloh Talonsoft	7/96
Betrayal In Antara Sierra	9/96
Blood 3D Realms/FormGen	Summer 96
Callahan's Crosstime Saloon Legend	10/96
Close Combat Microsoft/Atomic	7/96
Daggerfall Bethesda	Summer 96
Dark Earth Mindscape	10/96
Diablo Blizzard	Summer 96
Dungeon Keeper EA/Bullfrog	7/96
Elk Moon Murder Activision	7/96
F22 Nova Logic	Winter 96
Guardians of Destiny Virgin	Summer 96
Flying Nightmares 2000 Domark	Summer 96
Front Page Baseball Pro Sierra	Summer 96
History of the World Avalon Hill	Fall 96
Incredible Shrinking Man Cyberdreams	1/97
Interstate 76 Activision	Winter 96
Into The Shadows Scavenger	9/96
Jagged Alliance: Deadly Games Sir-Tech	8/96
Jetfighter III Mission Studios	Fall 96
John Madden Football 97 EA Sports	8/96
Last Blitzkrieg SSG	Summer 96
Leisure Suit Larry 7 Sierra	Fall 96
Magic of Xanth Legend	Fall 96
Master of Orion 2: Antares MicroProse	Summer 96
Meridian 59 Archetype/3DO	Summer 96
MicroLeague Baseball 96 MicroLeague	7/96
Myst II Broderbund	Fall 96
Necrodome SSI	8/96
Nemesis Sir-Tech	9/96
NFL Legends Accolade	8/96
Noir Cyberdreams	9/96
One Must Fall Epic	Fall 96
Over the Reich Avalon Hill	8/96
Pacific Tide Arsenal	Fall 96
Pax Imperia II Blizzard	Fall 96
Pod UbiSoft	Fall 96
Red Alert Virgin	10/96
Return to Krondor 7th Level	Fall 96
Reverence Cyberdreams	Fall 96
Risk! Hasbro Interactive	Fall 96
Robert E. Lee Sierra	7/96
Scrabble Hasbro Interactive	9/96
Shadow Warrior 3D Realms/FormGen	Fall 96
Shadows Over Riva Sir-Tech	8/96
SimGolf Maxis	Summer 96
Soul Storm OddWorld/GTInteractive	Spring 97
Star Fleet Academy Interplay	Fall 96
Star General SSI	10/96
Star Trek: Generations MicroProse	9/96
SuperHeroes MicroProse	Summer 96
Syndicate Wars EA	9/96
The Mindwarp Maxis	8/96
Third Reich Avalon Hill	8/96
Timelapse GTE Entertainment	8/96
Tomb Raiders Domark/Eidos	Winter 96
Trivial Pursuit Hasbro Interactive	7/96
Ultima Online Origin	Fall 96
X-Com 3: The Apocalypse MicroProse	Fall 96
Xenophage Apogee/FormGen	Summer 96

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QUAKE!

Get Ready To RUMBLE

*Id Signs A Death Warrant For 2D Gaming, 486s,
And Everybody Who Enters Their 3D Nightmare*

By V. Long

Describing *QUAKE* is like talking about sex—it must be experienced to be fully appreciated. Pictures pale in comparison, because *QUAKE* is about *being there*, not observing from a distance. Action gamers around the world have done just that by downloading the *QUAKE* DeathMatch multiplayer test (*Qtest*). But *Qtest* is *not* *QUAKE*. The unfinished version of *QUAKE* we played was a vast improvement over *Qtest*.

Many gamers expect *QUAKE*—an immersive and visceral first-person shooter using true 3D polygon-based modelling, fluidly rendered in real-time—to usher in a new era of gaming. When *id* agreed to show us the nearly completed game, I didn't have to check my notes. *CGW* Technical Editor Dave Salvator and I jetted to Mesquite, Texas, and met with renowned talents John Carmack, John Romero, Michael Abrash, Sandy Petersen, and the rest of the *id* crew. Between being blown to bits by howling members of the Texan assassins in DeathMatch contests, we saw the technology and design that I am convinced is the vanguard of a terrifying new level of immersive interactivity.

PLEASE DO NOT FEED THE MONSTERS

The welcoming committee that ushered us into the much larger, more complex, and beautifully crafted levels was *QUAKE*'s ghoulish cast of characters. Despite some previous skepticism, the monsters' AI appeared strong enough to make solo-play palm-sweatin' fun. With creatures this brainy and brawny, put yourself on the endangered list.

Upon encountering the fiendish hordes, we realized *QUAKE* lacked the auto-aiming feature found in *DOOM* and *Qtest*. Although *QUAKE* provided some up/down compensation, side-to-side corrections no longer existed. Lead programmer John Carmack explained that it was "a hotly debated topic. We settled on removing auto-aiming because doing so rewards skill, and the less-skilled players seem to get a better sense of accomplishment when they finally get the hang of it." Game designer Sandy Petersen gave me good advice: "You need to aim."

Another controversial change from *id*'s previous splatterfests is that *QUAKE* will not have a map feature. No matter how much



GEYSER OF GUTS An Ogre reels from the blast which renders an unidentified monster into a shower of giblets.

anyone begs or pleads, the design team believes that an automap detracts from the suspense of facing horrors around every corner.

The interface has also changed some from the Qtest version. It now includes an ammo count that provides more details than the one in DOOM, and has expanded on DOOM's running commentary at the top of the screen. Besides telling you when you've stumbled on a secret or goodie, you'll also find your death unceremoniously ridiculed with quips like "VLong tries to put the pin back in" or "Fragula rides Romero's rocket."

In addition, menu options will let you perform several basic functions like start a new game, save or load a game, configure controls, etc. But if you liked the pull-down command line in Qtest, rest assured it will remain in QUAKE. Some of the commands have been changed or removed, though, so don't expect your favorite keys or console commands to work the same in the release version.

And for those of you who routinely escape annihilation by cheating, you'd better learn to fight, because you won't have hotkey cheats like SuperJump to save your cowardly skin. American McGee, a level designer as well as id's acknowledged DeathMatch king, remarked sternly, "People should not be using SuperJump. It's out."

MY, WHAT A LOVELY PLACE YOU HAVE HERE

We noticed an abundance of rich new textures, such as stained glass, wood panels, and marble-like surfaces. If you didn't like the feeble pixel shower explosions in Qtest, you'll be happy to know there are now full-fledged fireball explosions with particles billowing outward.

Artist Adrian Carmack showed me that the fireballs are actually six frames of bitmapped animation. It's unfortunate that id had to resort to 2D art for explosions and other graphics like torches, but programmer Michael Abrash explained that even modeling a candle flame in real-time 3D brings a Pentium to its knees.

Regardless of how they're generated, I still like the explosion graphics—it's amazing how a lit-

tle artwork feeds the pyrotechnical proclivities deep in everyone's soul.

Some weapons are undergoing facelifts as well as functional stroking. For example, the double-barrelled shotgun sports ribs, and has an improved shot pattern. The grenade launcher's graphics are in transition, while the rocket launcher's rate of fire and blast radius are being increased for maximum impact.

One thing remained the same—there's no story line, besides the eternal struggle between good (you) and the hordes of unrelenting evil. Jay Wilbur, id's "biz guy," elaborated, "It's thinner than soap-film at this point...we'll thicken it later. I look at it this way: A bad game with a great story is a bad game. A great game with a bad story is still a great game."



WASN'T BEAUTY THAT KILLED THE BEAST When you wax a brute like the Shambler, you'll get to see his entire lifeless carcass stretched out, unlike DOOM's post-mortem mush. The red muzzle spray indicates this guy's shots are on target with an Ogre in the background.

LEVELS TO EXPLORE AND ESCAPE

Story or not, what I remember most is the overwhelming sense of actually being there—wading through vaulted subterranean corridors flooded in waist-deep water, gawking at magnificent cathedral-like chambers opulently filled with stained glass, and running like hell away from the hordes of Satan's minions bent on having me for dinner. Game programmer Mike Abrash saw my hair standing on end as I survived Sandy Petersen's perilous SMOTTE level, and dryly remarked, "There's no doubt you feel that the levels are inhabited."

There were three modes of difficulty (easy, intermediate, and hard). The difficulty modes affect the number of monsters, and Hard mode alters the levels physically. John Carmack is working on adding an Ultra-Hard mode that will make the monsters faster and even stronger.

Quake II and Beyond



ID WIZ-KID JOHN CARMACK

QUAKE isn't finished as of this writing, but that didn't stop John Carmack from talking about his hopes for the sequel. He explained, "The immediate plan is to move the current tools to the NT platform, and to develop new technology and tools that will gradually be introduced in developing and refining QUAKE II. My goal is to make content creation easier for the rest of the id team."

The use of Direct Color rather than palettes will be one fundamental change for the future. Direct Color gives programmers and artists more freedom with lighting effects and tricks (including clouds and colored lighting), all of which contribute to an immersive atmosphere.

Carmack added that, "QUAKE will be id's last pure planar polygon-based engine. The future will utilize much more advanced geometries, and will allow the programmers to specify the curvature and even roughness of surfaces."

"Like DOOM, QUAKE is very good at generating indoor environments, but doesn't do outdoor stuff as well as we'd like." To that end, he is looking at fractalated landscapes for creating realistic outdoor vistas.

Even with the new technologies, the characters themselves will continue to use polygons, because "other technologies, such as typical software voxel rendering, are relatively poor at perspectives. They do not generate the convincing impression of near or far the same way polygons do." He envisions twice as many polies will be used to generate future characters. "Current QUAKE models have 200 to 500 polygons in each figure. These numbers will go up somewhat in QUAKE II, but by the time we get our next generation of technology, the average character should have over 1000 polygons."

The bottom line is that Carmack and his colleagues seem to have every intention of blowing your mind as well as your budget in the coming years.

The levels clearly reflected the personalities of their designers. For example, Tim Willits, a *Raiders of the Lost Ark* fan, is known for Indiana Jones-type levels—walls that spew flying nails, spikes that impale from above, and devices that result in quick decapitation. In general, McGee designs the Metal levels, Tim Willits does the Medieval, Petersen does Fantasy (a subset of Medieval), and John Romero does the Military and some Medieval.

In case you're wondering, the answer is: No, the Quake Editor will not be released. Even if it were, few aspiring level-builders have a NextStep box needed to run it. But Jay Wilbur encourages intrepid programmers to create their own QUAKE editors and custom levels. As with Wolf3D and Doom, id currently plans to release the specs.

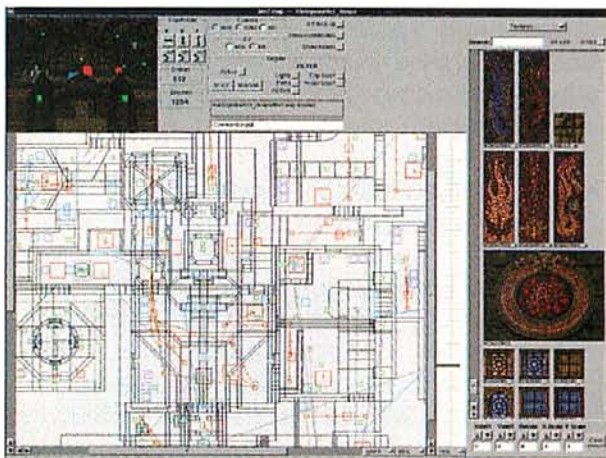
LET'S MEET OUR CONTESTANTS

As in DOOM, you'll encounter legions of soldiers turned evil. The grimy Grunt totes a shotgun, but is dwarfed by the beefier Enforcer who wields a laser blaster. Rottweilers often accompany these bad boys. As in WOLFENSTEIN 3D, I felt a little guilty putting these snarling canines to sleep despite their propensity to gnaw on my leg. These three foes exist only on the Military levels.

The pink-fleshed Fiend is much more dangerous and pissed than its equally muscular Demon brethren from DOOM. Its scythe-like talons and immense bounding leap help make short work of its victims. The bald-headed Ogre, brandishing a chainsaw and lobbing grenades, may not move as quickly but also deserves careful treatment.



ZZAPP! Beware the Shambler's belly-aching; it often spells a lightning bolt is about to punch through your chest. Ouch!



FOR YOUR EYES ONLY Salivate all you want, but id will not release its QUAKE Editor. Besides, you probably don't have a NextStep box to run it on, anyway. Watch the 'Net for plenty of home-grown hacks.

The Shambler lumbers along like the Abominable Snowman, and smashes its victims with gargantuan claws. Beyond spitting distance, it hurls lightning from its belly. Avoid it or prod some Fiends into attacking it for you. On the other hand, Zombies can only be permanently laid to rest with grenades, rockets, or the axe. Despite its rigor-mortis clumsiness, the Zombie excels at flinging pieces of decaying flesh and can make your life miserable. Given the chance, the metal-clad Knight and Death Knight will slash you to shish-kabob. The burlier Death Knight can hurl "magic missiles" that look like a flurry of spikes with green tracers. The pale levitating Scrag has the same magic attack.

Don't think that jumping into water offers any measure of safety, either. Spending too much time fully submerged means drowning. "Bad" water will rob you of health. Some pools harbor swarms of voracious Rotfish that do more than nibble.

As always, the id guys kept a few morsels from plain sight. Persistent poking around yielded information that they're still working on the Spawn, which bounces around and body slams you into submission. Its big brother, endearingly named Vomitus, drags along and spits hurtful chunks at you. The Shalrath and Shub-niggurath are the shareware and registered bosses, respectively; at the time, both were still in the embryonic stages of development.

The Flying Dragon that majestically graced the screenshots it released last year won't be included... at least, not in QUAKE I. Look for it in QUAKE II.

BIGGER TOYS FOR BADDER BOYS

Feeding gamers' ravenous appetites for playthings that go bang, QUAKE offers an arsenal of goodies. DOOM-fans will feel right at home with the shotgun and double-barrelled shotgun. These boomsticks work best for sweeping Rotfish, Rottweilers, and Grunts out of your path.

As in DOOM, acquiring a rocket launcher is a treat. This time, though, rockets leave a blazing exhaust trail before vaporizing beasts into showers of giblets. The dynamic lighting effects, which John Carmack coded in an hour as a bet, make rockets a joy to fire down darkened corridors. Forget about using them on the Spawn. Trust me.

Among the weapons unique to QUAKE is the grenade launcher, which uses the same ammo as the rocket launcher. You toss the ordinance on a relatively short parabolic trajectory, and it bounces around before it finally says hello. My favorites are the nail gun and super nail gun. Nothing compares to hosing down a Scrag or DeathMatch adversary under a torrent of carpenter's tacks. You'll find the ammo strewn about in boxes marked with the Nine Inch Nails logo. (Speaking of which, NIN's Trent Reznor is doing all of QUAKE's sound effects. As for music, there will be none, just ambient noise.)

The BFG of QUAKE weapons is the lightning gun. Amped by battery power, this one sends a searing white streak as far as you can see until it strikes a solid object. Monsters and DeathMatch opponents are not considered solid objects, no matter how many get toasted along the way.

Despite the premature coverage you may have seen elsewhere,



KING-SIZED BUGLIGHT The lightning gun could be considered the BFG of QUAKE. Its bolt burns through everything until it hits a solid object, but it won't last long without a recharge.



ONE DOWN, ONE TO GO A besieged player turns his attention to the Scrag after having gibbed its playmate, the Ogre, whose remains... well, remain.

there is no hammer in QUAKE, period. Get over it. Instead, you get an axe when you run out of ammo. DeathMatch opponents will see your character sling an empty gun over your shoulder and whip out the axe for a melee. Don't sneer at this primitive implement. I surprised and nearly fragged an id guy or two with the axe during our impromptu six-way DeathMatch. Both John Carmack and McGee tell me that players who accumulate Super Health or Quad Damage Amplifier or both will be powerful enough to lop heads with the axe. Satisfied?

QUANTUM LEAP FOR MULTIPLAYER GAMING

Toys this destructive are immensely more fun when mirthfully inflicted on like-minded buddies. Whether you're in DeathMatch or Team DeathMatch, it's strangely satisfying to watch your playmate's 3D-rendered head flip down the hall after being decapitated with high-caliber

projectiles, and it feels even better if you pulled the trigger. Anguished screams add tremendously to the experience, and offer reassurance that you've made your point, both in combat and coop mode.

Qtest's dynamic entry feature for network games (players can join network frag-fests whenever they wish without forcing everyone to restart the session) was nice, but QUAKE will vastly enlarge its reach by adding the ability to *simultaneously* connect players via serial, IPX, and TCP/IP. So you'll be able to dial into a network game where other players are connected over the LAN and the Internet. John Cash, id's "networking guy," is working feverishly to include these features in the first release, and plans to allow multiple modems and a "spectator" mode later.

QUAKE will support the Beame & Whiteside TCP/IP stack, and possibly a few others. Id plans to do a Win95 port about a month after the DOS version ships, and this should resolve TCP/IP issues for many players.

Online gaming services like Mpath, DWANGO, TEN, and Catapult are under consideration, but "nothing is set in concrete." However, it appears QUAKE will offer enough to keep many gamers happy until something firmer develops.

Quake Hits the Hard Stuff

Innovative game engines like QUAKE's can dazzle, even without dedicated 3D hardware. But to bring the next generation engines to fruition, that's going to take new metal. id's John Carmack predicts the next leap to occur "in about 1 to 2 years from now. The technology will rely heavily on hardware-accelerated rasterization, because by then, all systems will have it."

Rendition's Verité chip is id's current point of reference. They're also considering the S3 ViRGE chip because of its projected large market share, though according to Carmack, its performance isn't up to id's standards. The 3dfx chip is also a strong contender for id because of its "ass-kicking performance," but because it's a 3D-only solution, they're concerned it may only garner a limited market share.

But id isn't waiting around to take advantage of emerging 3D hardware. Already, they've got the QUAKE engine running on Rendition's chip, taking advantage of Verité's bilinear interpolation, perspective correction, MIP mapping, Z-buffering, and Gouraud shading. QUAKE delivers smooth frame rates at its native 320 x 200 frame size with no special graphics hardware. But using the Rendition chip, the result is a smooth 30 fps at larger frame sizes along with cleaner individual frame quality as well.

Id is releasing a driver spec to 3D hardware vendors who want to accelerate QUAKE in DOS. But QUAKE will more likely get to 3D hardware via Microsoft's Direct3D API when id ships a Windows 95 port, shortly after the DOS version heads out the door.

When QUAKE hits the streets, your Pentium rig will move things along just fine. But the coming 3D hardware will make your big picture bigger, and add panache to the overall effect. Currently, only Rendition accelerates the DOS version of QUAKE but other players will most likely jump into the game. We've seen the Rendition-accelerated version, and the difference is pretty palpable. As other hardware-accelerated versions appear, we'll have 'em and let you know if we like what we see.—Dave Salvator & V. Long



TIME FOR YOUR AXE KICKING Confronting the Shambler with a mere axe usually means one of two things: (1) you're nuts, or (2) you're bored with life.

DO THE MATH!

According to John Carmack, a realistic minimum system for comfortably running QUAKE at default settings would be a Pentium 60 with 8 MB of RAM. He added that almost any video card is adequate, since QUAKE can use as little as 256 KB of graphics memory. "While you can play QUAKE on a 486 (just as some people play DOOM on 386s), it won't be very fun" and may require decreasing the screen size and turning off the sound. QUAKE is very math-intensive, and it squeezes every last drop out of the Pentium's floating point unit.

"WHEN IT'S READY"

As you're reading this, it's likely that QUAKE version 0.9 is done and downloadable from numerous worldwide Internet sites. After a few weeks, id will mint version 1.0 to CD, which will then be sold via retailers. The CD shareware version (7 levels) will include the encrypted registered version—so unlocking the extra levels and goodies will only be a phone call and credit card authorization away. Evil's temptations keep getting greater.



For tips and techniques on setting up multiplayer QUAKE, visit the CGW Web site at www.zdnet.com/gaming

V. Long is the Technical Editor for Computer Life Magazine. He is an expert in explosives and home-grown projectile weapons, and enjoys pummeling CGW staffers in QUAKE DeathMatches. ☞

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Gaming In The Next Dimension

3D Graphics: Realism and Reality on the Hardware Frontier

by Loyd Case and Dave Salvator

There's a possibly apocryphal story about a game developer who was showing his mother his latest flight simulation creation. This was a few years ago, when a fast 386 was a performance hot-rod. Back then, a sim like FALCON 3.0 used about 20 triangles to approximate the shape of an entire jet fighter. Try as she might, the developer's mother couldn't see the game—all she saw were random geometric shapes changing willy-nilly on the computer screen.

Face it: computer game graphics is all about optical illusions where game developers try to convincingly simulate reality on a flat PC monitor. That game designers can take us into a virtual world and make us forget our real one for even brief periods is testament to their creative abilities. One key element of creating the illusion is 3D graphics. For decades, 3D graphics has been something of a holy grail in the computer industry. Even a scant few years ago, dedicated 3D hardware cost tens of thousands of dollars. Soon, the cost of hardware to generate killer 3D will be in the hundreds of dollars—and the low hundreds, at that. On top of that, 3D graphics comes with a whole new set of jargon

to learn (as if computers didn't have enough arcane terminology now). But what exactly is 3D graphics, and what will it bring to the party for gamers? We'll cut through the hype and apply some English to the technospeak that describes the new features 3D hardware vendors are implementing. We'll also take a look at a few new pieces of hardware, all of them promising in one respect or another. Since most of the boards we saw at press time weren't yet ready for release, we can't really pass final judgment, but we can give you some idea of what to expect.

"BUT IT LOOKS 3D TO ME"

Let's look at what 3D *isn't* for a moment. When gamers think of 3D games, they often think of DOOM. Guess what: DOOM ain't 3D. DOOM does a very good job of faking the gamer into thinking they're in a 3D environment, but they really aren't. The monsters are flat graphics—bitmaps. When you move to one side of a monster, the DOOM engine simply replaces one flat picture with another. Each creature in DOOM has eight views, and there's no true up and down. A game like COMMAND AND CONQUER isn't 3D, either. All the little buildings in COMMAND AND CONQUER *look* 3D, but they are really pre-rendered—in

other words, they're just flat pictures. Now you may be asking yourself, "Titles like *QUAKE* and *DUKE NUKEM 3D* look great with my 2D graphics board, so why do I need one of these 3D deals?" Well, 3D boards do bring new features to the table that help improve overall image quality—including frame rate—but more to the point, a 3D board lets an application off-load rendering work from the CPU, leaving more cycles free for gameplay, AI, and so on.

In a true 3D environment, viewing an object from any angle is possible since the game engine creates and manipulates 3D objects on the fly, and really works in three dimensions: x, y and z. There are also real calculations of depth occurring in a 3D environment. Animation should occur in real-time and be capable of realistic motion.

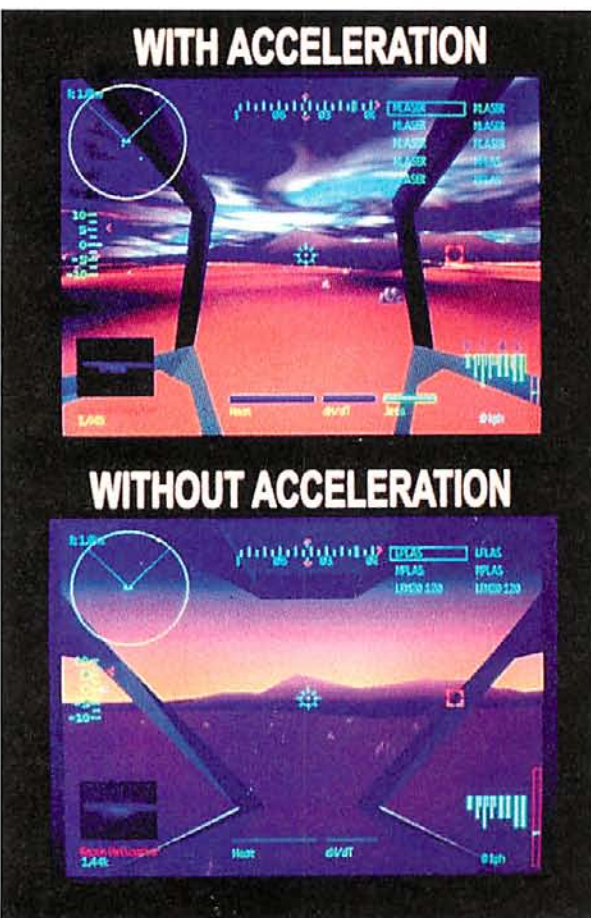
Unfortunately, generating 3D graphics in a real-time game environment is a huge computational problem. Consider a real-life scene: you are standing beside a car, near a house. Because the car is in front of the house, you can't see all of the house. Some of it is obscured by the car. Now imagine moving to the right a bit. You can now see part of the house—but another part of the house you could see a moment ago is now obscured. Moving like this is no problem. *Calculating* and rendering a scene like this, including which parts of the scene *can't* be

3D APIs and the Terror of Infinite Hardware

If you've ever installed a DOS game that supports a large number of sound cards, you can probably appreciate the problem of supporting a gazillion different pieces of hardware—especially if *your* hardware isn't on the list.

The same snafu could hold true for the new generation of 3D graphics cards. Already we're seeing vendor-specific implementations of games arrive in bundles. The ATI version of *MECHWARRIOR 2*, for example, won't run on a system with another vendor's card—even when Direct3D or DirectDraw drivers are properly installed. There is another way: a standard 3D Application Programming Interface (API), an interface between a piece of software (i.e., a game) and a particular capability (in this case, 3D graphics.)

Last year, Microsoft bought RenderMorphics, a UK developer of 3D libraries whose API, Reality Lab, and has since been re-christened Direct3D. As of this writing, Direct3D is still in late beta, but is near "code freeze." Game companies will likely be shipping a few Direct3D games by Christmas, but probably not that many. Direct3D is a real-time, 3D geometry and rendering engine that is specifically designed for fast 3D games in Windows 95. Direct3D will also handle driver installation chores automatically.



ATI's accelerated version of *MECHWARRIOR 2* puts texture maps on the ground and sky, creating a more realistic environment.

viewed and all the depth information, takes serious processing horsepower, especially if you want it at 30 frames a second, moving in any possible direction. Now, let's make the problem even more complex: you can now see part of the house through the windows of the car, but the windows also reflect part of the car's interior. Oh, yeah, and it's a foggy day, too.

There's been some debate as to the image quality versus frame rate issue. Some 3D hardware may have features that result in gorgeous images, but as you turn on some of these cool innovations, the frame rate goes from silky smooth to slide show. Because action and flight titles are all about 3D animation, not 3D illustration, frame rate is really part of the *overall* "image" quality. Running say, *US NAVY FIGHTERS* at 1024x768—even on a very fast Pentium—will probably be painfully slow, especially with all the graphics goodies turned on. At times, it's almost like warping to a different location as the frame rate goes south. Even at a more sedate 640x480, most systems will have problems with a game like *USNF* or *FLIGHT UNLIMITED*. The goal is bigger frame sizes (at least 640x480 native), better frame rates (30+ fps), and greater scene complexity (more polygons). Game developers need to strike a balance between individual frame image quality at acceptable frame rates to achieve the desired overall effect. It's too early to declare a "winner," but stay tuned, we will take a head-to-head look at real 3D hardware later this year.

SHOVELING THROUGH THE HYPE

Let's get back to market(ing) reality for a moment. To say that the computer industry tends to over-hype new technologies is like saying it rains in the Amazon jungle. Does this sound vaguely familiar? "3D graphics boards will give you incredible graphics realism, unparalleled performance, amazing gameplay—and it will butter your toast for you!" The truth is most of the new 3D accelerators on the market

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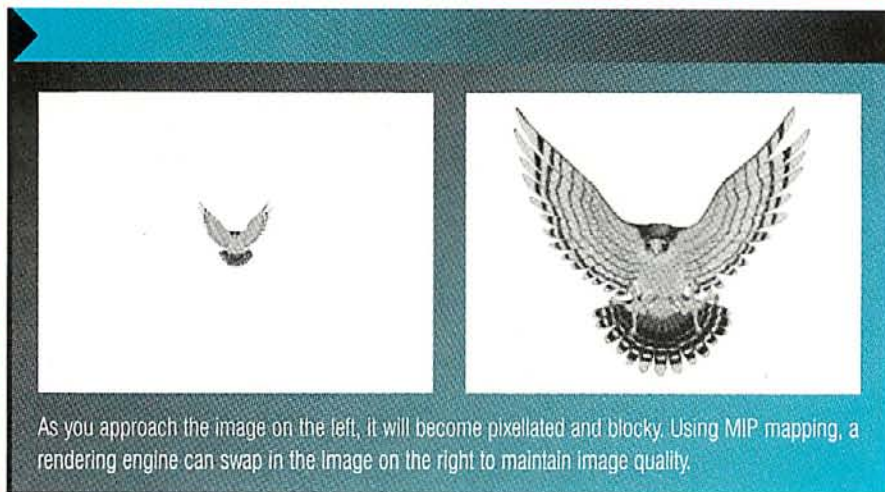
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As you approach the image on the left, it will become pixelated and blocky. Using MIP mapping, a rendering engine can swap in the image on the right to maintain image quality.

Texture Mapping. Since a texture map is simply a picture that's overlaid on a polygon, if the polygon shifts because of a change in the viewing angle, the texture needs to shift properly as well—otherwise, it looks very odd.

*Importance: High

Antialiasing. If you draw a straight line on a computer screen at an angle other than horizontal or vertical, you'll often see a stair-step effect, often called "jaggies." Antialiasing blends the colors around the line with the color of the

address a very limited part of the entire 3D graphics process. The complete set of 3D graphics computations is usually referred to as the *3D graphics pipeline*. The 3D graphics pipeline begins with the basic geometry of the scene, then takes into account changes to the scene—*transforms* (remember, things are in motion), lighting effects, what's seen and not seen and then the actual *rendering* of the scene into pixels drawn on the computer monitor.

Most of these new chips really only handle that last piece: rendering the scene to the computer screen. A few of them handle something called *primitive setup*, in which the pieces of the scene are broken down into basic geometric parts prior to the rendering. Everything else, including highly CPU intensive transformations (which calculate all the changes in objects as motion occurs), is handled by the CPU itself. With that in mind, let's take a look at various rendering features, and what they really mean.

PASS THE LEXICON

We could write a small encyclopedia just defining all the possible terms used for 3D graphics, but we will only define features that are probably the most important, plus a few that aren't—but are heavily hyped, so you'll be forewarned.

Remember that the ultimate goal is to create the illusion of 3D reality within the confines of a 2D computer screen.

Texture Mapping. Texture mapping is what gives modern 3D graphics their realistic appearance. A texture map is simply a bitmap or a picture that's laid over a polygon to make it look more realistic. For instance, a small picture of a few bricks may be tiled over a huge, rectangular polygon to make it look like a brick wall.

Individual pixels of a texture map will often be called *texels*.

*Importance: High

Perspective Corrected

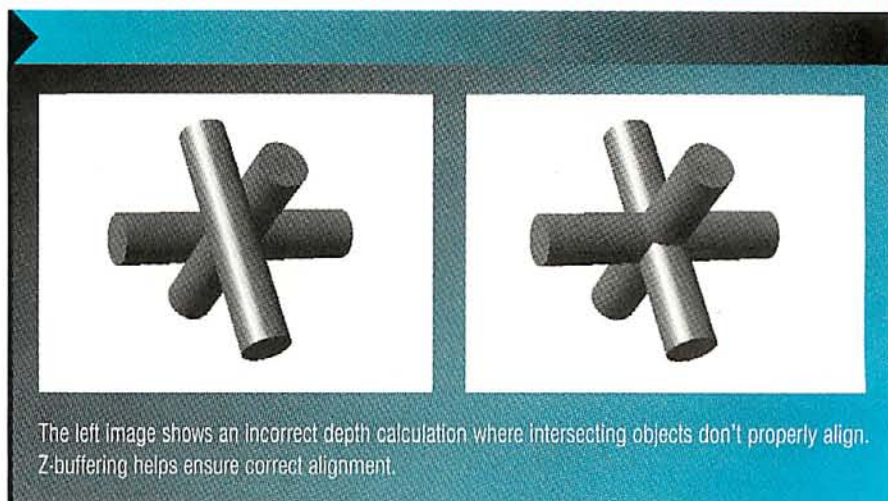
line itself to fool the eye into thinking that the stair-steps are gone. Antialiasing can also be applied to textures to make them look smoother.

*Importance: Moderate

Bilinear Filtering. In most of today's games, one texel, (i.e., one pixel from the texture map), is applied to one pixel of the underlying polygon. This is called *point sampling*, and results in textures appearing to "crawl." For each texel, bilinear filtering averages four surrounding texels from the texture map and applies them to the polygon, creating a smoother or more realistic appearance to the surface. This feature doesn't come cheap since it effectively quadruples the amount of work the processor has to do.

*Importance: High

MIP Mapping. You may have noticed in some games that when you get really close to an object, the texels suddenly get blocky and unreal. MIP mapping is really a simple concept. For each object, several textures are stored—for example, three textures may exist for our brick wall sample—a near texture, a middle texture and a far texture. As you move closer to the wall in the virtual environment, the textures are swapped to maintain the realistic appearance. If you combine bilin-



The left image shows an incorrect depth calculation where intersecting objects don't properly align. Z-buffering helps ensure correct alignment.



Perspective Correction prevents texture maps from "warping" when they're moved to different positions.



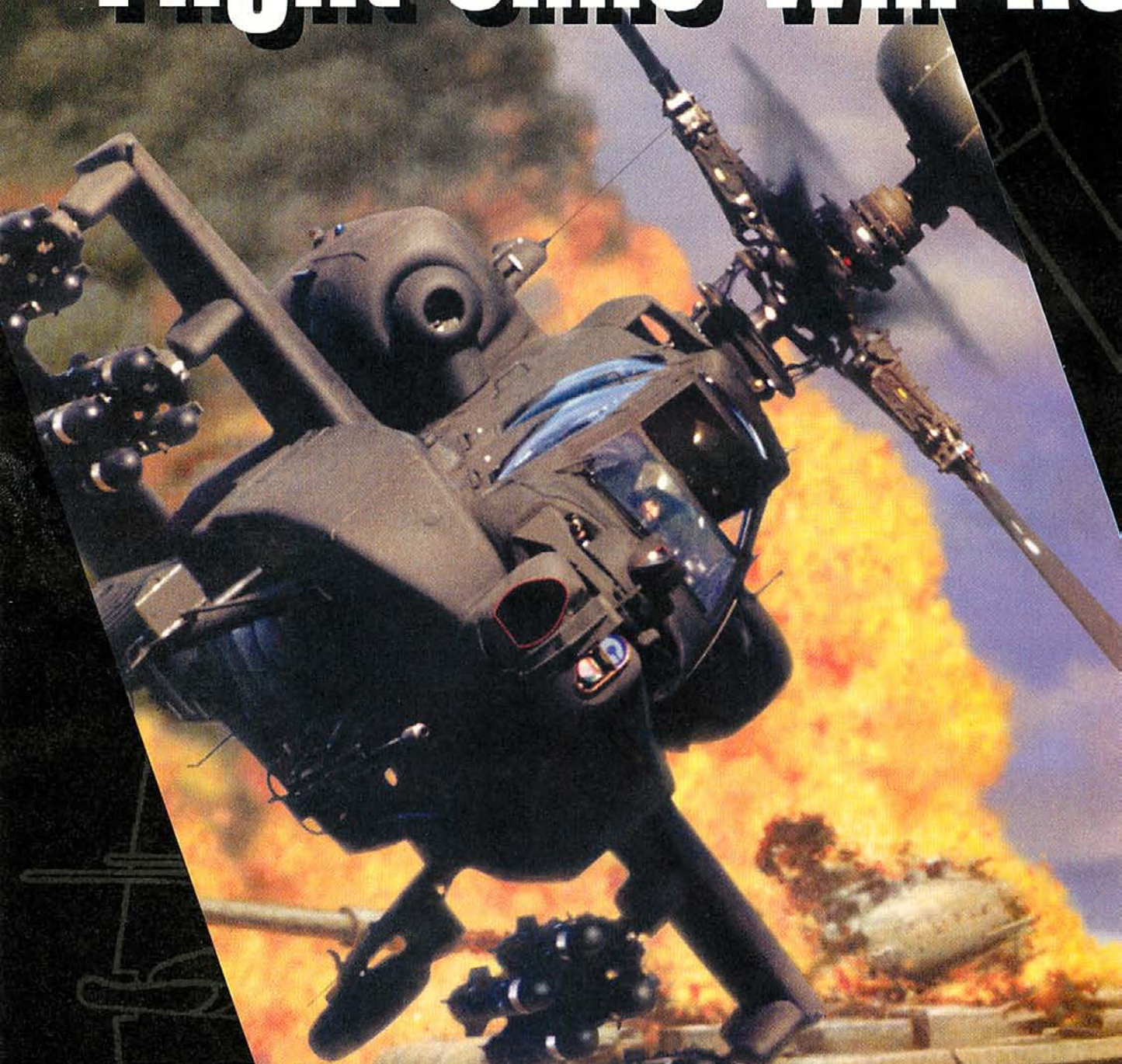
Anti-aliasing prevents the "stair-step" effect noticeable on the edges of the cube.



The left image is point-sampled, and pixellated, but bilinear filtering softens the image and reduces pixellation.

• OUR THANKS TO RENDITION, S3, AND ATI FOR THEIR HELP IN PROVIDING ART WORK FOR THIS ARTICLE. •

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ear filtering with MIP mapping, you get bilinear MIP mapping. One of the most dramatic increases in image quality occurs when you perform bilinear filtering to the two closest MIP maps, then average out the result. This is often called *trilinear filtering*, but is more accurately known as *trilinear MIP mapping*. Like bilinear filtering, trilinear MIP mapping adds a lot of processing overhead to the 3D pipeline, and can really drive frame rates south.

*MIP Mapping Importance: High

*Trilinear Filtering Importance: Moderate

Fog. This is just what it sounds like, but simulating fog or smoke effects also requires a lot of computation.

*Importance: High

Alpha Blend. Remember our example of looking through a car window? Simulating transparency or partial transparency can be tricky and expensive in terms of computation. Alpha blending is one technique to handle transparency effects.

*Importance: Low

Lighting Effects. Remember those cool flashing lights in DOOM? Guess what: those weren't really lights; they were really clever graphics tricks. In true 3D, lighting is realistically calculated, and if you have a bunch of lights, all throwing shadows, it can really eat up CPU or processor cycles.

*Importance: Moderate

Sub-Pixel Accuracy. Remember our definition of filtering and MIP mapping? The result of those operations need to be applied accurately to the underlying flat surface; that's what sub-pixel accuracy is for. It also smoothes a 3D object's motion, helping to reduce the "ratcheting" effect.

*Importance: Low

Gouraud Shading. This technique is named for its inventor, and when you have two flat polygons connected together, the actual connecting vertex can make the object look unrealistic. Gouraud shading simply blends in the colors of the two polygons to make the joined vertex look seamless and natural. Flat shading is the other predominant type of shading, where a single color is used to fill a single polygon. Its main advantage is that it's less processor-intensive, but flat shading gives a less convincing effect.

*Importance: High

Z-Buffering. One of the trickiest tasks in real-time 3D calculations is figuring out which parts of the scene are obscured, known as *hidden surface removal*. Z-buffering is one computational method for calculating which objects lie in front and only rendering the visible ones. Its downside is that it's memory and CPU intensive.

*Importance: Moderate

Technospeak aside, all of these features sound really great, and the resulting scenes are pretty impressive. But different 3D chips accelerate these features with varying degrees of completeness. Some chips only handle part of the rendering, leaving the CPU to do the rest. The unfortunate result is that your frame rate may still slow down when you turn on a cool rendering feature. Here again, the jury is still out.

Let's move on to some of the new 3D accelerator technologies and also take a look at some early boards that use them.

WHEN THE CHIPS ARE DOWN

There are three main philosophies behind development of 3D graphics hardware today: 3D-only, graphics plus 3D and the Swiss army knife approach (which handles several different multimedia chores, not just graphics). 3D-only vendors include 3Dfx, Yamaha and NEC, while Rendition, S3, Matrox and ATI are delivering full-featured graphics solutions in a single chip. The multimedia chip sets include nVidia, Chromatic and Brooktree. Let's look at each of them individually, and also take a brief look at resulting 3D graphics boards for PCs.

3D-ONLY SOLUTIONS

3D-only solutions will likely appear as add-on boards, typically requiring a dedicated PCI slot. These boards are going for all-out performance, so the focus is killer 3D performance, and leaving 2D graphics to the existing board. These vendors figure that most gamers already have a fast graphics board of some kind. But available PCI slots are becoming more scarce, so that's a concern—no free slot, no add-on.

VOODOO BY 3DFX

The Voodoo graphics chipset by 3Dfx may be the highest performing 3D graphics solution available. The real issue with Voodoo will be its cost. It's a multiple chip solution with two chips, and it also needs a dedicated memory area for storing textures. Now the good part: Voodoo supports a big heap o' 3D features, and should be capable of very fast 3D rendering. If demos mean anything, overall image quality should also be superb—perhaps the best of any of the products mentioned here.

Orchid has announced it will be shipping a board this summer, dubbed the RIGHTEOUS 3D, that will have 2 MB of frame buffer memory and 1 MB of dedicated texture memory. Pricing wasn't available at press time, but will likely be around \$300.

Also, NEC recently announced that its new high-end PowerPlayer system will be using the 3DFX chipset for 3D graphics.



ATI Xpression 3D

YAMAHA RPA2 AND RPA3

The RPA2 chip from Yamaha was incorporated in a recent 3D graphics PCI add-on board from Paradise Graphics, the *TASMANIA*. But *TASMANIA* received relatively little support from game developers. The newer RPA3 has a good feature set, but won't be shipping until later in the summer. No pricing information was available at press time.

NEC/VIDEOLOGIC POWERVR

The *POWERVR* is a recently announced chipset, co-developed by NEC and Videologic. *POWERVR*'s unique feature is a proprietary hidden surface removal method that doesn't require dedicated Z-buffer memory. Though a potential RAM saver, it's an unconventional method for handling hidden surface removal, but NEC will write support into their driver so game developers can make regular Z-buffer calls to use it. Compaq recently announced that its Presario systems will incorporate the *PowerVR* chip later this year. Also, VideoLogic will be offering an add-in board for about \$175.

FULL-FEATURED GRAPHICS SOLUTIONS

Full-featured graphics chips incorporate 3D, 2D acceleration (for fast Windows performance) and onboard VGA and SVGA for DOS games. Because of the nature of combining multiple elements, compromises are inevitable, but there's already good potential for replacing your current graphics boards with one of these solutions.

RENDITION VERITÉ

Rendition is a new company focused on delivering a complete graphics solution for fast game play. We had the opportunity to see gameplay with the *VERITÉ*, and what we saw looked good. Rendition was showing *INDYCAR 2*, and the *QUAKE* graphics engine, both tuned for the *VERITÉ*. *INDYCAR 2* played very well on a Pentium 100 with all rendering features enabled. Walls looked very good close up thanks to texture filtering and MIP mapping, and the cars looked great as well.

MECHWARRIOR 2 for Windows 95, which uses Microsoft's DirectDraw API, ran very smoothly on the Pentium 100—easily comparable to a Pentium 133 running one of the quickest Windows 2D accelerators available. We also checked out DOS game performance, still a critical item for today's gamers. Interestingly, VGA performance seemed only average, while SVGA performance seemed well above average for a Pentium 100. Though the VGA core is a true hardware VGA, it's not a very fast one. The SVGA implementation, though, is directly tied to the RISC processor engine used on the *VERITÉ*. Since most games shipped today are SVGA, they should run very well on the *Verité*.

Rendition has done its homework in the feature set as well, and image quality is likely to be very good, approaching that of 3DFX at a lower cost. Also, the *VERITÉ* performs some geometry setup, so less data needs to be transferred across the PCI bus, reducing a potential bottleneck.

The first product to ship with the *VERITÉ* will be Creative Labs PCI version of the 3D *BLASTER*. Unlike its VLB sibling, the PCI 3D *BLASTER* will replace the current graphics card in your PC, not merely supplement it. At press time, pricing hasn't been set, but it will probably be



Diamond's Stealth 3D 2000

well under \$300 for a 2 MB card.

3D LABS PERMEDIA

3D Labs has been in the 3D graphics business for several years, shipping high-end 3D chips for use in dedicated CAD and 3D modeling systems. Last winter, Creative Labs shipped the VLB-only 3D *BLASTER*, which used a scaled-down version of 3D Labs *GLINT* chip. The *PERMEDIA*, however, is a complete reworking of 3D Labs technology, and incorporates a 32-bit VGA core and a fast Windows accelerator. Creative Labs has announced that it is licensing the *PERMEDIA*, but hasn't mentioned any products yet. Acer will be shipping graphics cards later this summer based on *PERMEDIA*. 3D Labs may have a very interesting chip, but its overall performance for gaming is still an unknown.

S3 VIRGE

S3 has taken an existing chip, the *TRIO 64V+*, and added 3D capability to it. The resulting chip is the *VIRGE*, and it is even pin compatible with the *TRIO 64V+*. One benefit of this approach is that graphics card vendors can use existing card designs and thus quickly bring a 3D-capable card to market; also, Windows performance is quite good and VGA performance seems on a par with other S3-based cards: good, but not great. However, the result is something of a compromise, and performance is somewhat open to question. We looked at a beta version of the Diamond *STEALTH 3D 2000*, which comes with 2 MB of DRAM. *DESCENT 2* looked very nice, especially the wall textures, but the frame rate on a Pentium 133 slowed down a bit when there was a lot of action. Of course, this was a beta card, so we'll reserve judgment until we can see the shipping product.

Other companies using the *VIRGE* include Hercules, with their *TERMINATOR 64 3D*, Number Nine's *MOTION 332FX* and STB's *POWERGRAPH 64 3D*. The Hercules card will have single-cycle EDO RAM, giving it just a bit more juice in the memory department. All of these cards should hit close to \$200 for a 2 MB version.



Hercules' Terminator 64 3D

S3 will also be doing a VRAM version of the part called the VIRGE FX. One caution about the VIRGE: early versions of the VIRGE support *only* 2 MB of DRAM, so if you have the urge to add more memory later, check the product carefully. By the time you read this, though, cards supporting up to 4 MB should be available.

ATI 3D RAGE

Like S3, ATI took an existing design, the MACH 64 used in its GRAPHICS XPRESSION and GRAPHICS PRO TURBO products, and grafted 3D capability onto it. We had the chance to play on a beta version of the 3D Xpression card, a 2 MB DRAM card. ATI supplied us with an enhanced version of MECHWARRIOR 2. Although the resolution was slightly lower (512x384 instead of 640x480), it looked *very* nice. Sky and ground textures had been added, and the polygon count of all the objects had been significantly increased. Better quality textures were also laid on all the objects, making this version of MECHWARRIOR 2 look as good as anything else out there. The sky textures were even animated, giving the impression of clouds scudding across the sky. All these new textures came at a cost, of course: the default installation went from 48 MB to 72 MB.

As for performance, we did notice some mild frame rate hits in the heat of battle, but nothing severe. The same couldn't be said for the version of ASSAULT RIGS they supplied us—at the highest resolution, the frame rate on ASSAULT RIGS became pretty pokey. Windows performance was excellent, but VGA performance was only average. The XPRESSION 3D will be priced at around the \$200 mark.

MATROX MYSTIQUE

Matrox has actually been in the 3D game for some time now. Their latest 3D card, the MILLENNIUM, has also gained the reputation of being a very fast VGA and Windows card. However, the 3D feature set really wasn't tuned for games, and the MILLENNIUM received almost no support from game developers.

Matrox has taken a different approach with the MYSTIQUE, with more emphasis placed on 3D performance. Though based on the same basic engine as the MILLENNIUM, Mystique uses a different memory controller and PCI interface chip. Matrox has added support for perspective-corrected texture mapping, Z-buffering, and MIP mapping. However, the MYSTIQUE doesn't support bilinear filtering or blending—fog or smoke effects are handled through four levels of screen door transparency (if you've seen the smoke effects in CHUCK YEAGER'S AIR COMBAT, you know what screen door transparency is). Matrox's philosophy is that nothing should compromise frame rate, so they chose to forego features that could bog down frame rate.

Because its raw Windows and VGA performance should be pretty high, this card bears a close look, but the feature set means that the image quality might not match those of the other solutions. Still, if the 3D performance is comparable to its SVGA and Windows abilities, this could be an interesting card. Current estimated street price is about \$229.



Creative Labs' PCI 3D Blaster

CIRRUS LOGIC/3DO

Recently, Cirrus Logic has announced it will incorporate 3DO's M2 3D technology into its line of graphics accelerators. While Cirrus Logic's graphics chips have been at the low end of the 2D spectrum, the addition of 3DO's M2 technology could result in stellar 3D performance. However, not much else is known at this time.

MULTIMEDIA ACCELERATORS

Several companies have taken the approach that 3D is just another facet of multimedia technology. They've taken 3D and 2D graphics, digital sound, joystick inputs and MIDI music capability and integrated them into a single chip or a couple of chips.

CHROMATIC RESEARCH MPACT

Another startup company, Chromatic Research, is working on a chip that will do everything just short of the dishes. MPACT will handle

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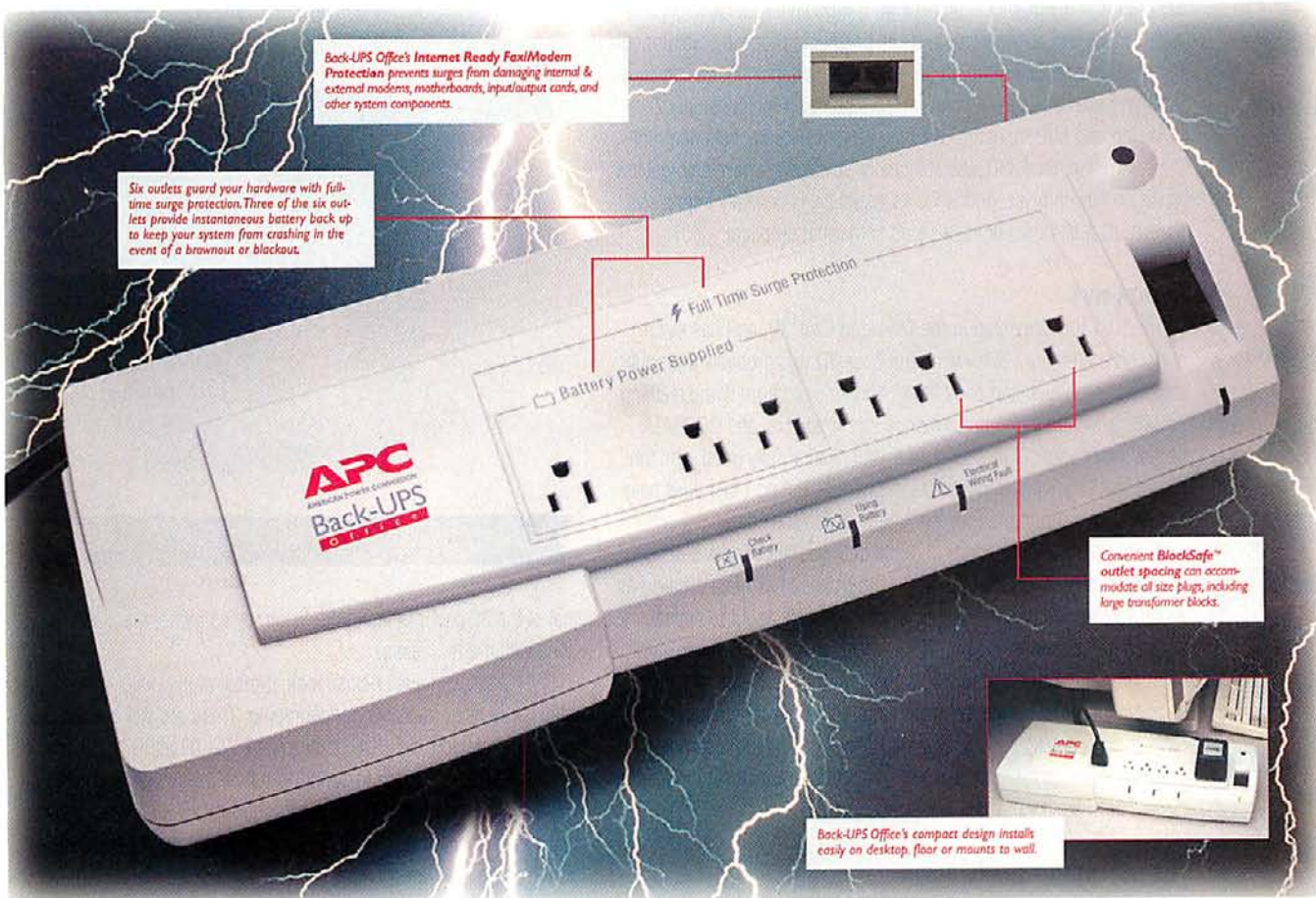
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Figure 1: Multiple Outlets Leave PC Vulnerable to Voltage Differential

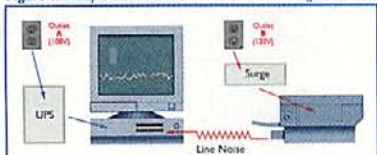


Figure 2: Computer Protected With Common Ground

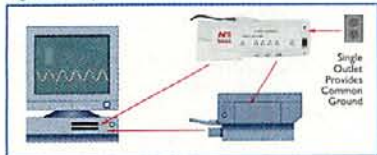


Figure 1, the voltage differential between multiple outlets create line noise and data glitches. In Figure 2, Back-UPS Office's common ground design eliminates the risk of a voltage differential.

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2D graphics, 3D graphics, digital video, wavetable synthesis, general wave audio, and fax/modem, and will be able to process several media types simultaneously. Though an ambitious undertaking, design compromises are inevitable. Its current 3D feature set includes only Z-buffering and MIP mapping. We only saw a very early beta demo of the chip where Direct3D was still shaky, so we don't have any real low-down on this chip yet. And while its versatility is certainly impressive, its thin 3D feature set does leave us somewhat skeptical.

NVIDIA NV1

The NV1 first appeared in the Diamond EDGE 3D, and has since surfaced on the Jazz 3D MAGIC. The EDGE 3D was probably a product that was "slightly ahead of its time," and suffered from some teething problems. Windows 2D performance was mediocre, and DOS VGA performance was pitiful. VIRTUA FIGHTER looked awfully good, and the use of the Sega control pads was pretty neat, but no other titles have appeared other than the four that shipped with the Edge.

According to nVidia, that's about to change. The Windows drivers have been beefed up, and the VGA performance has been tweaked as well. More importantly, a number of new titles are about to appear, including a hot rod version of MECHWARRIOR 2. The MIDI music samples have been greatly improved as well. Also, nVidia has taken the criticisms to heart, and is busy working on their next-generation NV3 chip, though details are still sketchy. We weren't able to test most of these claims at press time, but we'll definitely take a closer look at the newer NV1-based cards as they arrive.

THE IMPENDING SHAKE-DOWN

With any new technology, there will be winners and losers in the marketplace. In the short term, some of the pain will be alleviated by the use of standard 3D APIs (see sidebar), but nonetheless, it's likely



Diamond's Edge 3D

that of the 30-plus players in the 3D graphics game, many will be gone within a few years.

CGW has taken a very close look at most of the major players, and what we've seen looks very encouraging. There are still questions to be answered: How will DOS games play? Will Direct3D take hold, or will developers be forced to support multiple pieces of hardware, and will hardware vendors in turn have to bundle custom-coded games to make their boards palatable? Will even 3D performance meet expectations? In the next few months, you can be sure we'll be going over real shipping product with our virtual fine-tooth combs and let you know if it's really worth it. We can say, however, that the die is cast, the game's afoot and soon we'll be wallowing in 3D hardware. We can't wait. ☹

3D Graphics Card Features

Product	Creative PCI 3D Blaster	Diamond Stealth 3D 2000	Hercules Terminator 64 3D	ATI 3D Xpression	Matrox Mystique	Diamond Edge	Orchid Righteous 3D
Chipset	Rendition Verte ¹	S3 Virge	S3 Virge	ATI 3D Rage	MGA	NV1	3Dfx
MIP Mapping	Yes	Yes	Yes	Yes	Yes ²	Yes	Yes
Bilinear Filtering	Yes	Yes	Yes	Yes	No	Yes	Yes
Trilinear Filtering	Yes	Yes	Yes	Yes	No	No	No
Alpha Blend	Yes	Yes	Yes	Yes	No	Yes	Yes
Fog	Yes	Yes	Yes	Yes	Yes ³	Yes	Yes
Sub-Pixel Accuracy	Yes	No	No	Yes	No	No	Yes
H/W Lighting ¹	Yes	No	No	Yes	Yes	No	No
Gouraud Shading	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Hardware Z-buffer	Yes	Yes	Yes	Yes (optional)	Yes (optional)	No	Yes
Other	Geometry setup, H/W antialiasing, chromakey, & support for stereoscopic displays		Single-cycle EDO DRAM	SDRAM	Bus mastering for command lists and texture loading	Digital audio, MIDI, Sega Controllers, Slow DOS VGA	Separate texture memory, HW antialiasing

¹ Hardware Lighting: Uses flat textures to depict lighting effects, as opposed to a light source, which more accurately simulates light coming from a specific point in the scene.

² Tile based

³ Screen door transparency



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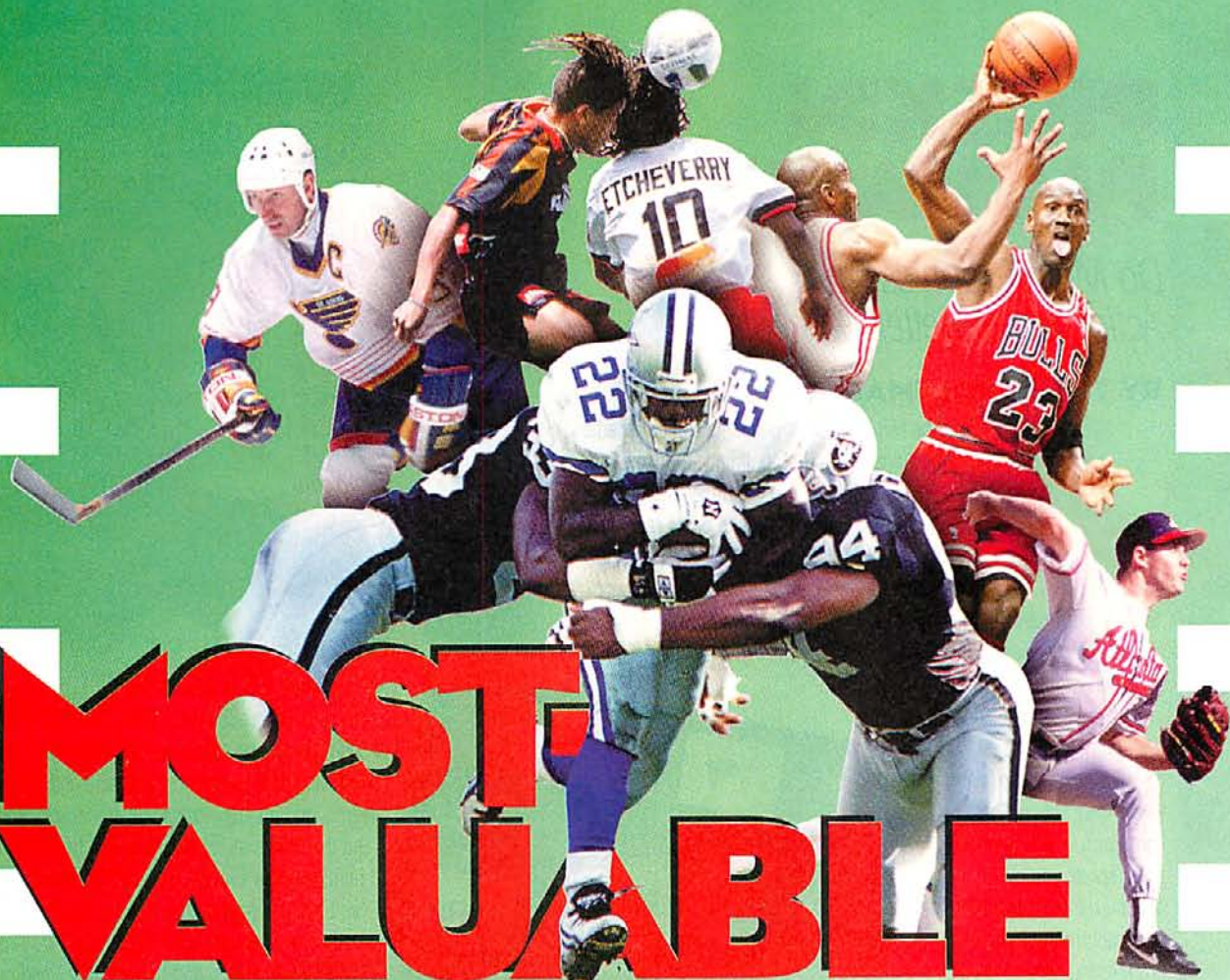
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MOST VALUABLE PLAYERS

CGW Surveys The Field Of Computer Football, Baseball, Hockey, Hoops And More

When the Olympic torch fires up this summer in Atlanta, it will mark the 100th anniversary of this modern international athletic competition—a landmark event. And in the U.S., it couldn't come a moment too soon, as professional sports once again finds itself knee-deep in what Pat Riley calls "the problem of me"—players so self-absorbed that they're killing their teams and turning off their fans. Sure, it hasn't been all bad, but for every moment of triumph—Dwight Gooden's stunning no-hitter,

the Bulls' awesome domination—there's been an equal act of stupidity. Players have been shoving reporters, head-butting refs, and even abandoning their teams to go water skiing, for crying out loud.

But, hey, don't get us started. In the world of computer sports games, thank goodness, it's been another banner year, as games across the board continue to get better and better. Smarter AIs, gorgeous motion-captured 3D graphics and more sophisticated playbooks and strategy are all helping to put computer sports fans deeper into the action than ever before. So lace up your sneakers and follow us onto the field as we survey the hits (and misses) in this year's sports games, and take a sneak peak at the most promising players in the season ahead.

PIGSKIN PACKAGING

Do More Graphics And Action Equal Better Gameplay?

BY TERRY COLEMAN

As the NFL goes further into its eighth decade, questions abound. Can Jimmy Johnson, now with the Dolphins, win the Super Bowl that eluded Don Shula at the end of his record-setting career? Will George Seifert ever get the respect he deserves as coach of the 49ers? Are Emmitt Smith's hamstrings really healed? Is Dave Brown worth the millions he receives as the Giants unknown QB? What fountain of youth does Jerry Rice drink from?

As this season is simulated on the silicon gridiron, similar questions are raised. Will FRONT PAGE SPORTS FOOTBALL PRO return to win another CGW sports title? Will action-oriented game engines ever capture the feel of the pro passing game? Are computer coaches soon to be on the unemployment line? And what about zone blitzes?

STATISTICAL DINOSAURS

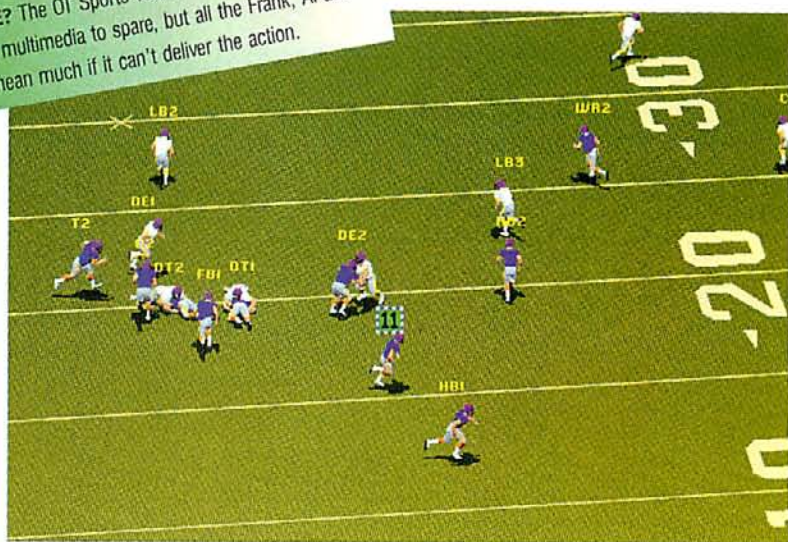
A big concern for any real football fan is how the stats are generated. Problem is, the stat-based sims are fading fast in football, unlike their baseball brethren. The only pure stat sim I still recommend is 3-IN-1 FOOTBALL. (Lance Haffner, 800-477-7032, or 615-366-8088). You can autoplay entire seasons in a couple of hours, and "live" games against the computer or hotseat vs. another human coach take maybe 30 minutes. Forget graphics, this game concentrates on a strong computer opponent and realism—the stats generated are the most accurate of any football game on the market. Every great college and pro team from the dim mists of time is included, along with the particular rules quirks for each era; Lance also sells season disks from the 1950s onward, for those who don't feel teams such as the Dallas Texans were obscure enough. If you're more interested in re-creating the Dolphins' perfect season than in timing your passes

with a joystick, this is your game.

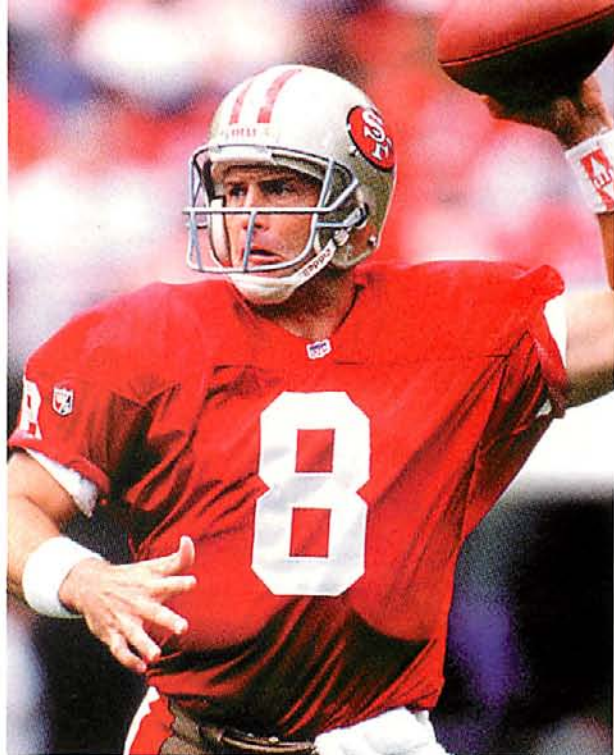
with a joystick, this is your game.

NFL PRO LEAGUE FOOTBALL (IBM, 800-426-2255) is an odd mix of stat-based realism with animation and graphics. There are plenty of classic and current teams, and enough stats to fill an encyclopedia. But the AI has strange lapses, and the entire experience seems kind of sterile. For instance, when you throw a post pattern to your flanker, he's the only one who can catch it; there are no secondary receivers, and no audibles. PRO LEAGUE does have modem play going for it, but the stats and realism generated aren't significantly ahead of the Haffner product to justify the hassles and the extra expense.

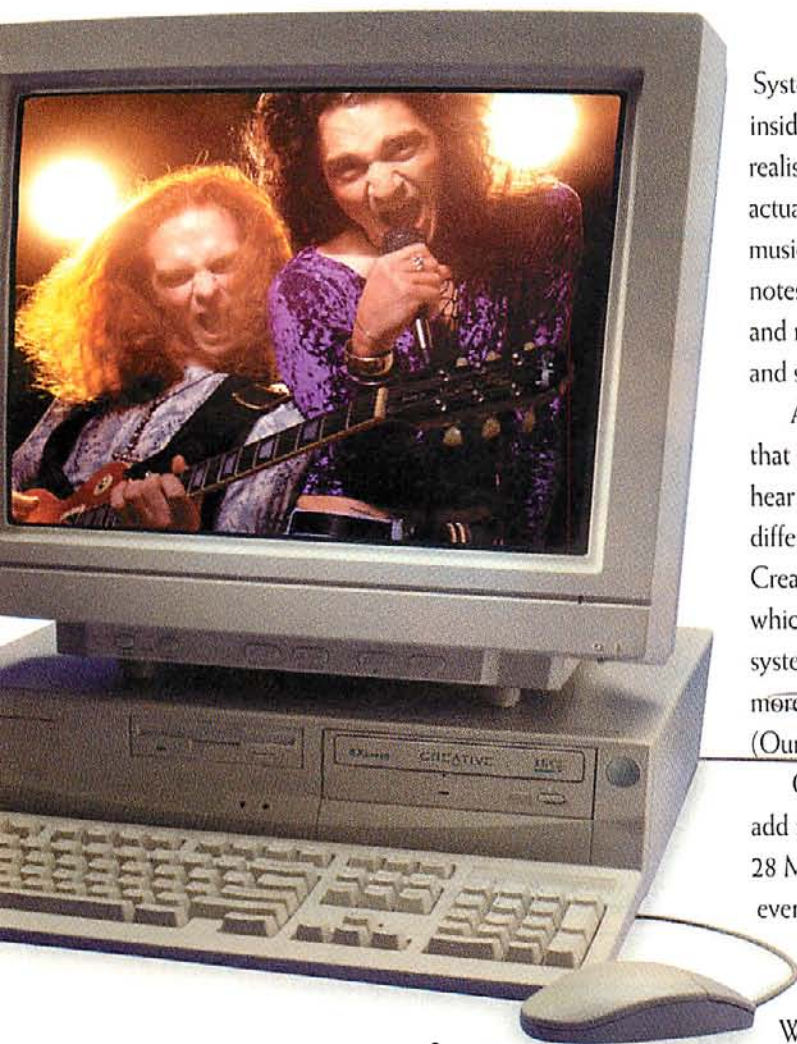
HIP OR HYPE? The OT Sports version of ABC MONDAY NIGHT FOOTBALL has multimedia to spare, but all the Frank, AI and Dan won't mean much if it can't deliver the action.



LONELY & BITMAPPED Tired of beating the AI? When FRONT PAGE SPORTS FOOTBALL PRO 97 bursts from training camp this fall, human coaches will finally be able to test their mettle on the playing fields of cyberspace.



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'NFL Legends' Brings Gridiron Ghosts Back To Life


**SNEAK
PREVIEW**
GAME STILL IN DEVELOPMENT

The music swings, the sax solo burning in time to Jim Thorpe, as he cuts left, then bursts into the open, chased by Bronko Nagurski. Leather helmets clash against pads barely large enough to contain the massive sinews, as the two men tumble out of bounds. On the next play, it's Thorpe again—no, it's a fake—Knut Rockne rolls right and throws deep to "Crazy Legs" Hirsch. Touchdown!

A highlight reel from days gone by? No, it's the freshest idea in years: take an action-oriented football game; add solid statistics; place 60 years of great players at your fingertips. Accolade's ambitious NFL LEGENDS uses lessons learned from the UNNECESSARY ROUGHNESS series, but as designer Kevin Hogan is quick to point out, "not a line of code has passed from that game to NFL LEGENDS."

NO SINGLE WING

You take snaps from center in four eras—1932, 1950, 1968 and 1996—and you can even match teams from different eras. Sammy Baugh's QB rating might soar, with the modern rules favoring passing. And who, other than Deion Sanders, would Jerry Jones keep on a 1930s roster if the Cowboys were limited to only 20 players? Could the vaunted "Four Horsemen" match their legendary rushing exploits against 300-pound defensive linemen and 90s-style Zone Blitzes? NFL LEGENDS revels in the celebration of larger-than-life players and great teams. It allows you to play "what-if" with more than cold statistics from dusty record books.

And it *feels* like football, not a watered-down arcade imitation.

There's plenty of action in both the running and passing games; the blocking routines take into account angles, player Intelligence and Agility. Completing passes seems easier than in FRONT PAGE 96, and yet more realistic than in JOHN MADDEN—no more of those 48-yard bombs every third play found in UR.

Some 24 audibles are available, along with the ability to create plays and optimize your playbook. Other nice touches include the differences between real grass and AstroTurf; deterioration of the field; ability to accelerate; traction in bad weather; and of course, injuries, which can carry and affect a player's performance during a season. The digitized music changes from swing in 1932 to early rock n' roll in the 50s, and on to more modern sounds. The playing fields and stadiums are faithfully recreated in each era, as are the rules. In 1932, for example, you have no hashmarks; if you run out of bounds, the next snap is on the sideline—which makes for some creative play-calling.

Multiple seasons are included for career leagues, and you can trade not only players, but draft choices as well—a big improvement over FPS Football. If your reflexes aren't up to fast action, you can just coach to your heart's content. Now excuse me while I go don my leather helmet—my Chicago Cardinals have a score to settle with those cocky 49ers, and this time we're playing in *my* era.



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COACHING CHANGES

ULTIMATE FOOTBALL '95 made some positive changes, but it wasn't enough to please the management and fans, so it's out the door. MicroProse has signed with ABC to form OT Sports, and their first release, ABC MONDAY NIGHT FOOTBALL, looks to have the superstar appeal that UF lacked. Dan Dierdorf, Frank Gifford and Al Michaels add pizzazz, and the multimedia and production values are close to those of the TV show. Whether the flash and the excellent graphics will capture the computer Neilsen ratings are dependent on whether this blend of action and strategy moves beyond the old UF engine. We'll keep you posted.

In even bigger news, JOHN MADDEN FOOTBALL 97 (EA Sports, 415-571-7171) won't be out until this fall—the first time in recent memory that it's skipped a season. MADDEN has lived off past glories for long enough now that its position as the action football king is no longer a certainty. Recent versions have focused too much on interface and graphics; the gameplay, once the industry standard, has suffered as a result. The draft module, for example, doesn't work as well as that of FRONT PAGE 96. The passing routine is overly simplistic, just as FRONT PAGE 96's is too hard. MADDEN doesn't commit the egregious arcade sins of *HARDBALL 5*, but it is way too slanted in favor of offense (even for the pass-happy NFL). It's more than a little irritating when an average receiver can catch pass after pass even when double-teamed by an All-Pro corner and free safety. The defense, once criticized because the Mad Dog Blitz was too effective, now makes The Steel Curtain look like moth-eaten fabric. So, I have a lot of respect for EA Sports' decision to wait until the engine is revamped, instead of



HEY, I SKIPPED A SEASON Action fans may feel disappointed, but the improvements to JOHN MADDEN 97 will likely be worth the wait.

releasing "MADDEN 95 _." If MADDEN 97 is given the royal treatment that NBA LIVE received, football fans will have a lot to cheer about.

And what of FRONT PAGE FOOTBALL? The original engine is giving way to a younger batch of code. The new draft choices promise tweaks to the already strong AI, an easier passing mode (finally!), and—hold on to your facemask—multiplayer play. Plus, the annoying number of 99-yard "runs to daylight" should fall by the wayside. But as usual with the FPS crew, the game won't realistically be finished and on the shelf until near Thanksgiving. So, suffer through

with FOOTBALL PRO 96's excellent graphics and career mode—still the best football sim in the land—and be sure to whine at Sierra (800-757-7707) for a reasonable upgrade price.

NETWORK BOMBS

In the meantime, don't hold your breath for on-line action elsewhere, either. The new NFL LEGENDS (see the Sneak Preview on previous page) allows hotseat, but no modem or net play. And the version of FPS FOOTBALL PRO on INN (415-548-2500) is OK, but you rarely find an opponent from February through August—and it's an old version of the game engine, at that. The FOOTBALL PRO leagues on CompuServe offer more opponents, but you aren't really playing "live" but against your opponent's pre-chosen game plan.

Still, the emphasis by the "Division I" programs to hold releases until the gameplay comes close to the technology bodes well for football fans—whether their game plan calls for action, simulation, stats, strategy, or hopefully, all of the above.



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ATOP THE MOUND

Baseball Slides Head-First Into Your PC

BY DENNIS McCAULEY

If there's one major sport that's perfectly suited to computer simulation, it has to be baseball. With its historical emphasis on statistics, the national pastime provides perfect grist for the number crunching that personal computers do so well. The tight geometry of the game, its timeless sense of pace, and its rich history have combined to keep sports game developers busily coding balls and strikes.

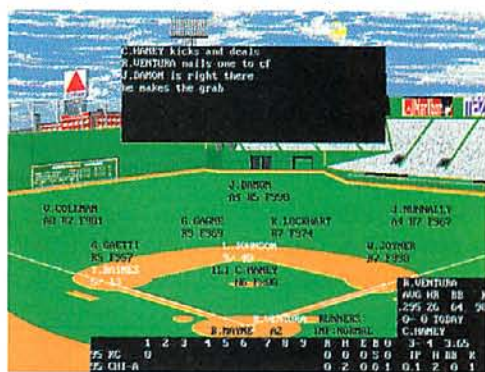
What's amazing is the effect that baseball fans' passion for statistics has had on the evolution—or seeming lack thereof—of baseball products. As we near the end of the second decade of the home computer revolution, a surprising number of offerings exist primarily for their statistical appeal. Oh, a few have added a stadium backdrop here, or an announcer voice-over there, but it's the underlying stat engine that really drives many baseball games. In an age when most games become yesterday's news as soon as the next technological wave hits, fully half of today's baseball games are static products driven by statistical simulation. The other half comprise splashy, graphics-heavy baseball products. These feature large, full-motion player sprites, arcade action, music and loads of atmosphere—right down to the boo-birds in the bleachers.

STAT ATTACK

One of the old pros in stat-based sims, Lance Haffner's *FULL COUNT BASEBALL*, now extends its career with version 6.0—and it's



a very serviceable product if you don't mind investing the time involved in manually entering lineups, pitching rotations, and the like. On the bright side, once you've taken the trouble, the game can store up to ten preset lineups per team. Designers Haffner and Shannon Lynn could



have made seasonal replays much easier, however, by coding stock lineups in during production.

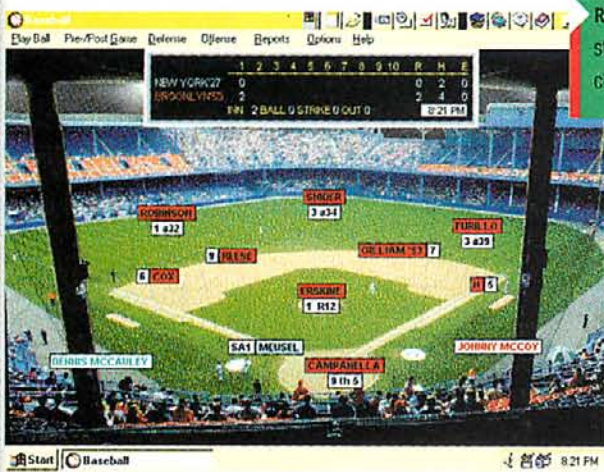
The true appeal of *FULL COUNT* is the huge number of teams included: every big league club from the most recent season, plus every World Series and playoff team since 1900.

Ambitious fans can

ROAD TRIP With its low system demands and realistic stat-based play, *FULL COUNT BASEBALL* is an attractive choice for laptops.

set up a massive tourney to find the best team ever, or just replay their favorite fall classics, using the likes of the powerhouse '27 Yankees, the Gas House Gang or the Amazing Mets.

The text-based action is played out over VGA backdrops of major league stadiums. *FULL COUNT* has lefty-righty breakdowns for post-1984 teams, generates team schedules and auto-tracks rest days for pitchers. The game's chrome includes weather, injuries and realistic pitcher usage options for every era of professional baseball. *FULL COUNT* also offers a player creation utility which gamers can use to make teams, provided they don't mind keying in 37 rating categories per player. There are some quirks, as when the trade routine queries the player whether the team involved has compiled stats—something the software could easily keep track of. Still, *FULL COUNT BASEBALL 6.0* provides good value, since gamers who relish its brand of stat-based strategy are less likely to be dependent on interface niceties.



CURVE BALL You'll have to decide for yourself whether *BASEBALL FOR WINDOWS* is worth the steep learning curve, but *BILL JAMES ENCYCLOPEDIA ON CD* is a must.



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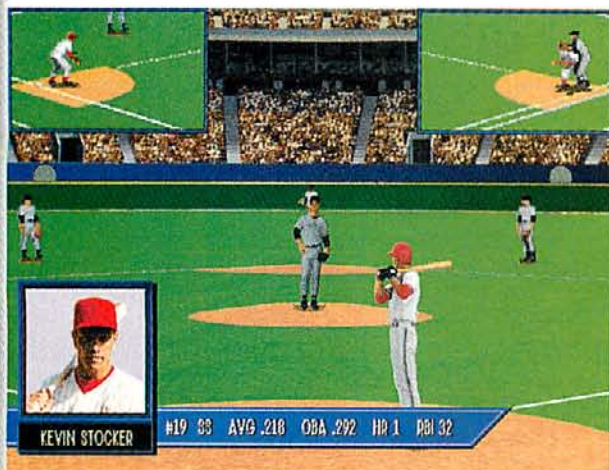
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Circle Reader Service #97



NEW STORMFRONT COMING IN TONY LARUSSA 3 FOR 1996 gets the "weirdest title" award, but it's also the front-runner in the graphical baseball sim race.

MILLER DOES WINDOWS

The latest version of Miller Associates' *BASEBALL FOR WINDOWS* incorporates an improved league manager module and new micro managers, including two that correctly handle pre-closer era pitching staffs. The game comes with several oldtimer teams, three complete past seasons (1921, 1943 and 1971) and three ballparks.

Of all the stat-based sims, *BASEBALL FOR WINDOWS* has most pushed the envelope toward multimedia. While play is still static and text-based, it takes place atop beautifully rendered ballpark graphics. Former Detroit Tigers announcer Ernie Harwell does an enjoyable play-by-play, and for an additional 45 minutes on the CD-ROM offers viewpoints and yarns from his many years behind the mike. The charming stadium sounds in *BASEBALL FOR WINDOWS* beat those heard in any other baseball sim.

The knock on Miller's game is that it's not very intuitive, and probably has the steepest learning curve of any product on the market. I've never understood why Miller Associates didn't combine the modules, instead of forcing gamers to know when to click separate League Manager, Advanced Draft or Baseball for Windows icons. Consolidating the modules would make the game much less confusing for novices, with no loss in functionality.

Another Miller Associates product, the *BILL JAMES ELECTRONIC BASEBALL ENCYCLOPEDIA*, is a must-have product for fans of the national pastime, and its stats may be imported into *BASEBALL FOR WINDOWS*. Bill James on CD-ROM is the final word in statistical analysis, allowing users to look up stats on any professional ballplayer that ever played, compare them, graph them and print them. In short, the *BILL JAMES ENCYCLOPEDIA* slices and dices stats any way you want 'em.

WORKIN' IN A DIAMOND MIND

DIAMOND MIND BASEBALL is the essence of the stat-based game: all statistics, no pizzazz. It can shake and bake the numbers as well as or better than any game on the market, but it makes no attempt whatsoever at graphics. If the idea of a game that's all blue screen puts you off, then skip ahead. If, however, you're willing to give a glance to a little game with a big-time statistical engine, then *DIAMOND MIND* may appeal to you.

No rookie, *DIAMOND MIND* was formerly known as *PURSUING THE PENNANT*, under a licensing agreement between its designer and the board game company of the same name. Now out on their own, the *DIAMOND MIND* folks offer a sim that has much to recommend it, especially for seasonal replays. It's one of the fastest autoplay games available, zipping through the entire National League 1995 schedule in an astonishing five minutes on a Pentium 133. By comparison, the pre-release version of *FPS BASEBALL PRO* took hours to sim a smaller league.

Not only is *DIAMOND MIND* nimble, but it's deep, too, with hundreds of statistical categories available. The interface, however, is about as exciting as watching grass grow, and some may find working through the game's layered approach to locating information rather tedious.

TONY LARUSSA 3: 1996 EDITION

For the new season, Stormfront Studios has released an update to their popular *TONY LARUSSA BASEBALL 3*. One notable improvement is the inclusion of head-to-head statistics for each batter and pitcher. Does your light-hitting shortstop own Greg Maddux? Better give him a start when the Braves are in town. Be forewarned, though, that using the head-to-head option in computer-simulated games can slow play down noticeably. Stormfront has also factored in situational batting performance, impacting how hitters will do with runners in scoring position, or pinch-hitting, for example.

TONY3: 96's auto-play deserves mention, as it's quick, if not especially accurate. CGW simulated an entire American League season in under 10 minutes. Stats were skewed to the high side offensively, though, with sixteen players cracking 30 or more homers. One outfielder had 89 errors and only three putouts, although this was an isolated case, and looks as though it may be an internal rating error. Oddly enough, only five saves were recorded in the entire league. Finally, the beta version we looked at had RBIs listed as a percentage, rather than the traditional raw number. Hopefully these glitches will be addressed in the final release.

Overall, though, *TONY 3: 1996* qualifies as a fun graphics-oriented sim that's easy to navigate, thanks to its intuitive, button-driven interface. Learning the mechanics of hitting and pitching can be tricky, and user-controlled fielding is best left to experienced *TONY* players.

The game includes a Fantasy Draft feature, as well as what Stormfront calls the GM Challenge, which is somewhat akin to career leagues like those found in the *FRONT PAGE SPORTS* series. *TONY 3: 1996* also includes three announcers—Mel Allen, Lon Simmons and Hank Greenwald—who are all enjoyable and provide consistent voice-overs throughout the game. If you prefer, you can toggle the announcers off and get on with the action.

OUTTA HERE!

With such a wide variety of computer baseball games available, the biggest problem facing most players will be deciding which one to get. Narrow it down by setting your priorities first. Is it graphics and action that sends you back for more, or are stats what makes your knuckle ball flutter? Either way, if you're ready to play ball, there's a game out there for you, coach.

Next month, Dennis McCauley's sports column focuses on MICROLEAGUE BASEBALL 6.0.

BASE INSTINCTS

Sierra's Baseball Franchise Heads For Another Winning Season

BY DENNIS MCCAULEY

Sierra's Front Page Sports line has established itself as one of the most successful ongoing sports series in the annals of computer gaming. While most of the competition plays catch-up, Sierra's sims tend to dominate their respective markets year after year. *CGW* recently got a sneak peek at the much-awaited **FRONT PAGE SPORTS BASEBALL PRO 96**, scheduled for midsummer release, and while the near-beta version we saw was unfinished in some areas and awaited fine-tuning in others, there was enough beef to indicate that, for baseball fans, 1996 could be a very good year.

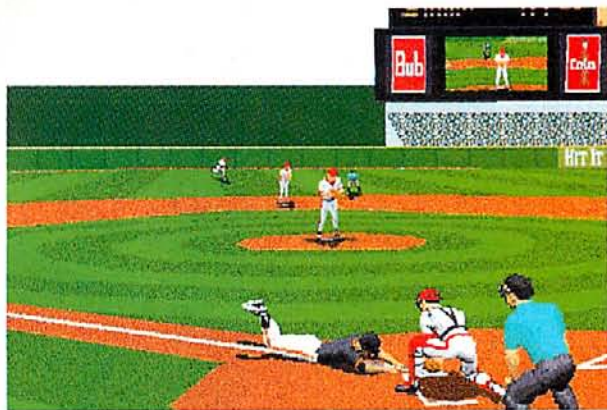
While the previous incarnation of *FPS Baseball*, released in 1994, was strictly an MS-DOS version, the latest vintage is a native Windows 95 product, and that itself is big news. The game's lineage is apparent, however, and anyone familiar with past *Front Page* releases—either baseball or football—should be able to jump in and navigate through the program easily.

SIMLASORDA

FPS BASEBALL PRO 96 offers plenty of gameplay options for would-be managers. An arcade mode allows gamers to control the pitching, hitting, and fielding of their players, while a managerial mode lets the computer handle the mechanics, so you can concentrate on the high-



TOO MUCH REALISM? The sparse crowd in attendance at this game must have been modeled after the '94 strike season. Peanuts, anyone?



HOMER SIM, SON Sierra's improved graphics in *FPS BASEBALL PRO* give an edge to the action when sliding for home.

er-level decisions, such as when to make the double-switch, and whether to have potato chips or pretzels during the 7th inning stretch. Gamers who want to capture the leisurely pace that is the essence of baseball can opt to play pitch by pitch, while hard-charging Type-A personalities can toggle single-pitch mode and be done with it.

With a little effort, players can input historical clubs into the game, or import their teams from the '94 version. Of course, *BASEBALL PRO 96* retains the career mode that has become a signature of the *Front Page* series. Gamers can draft, trade and allocate spring training time in an effort to mold their teams. This aspect of the game holds great potential, since astute managers should be able to build their rosters to suit the dimensions and characteristics of their stadium, be it Wrigley Field or the Astrodome. Whether the '96 version fulfills its career mode promise remains to be seen, however. Past editions have been criticized for their failure to reflect in a meaningful way the skill changes that occur over the course of a ballplayer's career.

BLEACHER FEATURES

Speaking of ballparks, *BASEBALL PRO 96* incorporates 3D models of every current major-league park. The stadium graphics are quite realistic and easily the best to date of any baseball sim. In general the game is much more graphically appealing than the previous edition. For this year's model, Sierra's graphics crew employed the same high-res motion-capture-based animation that made *FPS PRO FOOTBALL 96* so dazzling. While this technology provides very fluid player movement, it does leave some very obvious jagged edges in close-up shots. Perhaps the oddest graphical occurrence in *BASEBALL PRO 96*, though, is the ball itself, which occasionally takes on the dimensions of an overripe cantaloupe. Fruit salad, anyone?

Sierra's well-done CAMS (camera angle management system) is back, offering near-unlimited viewing angles as well as a chance for gamers to save and edit tapes of their big plays. Sierra is also touting improved AI and a fast sim mode that they contend is an improvement over the '94 model. Frankly, the sims that I ran on a high-end Pentium were frustratingly slow—it took nine hours to go through half a season—and the statistical accuracy was nothing to write home about. Hopefully these issues will be addressed by time the final release takes the field.





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HOOP DREAMS

*Computer Basketball—
No Longer A 3-Point Shot*

BY TERRY COLEMAN

John Wooden was not merely the best basketball coach ever, he was perhaps the best coach in any sport: amateur or professional. He was also a three-time All-American as a player. What most people don't know about the "Wizard of Westwood" was that despite his success at basketball, Wooden's favorite sport was actually baseball. He loved the grace, the timelessness, the unhurried nature of the most strategic of American team sports. Wooden did admit, however, that basketball was probably the best sport for the average fan, as it featured the fewest players on the field with the largest ball. Basketball was the easiest to follow—and there was a lot of scoring, which helped sell tickets.

What John Wooden might think of computer basketball simulations is open to speculation. But I imagine that he might allow himself a wry smile at the grace and care with which *NBA LIVE 96* is crafted; he'd probably frown and roll that famous program tightly in displeasure over *COLLEGE SLAM*; and he'd likely shake his head that stat-based sims are still around in the action-heavy hoops world of the '90s.



TAKIN' IT INSIDE *NBA LIVE 96* actually puts the superior power of the PC to work with better AI and graphics. The surprise is that the PC controls are better than the console versions.

SLAM DUNK

The original *NBA LIVE* is one of the best sports games of all time, as significant to basketball as *FRONT PAGE SPORTS FOOTBALL* was to the gridiron. It was the first action game that played like real basketball, instead of some alien arcade hybrid. It would have been easy for EA Sports to take the awards and get fat, as many modern athletes tend to do. Instead, *NBA LIVE 96* builds on the success of the original and corrects many flaws, both in terms of action and simulation.

Whereas in the original too much emphasis was placed on when you clicked the button, now the players' actual abilities seem to make a bit of a difference. Make no mistake—this is still an action-heavy game; but when you select Simulation mode, Ewing becomes the interior force for the Knicks that he should be. Similarly, Dennis Rodman's carrot-top hairdo flashes as he pulls down realistic numbers of rebounds. Penny Hardaway skies for elegant jumpers, and John Stockton defies Father Time with assist after record-setting assist. The big surprise is that the stats are in the ballpark. *NBA LIVE 96* isn't as realistic as a pure stat sim, but it far outshines any other action-oriented hoops game—including the original *NBA LIVE*.

Trading is more robust, but it lacks the appeal of *FRONT PAGE FOOTBALL Pro's* career leagues. You can create custom players as well, but it would be really nice to see EA furnish hoops fans with some all-time great teams—maybe in *NBA LIVE 97*? Also, the injury ratings are far too forgiving—if these were right, Shaq wouldn't have missed more than 2-3 games, instead of the third of the season he fanned on in real life.

These quibbles are minor, however, when you consider the vastly improved AI and the increased play-calling options. About the only limitations on the design—you can even call plays on the fly now—are the authentic NBA rules, which prohibit "illegal defenses" such as zones. If EA ever gets around to a college version, this engine would be perfect to showcase Kentucky's full-court press, Temple's infamous matchup zone or Dale Brown's bizarre defenses at LSU. Until that time, I'll keep running the pick-n'-roll with Karl Malone—and continue converting ratings for Wilt Chamberlain.

COLLEGE PASSES

Another action approach, *COLLEGE SLAM*, doesn't make the transition from cartridge to the PC pros quite so well as *NBA LIVE 96*. More Pac-Man than basketball, the best defense is to set the basket on fire so that





your opponent can't score. If you find this sort of thing funny, you'll probably gobble up the power pills and slam away, hardly worrying that the ball never goes out of bounds. Aside from the rampant silliness, I can't stomach a college hoops game—even as a bad joke—that leaves powerhouses like two-time NCAA champ Louisville out of the lineup. Then again, you can always have a Mario clone as your point guard...

A more serious approach comes from GTE Entertainment, whose NCAA CHAMPIONSHIP BASKETBALL attempts to be the FRONT PAGE SPORTS simulation of the College hoops arena. Like FRONT PAGE FB, it offers a career mode, where you recruit top prep stars into your program and develop them over four years. Some of the ratings are odd: why would a shooting guard be rated twice as high for three-pointers as for shorter-range baskets? Still, there are some nice touches, such as great leapers not necessarily being the best rebounders—at least until they learn to box out.



DRIVING THE LANE NCAA CHAMPIONSHIP BASKETBALL brings career leagues, better AI and more innovation than the computer college hoops scene has seen for many seasons.

Most major colleges are included, along with some pretty obscure ones, all organized into regions. At the end of the regular season, the NCAA tourney takes off; and you have

the option to simulate the results via computer, or to play each of the 63 games "live." Passing is fairly intuitive, and the system even works well with a joystick or keyboard. It's possible that there may even be modern play, which would give this a big edge over the competition.

At this early stage, the AI is still in development, but the game does have a true basketball feel. You can work the ball inside, or drop back in a zone, and passing is crisp. Regardless, this game isn't trying to compete against NBA LIVE as much as offer a bridge between the action and stat-based basketball sims, with a fun recruitment and player development mode.

"I NEVER FOULED OUT."—WILT CHAMBERLAIN

How do the stat-based sim guys stay in business? They continue to support their products year after year. Lance Haffner Games has one of the most playable systems on the market in FULL COURT BASKETBALL and



SCORCHED SCHOLARSHIP COLLEGE SLAM, with its burning hoops and power pills, bends the rim in all the wrong directions.

True Fantasy Basketball

I used Haffner's THE PRO GAME to pit 16 of the greatest teams of all time in a season-long competition to determine which team was truly "the best." So that older teams could be competitive, I selected the option that played in the visiting team's style. On one occasion playing with older rules, George Mikan of '54 Minneapolis outscored Shaquille O'Neal 35-24, as the modern player was baffled by Mikan's old-fashioned, but effective hook shot.

The competition was so tough that no team came close to eclipsing Chicago's record of 72 wins. The NY Knicks of 1970 had the stingiest defense, while Larry Bird's '86 Celtics led the league in scoring. The biggest disappointment was the LA Lakers, who finished below .500, despite Kareem and Magic Johnson's excellent play. The biggest surprise was the '59 Celtics, where Bob Cousy stole the assist crown from John Stockton. The Celtics fell, however, to Jordan and the '93 Bulls, who faced the '72 Lakers in the final. Both teams were similar: aging superstars (Pippen and Jordan vs. Chamberlain and Jerry West); role-players (Dennis Rodman, Tony Kukoc); tough defense and accurate shooting.

The series hinged on whether Jordan could get Wilt in foul trouble; otherwise, "The Stilt" did anything he wanted to the out-matched Bulls centers. Ironically, the plan worked to perfection in games three and four, but when the Bulls had a chance to steal game five in overtime, their poor free-throw shooting betrayed them. Jerry West then scored 32 points to put game six, and the series, out of reach.

The replay was a bit of a pain to set up, since I had to enter every game in my make-believe schedule. But statistics nuts (like me, obviously) can spend hours pouring over the results of games between their hoops heroes, which makes all the clunkiness worth it. And while the results of a replay like this aren't "realistic" in the purest sense, they do possess a ring of "truth." And until NBA LIVE gets its act together and includes past great teams, we can be thankful Lance Haffner is a sports dreamer like so many of us.

BASKETBALL: THE PRO GAME. There are no buttons, no mouse input, no visuals to speak of—just realistic statistics and challenging gameplay. Like Haffner's 3-IN-1 FOOTBALL, the emphasis is on quick play: a full game of FULL COURT is playable in 30 minutes, PRO GAME in about an hour. Antiquated though it might seem, these are quite manageable for hotseat play, although the strong AI benefits from Lance having had a decade to perfect it.

The real reason that gamers are still drawn to Lance's basketball games is the chance to let James Worthy drive the lane against Wilt Chamberlain, to have Bill Russell block shots by Shaq, or to let Jerry West match three-pointers with Larry Bird. Could John Wooden's best with Lew Alcindor

have stopped Duke from winning back-to-back titles, or would both teams have fallen to Bobby Knight's undefeated 1976 IU Hoosiers?

While the possibilities are endless, the method you use to get there could be better. Lance's market share could only be helped if he re-did these games in Windows. Also, while schedules are fairly easy to generate, only THE PRO GAME comes with them pre-generated—a real time-saver. Hopefully, Lance will upgrade these graphically, as he did with FULL COURT BASEBALL (see page 76). Still, if it's realistic hoops play you want, both of these games are still a bargain—especially THE PRO GAME.

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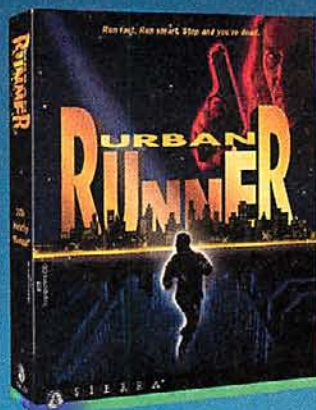
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PUCK OFF '96

New Hockey Games Slice Up The Ice

BY GORDON COBLE

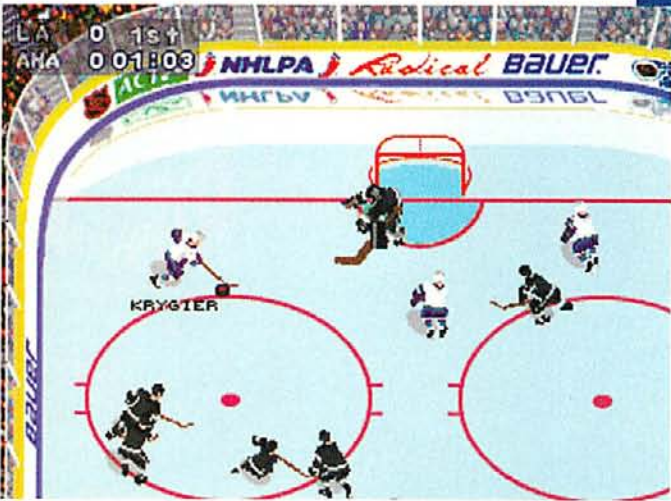
With the release of four new products in a 12-month span, this is a prolific time for computer hockey. It wouldn't be in virtually any other gaming category (can you say "hovercraft racing?"), but it is here.

This foursome swells the current hockey line-up to an all-time high, with product running the gamut from ultra-graphical to text-based, and from really good to pathetic. Is there one game out there that manages to faithfully recreate a true-to-life hockey environment? Let's hit the ice and survey the competition.

FIGHT THE POWER

Virgin's upcoming Windows 95 game, NHL *POWERPLAY* 96, should provide the most realistic hockey action ever on the PC. (Note that "should" is the operative word here, as final code wasn't available in time for this article.)

POWERPLAY's strength lies in convincing us that there are real, thinking hockey players on the ice. Will he go this way, that way or pass the puck? It depends on the situation and the player. Will penalty killers automatically ice the puck? No, that depends on just how hard he's being pressured. Are there any "sure-bet" plays—little holes in the pro-



GLIDING ACROSS THE ICE Not only does NHL *POWERPLAY* 96 look like hockey, it's the closest you'll come to feeling the puck on your stick without actually stepping onto the rink.

gramming that allow you to be abnormally successful with one tactic? If there is, I've yet to discover it.

It's this on-ice realism that game designers Radical Entertainment (also responsible for *BRETT HULL HOCKEY*, a game long on ideas but short on execution) are counting on. If the final release is free of the repetition and often nonsensical actions seen in other games (and sometimes evident in the *POWERPLAY* beta), that alone will make the game worthwhile for the serious computer hockey player.

It will have to be, because *POWERPLAY* is missing a fair chunk of the graphic flair, managerial options and little extras to which we've become accustomed with games like Electronic Arts' *NHL HOCKEY 96*. For starters, *POWERPLAY* has just one panning, 70-degree end-zone camera angle, and players are too small for team logos and numbers on their jerseys. Games will run in VGA only—a definite step backward.

On the other hand, player animation is very strong, with slapshots that differ from wrist shots, and hooking that differs from poke checking. Strategists will be disappointed by the lack of player trades, but will fall in love with other coaching options, including man-to-man versus zone coverage, speedy versus cautious breakouts, and more, all changeable on the fly. And yes, coaching ploys do have a pronounced effect on the action. For hockey enthusiasts who prefer game realism over graphic flair, this could be a compelling product.

ICE ICE BABY

Just switching on EA's breakthrough NHL HOCKEY 96 is a rush. Great sound, 21st-century menu screens, stats as far as the eye can see, and nearly-hallucinatory graphics that include numbered and logo-embellished jerseys and *ice reflections* make the game seem drop-dead awesome at first. In SVGA with detail options cranked, it'll run like a slug on anything but a Pentium 90 or above, but the visual show is almost worth it.

NHL HOCKEY 96, though, *isn't* something that appreciates with time. That is its flaw. After the initial thrills and spills, exquisite periphery gives way to repetitive on-ice tactics, questionable AI and a sense that no matter what you do, the computer will decide the outcome. It's not all bad by any means, and the "team concept" and managerial options are actually very good, but you'll recognize the problem when you've blasted your 20th point-blank shot of the period without a goal, finally resorting to the infamous "one-timer" from some ludicrous angle to finally score.

Goaltenders that hold the puck forever even when you've skated clear of the offensive zone, power play units that become incredibly stupid, penalty killers that ice the puck for no good reason, icings that you can almost *always* beat—the list goes on and on. It may be great for graphic hounds and those new to hockey, but NHL HOCKEY 96 is not the game for serious hockey aficionados.

WAYNE'S WORLD

Not to be confused with Bethesda's WAYNE GRETZKY series from the early '90s (which, in retrospect, featured several innovations and was actually a satisfactory game), Time-Warner Interactive's WAYNE GRETZKY AND THE NHLPA ALL-STARS isn't nearly of the same caliber. Unlike its real-life namesake, GRETZKY is a strong starter but lacks finish.



BRAND NEW KEY If you're itching for a shiny new pair of virtual roller skates, NHL Hockey 96 by EA Sports has your graphic ticket—but is short on long-term gameplay.



ICE COLD World Hockey is the Stanley Cup winner of our Worst Hockey Sim award, with blocky graphics and equally poor gameplay.

The game has some inspired touches, with a number of pre-game and pre-season options such as custom-constructed teams, trades and a practice mode. It also packs the best face-off and fighting sequences of any PC hockey game I've seen.

But on the ice, everything switches to hyper-drive. It's a flurry of bodies and sticks as teams mill about in complete disarray. Curious "ughs," "oofs" and other wails of pain buffet the audio landscape, and the whole thing begins to resemble a horizontal scrolling death match in no short order. Too bad.

DEMERIT

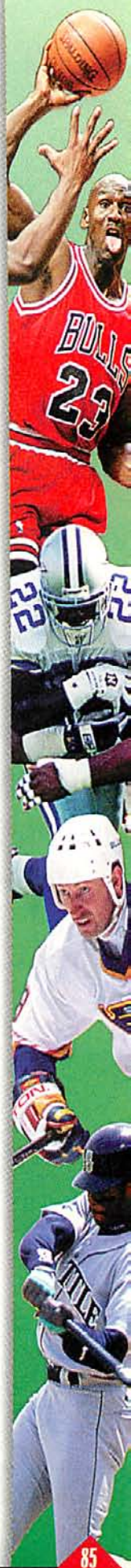
Surely Merit Studio's World Hockey 95 is someone's twisted joke, made even worse by wrapping it in packaging that mimics EA's infinitely more sophisticated NHL Hockey 95. Heck, there's even a quote right there on the box, favorably comparing the two.

Indeed, there are comparisons to be made, but in every single case, Merit's game comes up short—and I mean road-kill short. No doubt the shoddiest hockey game in recent memory, World Hockey starts with an ugly interface; continues with incorrect rule interpretation and a baffling viewing perspective; and ends with confusing gameplay that bears no resemblance to any game of hockey ever played.

TEXT FOR TEXT'S SAKE

Despite the proliferation of graphic-based games, there will always be room in the marketplace for text-based sports software, which statistic and fantasy lovers play out "what if" situations and generally compile loads of facts and figures.

Of the few producers of hockey text games, Lance Haffner is the most active, having just released a new version of HAT TRICK complete with 1996 teams and, as usual, selected "great" teams from 1960 to 1992. Otherwise, this little program hasn't changed much over the last few years, still with the same puzzling manual and without any graphical touches. But it does allow more coaching and playing options when manually contesting a game than does its competition, APBA Pro HOCKEY, so if text-based hockey is your thing, this is the one I recommend.



ABOVE PAR

More Courses On The Fairway

BY SCOTT MAY

Golf is one of the few sports that lends itself incredibly well to computer simulation. Accessible by players of every imaginable skill level, it's small wonder golf sims are so popular. Thanks to advances in technology and continually evolving design innovations, this time-honored genre has never looked or played better.

Currently, the PC leaderboard features four major players. Access Software's LINKS series—LINKS 386, LINKS 386 CD and LINKS Pro CD—is the undisputed software champ, though it's showing signs of old age. Next is Microsoft GOLF 2.0, which is essentially LINKS licensed for Windows, containing most of the features from the DOS original. Electronic Arts' PGA TOUR 96 is a sensational first effort noted for its smooth interface and engaging play variations. Finally, the Shark's back in GREG NORMAN ULTIMATE CHALLENGE GOLF from Grolier Interactive. Designed for Windows, it features educational value that should appeal to both novice and veteran golfers. Gamers should also look for Maxis' SIM GOLF (see sidebar) and Headgate's THE GOLF CLUB (#140, p. 37) in the near future.

What should sim golfers look for when making their first foray onto the digital fairway? Many factors contribute to a game's overall success, but the five major considerations are: graphics, player interface, realism, course add-ons and options.

PICTURE PERFECT

Thanks to LINKS' pioneering efforts in digitized course graphics, photorealism is the buzz word for most new golf sims. Typically, fairways and greens are created by mapping grassy textures onto a contour grid, modeled after the terrain features of the actual location. Trees, foliage,



WINDOW DRESSINGS MS-GOLF 2.0, and DOS cousin LINKS, use separate windows to display various views, stroke setups, shot info, scorecards and club distance charts.

bunkers, water hazards and peripheral touches such as clouds, cart paths and static backgrounds, are then added to create a realistic environment.

The tough part in any golf game, though, is blending computer-rendered fairways with digitized objects (trees, bushes and rocks) and making it look natural. LINKS, MS-GOLF and PGA TOUR 96 all do an excellent job blending disparate graphic elements into a smooth, cohesive whole. Only NORMAN fails to consistently achieve this balance. Its parts and pieces sometimes don't match up, as if rendered with different degrees of focus, lighting and contrast. The resulting cut-and-paste quality is quite noticeable, but mitigated somewhat by the rich 16-bit HiColor palette. But NORMAN does let you play a fully functional game from an overhead perspective, with amazingly detailed topographic renderings.

Each game here also offers video fly-bys of each hole. PGA TOUR 96's fly-bys feature excellent voice-over advice, providing detailed hints, tips and caveats. Fly-bys in NORMAN are also good, narrated by Norman himself. Both LINKS and MS-GOLF feature fairly generic fly-bys, augmented with tips from the pros. LINKS Pro CD has tiresome comic commentary by Bobcat Goldthwait, something most players can do without.

SWINGING THE CLUB

In real golf, a solid hit is the combination of many things: hip and shoulder movement, backswing and follow-through. In computer golf, however, it all boils down to one twitchy finger. Although most games let you adjust variables such as stance, aim, height and spin, your final success or failure is measured by your ability to use the dreaded swing meter. Whether circular (LINKS, MS-GOLF, PGA TOUR 96) or straight (NORMAN), swing meters all work the same: click once to put the meter bar in motion, again to set your power, and again to make contact with the ball. Click too soon on the downswing and you'll hook or draw to the left; click too late and you'll produce a slice or fade.

Both PGA TOUR 96 and NORMAN have intuitive swing meters which automatically display the optimum power and impact marks on the color-calibrated gauge. These well-designed meters remove much of the frustration from putting. LINKS and MS-GOLF use uncalibrated swing meters, making it extremely difficult to accurately gauge strokes.

All games here utilize an adjustable "stick" to aim the ball and

Maxis' SimGolf

You might think a links sim from Maxis, the SIMCITY folks, would be more along the lines of miniature golf. Close, but not quite. On the horizon is SIMGOLF for Windows 95, featuring a built-in course construction kit, multiplayer support (network, modem and Internet), and on-line tutorials from designer Robert Trent Jones. Another promising innovation is the Maxis MouseSwing interface, which uses mouse movement to recreate backswing and ball strikes. A cure for the dreaded swing meter? Let's hope so.

The game will come with three pre-designed 18-hole courses. Players will then have the ability to modify these existing courses or design new links from scratch, then share them with fellow SIMGOLF enthusiasts. This is the first course designer since Accolade's highly successful JACK NICKLAUS series, and looks like it will add considerable replay value to Maxis' golfing title.



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SPORTS SPECTACULAR

assess distance to the pin. PGA TOUR 96 takes this one step further, however, with its ingenious Targeting Arc System, which lets you view the proposed ball trajectory prior to your shot.

Besides an intuitive swing meter, a good interface also needs accessibility of options and customizable screen sizes. LINKS boasts more than 340 different combinations of screen layouts, while PGA TOUR 96 offers similar details, including a better assortment of interactive viewing angles. NORMAN has the best interface, with large buttons on the bottom of the screen and more options available via pull-down menus at the top.

A TRUE GOLF SIMULATOR

Although all of the golf sims presented here take a serious approach to the sport, some are more detailed than others. NORMAN definitely wins this round, offering an amazing variety of playing conditions, each contributing subtle impacts on gameplay, including wind speed, temperature, ground conditions, and even ball construction. NORMAN is also the only game with pure simulation play—as opposed to twitchy-finger arcade mode—based on more than 40 user-defined golfer characteristics.

The rest of the pack only offers computer-controlled simulated players. In this regard, PGA TOUR 96 offers the best leaderboard, featuring 14 real PGA Tour pros, including Craig Stadler, Tom Kite and Fuzzy Zoeller, each programmed with true-life characteristics and video captured swings.

MORE OPTIONS

Though all golf games come down to whacking around a little white ball, designers can distinguish their games by including options. The Macintosh version of LINKS Pro CD, for example, features voice recognition, allowing you to select clubs and shot types with voice commands. LINKS and MS-GOLF 2.0 also offer the ability to record golf sessions, which others can load up and compete against. Both games are the only ones in this roundup to offer network and modem play.

A solid variety of game modes also breathes life into a golf sim. PGA



STORMIN' NORMAN GREG NORMAN GOLF has the best interface, with a large screen, an array of buttons at the bottom and pull-down menus at the top of the screen.

TOUR 96 leads the pack with the best assortment of game modes, including stroke, practice, tournament, sudden death playoffs, Skins Game, and Shoot-Out. MS-GOLF offers Skins scoring, but the other titles only allow adjustment of player skill levels, with no variations beyond basic stroke play. Only LINKS and MS-GOLF allow you to print scorecards.

One of the best options I've seen is the interactive lesson found in NORMAN. Called the Lesson Tee, this ingenious feature sets players up with nine different golfing challenges, describes potential problems and solutions, lets you adjust your stroke accordingly, and then evaluates your performance.

ADDING A FEW COURSES

Sometimes, playing the same 18 holes, over and over again, can be a little too repetitive. If variety is the spice that flavors your game, look no further than Access' LINKS CHAMPIONSHIP COURSE series, the mother lode of diverse golfing challenges. Here's the lineup so far: BANFF SPRINGS, THE BELFRY, BIGHORN, BOUNTIFUL, CASTLE PINES, COGHILL, DEVIL'S ISLAND, FIRESTONE, INNISBROOK, MAUNA KEA, PEBBLE BEACH, PELICAN HILL, PINEHURST, PRAIRIE DUNES, RIVIERA, and TROON NORTH.

The beauty of the Access add-ons is their compatibility with LINKS 386, LINKS 386 CD, LINKS 386 Pro CD, and Microsoft GOLF FOR WINDOWS (version 1.0 or later). LINKS 386 CD even allows you to convert the original, low-res LINKS courses for use with the newer graphics engine.

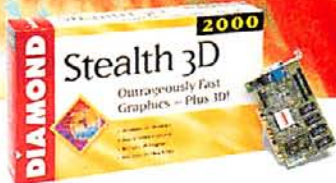
All the other golf sims come up short in the add-on category. PGA TOUR 96 comes with two courses, Spyglass Hill and TPC at Avenel. EA recently added SPANISH BAY—Scottish-style links on the Monterey coast—hopefully with more courses in the works. Time will tell if Grolier's NORMAN establishes a strong enough foothold to justify additional courses. The title ships with two courses, Medalist Golf Club, co-designed by Norman and Pete Dye, and the fictional Dorset Cliffs.

The availability of add-on disks is a chicken-and-egg dilemma. If a golf sim founders on the market, additional courses are a wasted expense. However, the promise of additional courses can be a huge selling point. In the final analysis, the winners are those companies who exhibit a strong initial commitment to their product, such as Access' LINKS series.



WATCH THE LAKE PGA TOUR 96 has the most intuitive swing meter, using a color-calibrated gauge to display optimum hitting power.

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THE AMBASSADOR OF GOLF GAMES

Access Continues To Dominate The Fairway

BY SCOTT MAY

If the governors of golf had to pick an ambassador to the sport, they couldn't do much better than LINKS, Access Software's incredibly popular simulation series. It's a series that has inspired several generations of newcomers to learn the sport. Not bad for "mere" computer software. Well, now that everyone has had the chance to savor the latest in the series, LINKS 386 CD, Access has decided to move the proverbial carrot forward, dangling this beautiful morsel within the reach of sim golfers. If you ever needed a good reason to upgrade, the new graphically enhanced LINKS LS could be it.

LINKS first hit the digital fairway in 1989, based on Bruce and Roger Carver's immensely popular WORLD CLASS LEADERBOARD GOLF. Hallmark features of the original LINKS included video-captured golfer animations and photorealistic. Subsequent revisions improved the graphic display, while adding more goodies such as stereo sound effects, fly-by hole previews, audio commentary and, for Mac users, voice recognition and multiplayer games via modem or network connection. Meanwhile, more than a dozen add-on course disks secured the game's position as reigning champ.

The blueprint for the LINKS LS series (LS stands for *Legends in Sports*) is for each release to feature a new golfing resort—complete with a 3D virtual tour of its clubhouse—along with the home course of a golf legend. The initial release includes the twin courses of Hawaii's Kapalua Resort, along with Arnold Palmer's home course of Latrobe Country Club, with a multimedia peek inside Arnie's personal office and library, employing a 16-bit version of the virtual reality engine from UNDER A KILLING MOON. The program also contains extensive video interviews with Palmer and Ed Seay, his co-designer at Latrobe. The plan is to replicate this format, spotlighting different golf legends, in future LINKS TOUR PLAYER add-on disks. In time, players will not only have a solid collection of famous courses, but a virtual library of golf knowledge from the best in the business.

The framework and much of the gameplay of LINKS LS have been preserved. Everything else, though, has been revamped for today's powerhouse PCs. If you have a local-bus video card with at least 2 MB of RAM, the new graphics engine will offer you resolutions up to 1280x1024 in 16 million colors and a stun-

ning 1600x1200 in 65,000 colors. Paired with a 17-inch or larger monitor, the beauty and scope of the game's onscreen real estate is absolutely breathtaking. Other new graphic delights include vastly improved light source technology, 3D perspective scaling, and some of the most realistic haze and sun bleaching effects you've ever seen.

The player interface sports a sleek new look, and the bottom control panel now appears and disappears at the flick of a mouse, like the Windows 95 Taskbar. The familiar swing meter features a new look, but essentially functions the same. Up to four user-defined camera windows can be placed anywhere on the main view screen, as well as a chat window for modem and network play. Though a DOS-based program, the game runs acceptably in Windows 95, provided you have 16 MB RAM. Access does plan to release a native Win95 version next year.

Other new features include multiple play modes—finally!—such as Stroke Play, Match Play, Best Ball and Skins. Having trouble seeing the ball at high resolutions? Now you can either change the pixel size of the ball or turn on automatic ball tracking. You can also redefine system sounds and golfer animations, depending on your system speed and storage space, including variable size and motion detail (15 to 30 frames per second). As in previous versions, you can record your game and then compete against that recorded performance.



VIEW TO A HILL Multiple camera windows leave you with no questions as to the path of your ball's flight.



GLORIOUS GREENS The control interface pops up only when needed, so as not to obstruct LINKS LS's dazzling 24-bit color vistas.

The new game enhances this feature by allowing you to also record a computer opponent, whose performance fluctuates with every replay. Another interesting new feature allows remote opponents to play the same round of golf, unlinked, then compare their final outcomes using a built-in score verification utility.

If you ever thought that the LINKS series was losing its edge, then LINKS LS will surely turn you

around. With new features and graphics that push the envelope, Access' next level of gameplay looks set to establish another period of dominance on the golfing sim fairway.



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ATHLETIC BRIEFS

Alternative Games For The Sports-weary Sports Fan

BY JEFF GREEN

If you think there's more to life than baseball, football, basketball and hockey, you may not be right, but you're certainly not alone. While these games tend to dominate the computer sports scene—just as they do in real life—there are always alternatives for those tired of the same old thing. We switch you now to CGW's ESPN2.

KICK ME

Thanks to the '94 World Cup in Pasadena, U.S. interest in soccer is finally growing after decades of indifference. Soccer sims, too, long popular in other markets, now seem poised to cross over as well.

Electronic Arts' FIFA SOCCER 96 is a worthy member of the company's great sports lineup. Deftly straddling the arcade/sim line, the game offers rich, satisfying action and enough decision-making to keep things (relatively) honest. EA has improved the AI in this version, so strategies such as game plan, formation and pitch coverage actually seem to affect gameplay. The AI also seems tougher: thankfully, it's now pretty difficult (for both you and the computer) to score. So even if you're stinkin' up the field like I've been known to do, your opponent isn't necessarily going to rack up 15 goals by half-time.

VR SOCCER '96, the first release from Interplay's VR Sports division, has one big plus: awesome graphics. The 3D motion-captured players are amazingly realistic, and the 360-degree field of vision, allowing you to roam all over the field from virtually any perspective (including first-person from any player or ref) is state-of-the-art coolness. Game options are robust, with 44 teams to choose from for exhibition, tournament or cup play, while multiplayer options let you play with up to 20 people over a network.

Yes, the chrome looks good, but gameplay-wise VR SOCCER could use a tuneup. Some of the setup is confounding (for instance, why can the formation only be set when the ball is in play?), and the controls are awkward—a problem compounded by an annoying manual that only discusses passing and shooting techniques with a joystick, use of which is supposed to be optional. Worse, the AI seems maddeningly unrealistic at times. My goalie—computer-controlled only—was either blind, a moron, or both, because he was letting shots roll by that my grandmother could have stopped—and she's dead. We'll have a full review of VR SOCCER next month or you can red card us.



PELE WITH ME VR SOCCER lets you view the action from the first-person perspective of any player. Now where's that BFG when you really need it?



DISCUS AMONGST YOURSELVES OLYMPIC SUMMER GAMES puts an arcade spin on Olympic events like the discus.

CARRYING A TORCH

Only lazy people will be *watching* the Olympics this summer. Serious athletes will be plopped in front of their computers, playing Olympic-style games. So far, we've looked at betas of two titles timed for a summer release.

BRUCE JENNER'S WORLD CLASS DECATHLON from Interactive Magic attempts to meld strategy with 3D twitch action as you make your way through the 10-event he-man extravaganza. You'll need to allocate points for five skills—sprinting middle distance running, weight throwing, jumping and coordination. How you divvy them out will affect your performance. We looked at early beta code, and the AI wasn't really in place yet, so it remains to be seen how well the stats tie into the game action. This will probably make or break this game.

Eidos Interactive's (formerly U.S. Gold) OLYMPIC SUMMER GAMES lets you participate in 15 different events, including track and field, swimming, fencing and shooting. This is a more unabashed arcade title—the pre-release documentation goes on about "button bashing" but mentions not a word about stats or strategy. This doesn't mean it isn't realistic, though. In my first attempt at the discus I tossed it straight up in the air and it landed smack on top of my head. That's about as close to real life as a sports sim is going to get for me.

FISH FRY

And then, there's the brave new world of fishing simulations. No, it's not as easy as it sounds, and there's a lot more gameplay than you might think.

Following Sierra's TROPHY BASS, which received four stars in our February issue (and which has a sequel due this winter), is GameTek's FLY FISHING (working title), due later this summer, which lets you fish in three U.S. rivers—the Yellowstone, the Green River and the Silver Creek. Choice of fly, time of day, weather, river depth and temperature all factor into your search for trout. Nice video-captured rivers and an encyclopedia of fishing tips round out a title that may hook gamers of all types. ☿

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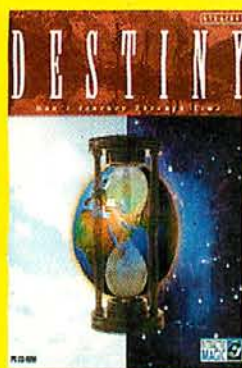
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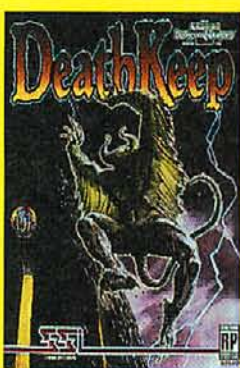
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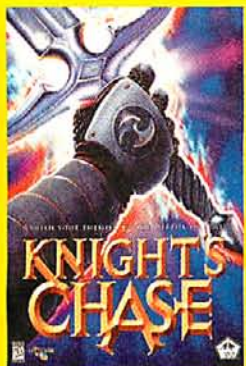
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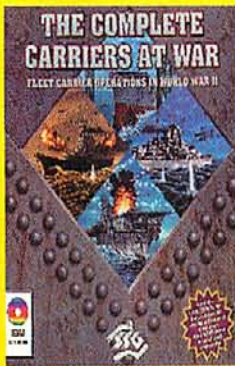
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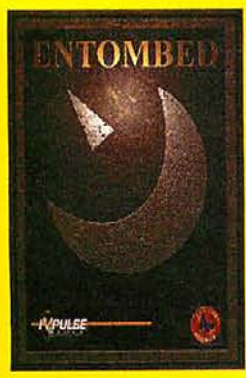


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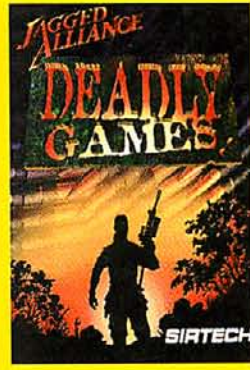
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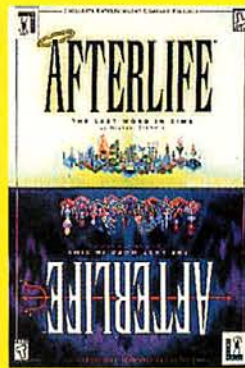
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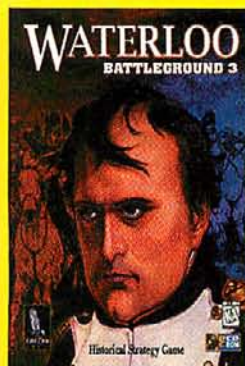


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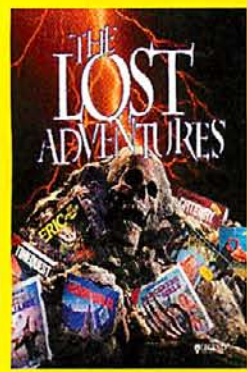
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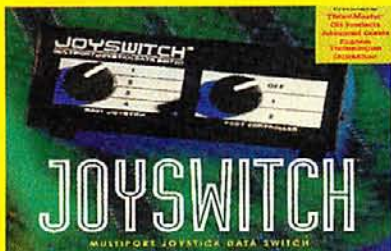
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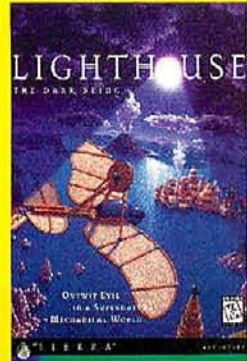
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Joystick Or No Joy?

What To Do When Old Glory Just Won't Perform

Consider the lowly joystick (all right, if you've dropped \$150 on a Thrustmaster F1.CS, maybe it's not so lowly). Joystick problems with games are probably the third biggest headache in games today, after sound card and graphics configurations. Yet, it's difficult to find useful information on how to make joysticks work. Let's take a close look at the game port on your PC, check out its operation and give some suggestions on how to fix a few of the problems you might have.

The game port on your PC is essentially the same design as the one that shipped with the original IBM PC way back in 1982. Since then, hard disks have gotten

faster and much bigger, graphics have radically improved, stereo sound comes out of the PC, CPU's are tremendously faster and mice have made our lives somewhat easier. Yet the joystick port is essentially the same as it was nearly 15 years ago. Let's take a look at this arcane and anachronistic piece of technology.

The first point is that the joystick adapter does not generate an interrupt. If you recall the time you set up your sound card, you had to specify an interrupt (usually IRQ 5 for Sound Blaster compatibles). An interrupt is simply a way for a particular device (a sound card, for example) to tap the CPU on the shoulder and get its attention. Joysticks don't generate interrupts. Instead, joysticks have a common I/O address (usual address 201). Think of this address as a mailbox. The game port puts information into the mailbox and the computer picks it up. But what information actually gets put in?

The most obvious answer is the posi-

tion of the joystick along one axis or the other. The most straightforward way to do this is through an analog-to-digital converter (ADC), that would translate the analog position of the joystick to a digital signal. Unfortunately, back when the PC was invented ADCs were expensive, so they resorted to a cheaper solution. In the joystick itself are several *potentiometers*. These are simply variable position resistors, much like a knob that might set the speed on a fan or the heat level of an electric stove. Most joysticks have two potentiometers (called "pots" for short), one for each axis.

“ Get a good joystick, a dedicated game card and be prepared to re-calibrate early and often. ”

LAB NOTES

Software Labs has just shipped Power 2 Play 2.0 (P2P), which lets you run your DOS titles directly from Windows 3.1 or Windows 95, rather than having to reboot.

P2P also ships with a CD-ROM with shareware versions of perennial favorites like DOOM, HERETIC, RETURN OF THE TRIAD, and about 60 others, though the CD currently lacks many newer titles.

P2P ran QUAKE from Windows 95 without a reboot, and with almost no drop in frame rate, even at higher screen sizes. Trying to run several other newer DOS titles—FLIGHT UNLIMITED, EF2000, and DUKE NUKEM 3D—through P2P crashed the system, and we had to hard reboot. P2P will scan your hard-

drive(s) for installed games, and add them to its list of installed games, which you can then assign to five hot buttons, where one click launches the game.



Power 2 Play does offer convenience for those who have grown weary of the C:\ prompt, and doesn't appear to slow graphically-intensive titles, which is impressive. But it won't run all titles straight away, and you'll still need to massage more cantankerous titles manually. Its UI is fairly straightforward, though obviously designed for Windows 3.1, lacking Windows 95's right-mouse-click Properties-type features. A more Win95-friendly UI is in the works. At \$34.95, it will mean less clicks to run your DOS titles, but is more of a nicety than a necessity.



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In the game card is a timer circuit that outputs a signal whose time duration varies, depending upon the position of the joystick. The game must continually poll the I/O address of the game card to get the duration of the signal, and hence the position of the joystick.

Let me repeat: *the game software must continually poll the I/O address to get accurate information on the joystick position*, meaning that valuable CPU cycles are being burned to read information on your joystick's position. In fact, as much as 15 percent of your computer's CPU may be eaten up polling the joystick.

IF YOU CAN'T STAND THE HEAT...

There's another rub. The duration of the joystick position signal changes when the speed of the computer changes. This is what the infamous joystick calibration routines are actually doing: calibrating the game card and joystick to the speed of the computer. But wait, it gets worse. Most cheap game cards, and

more than a few joystick ports in sound cards, undergo a phenomenon called *thermal drift*. As the computer warms up, the joystick signals' durations actually change, and this deviation is the main source of joystick drift. With really cheap game cards, you constantly have to re-calibrate your joystick. Of course, modern Pentium systems with lots of memory and sophisticated graphics cards generate even more heat, causing more thermal drift and... well, you get the picture. Another source of difficulty are cheap joysticks, whose pots and springs tend to get thrown out of whack after relatively limited use.

Okay, so you've dropped over a hundred bucks on a premium joystick with a gazillion buttons... or maybe only four buttons, such as the CH Flightstick Pro or THRUSTMASTER FCS. You pick up a game that ostensibly supports one of these advanced controllers, only to find that you have a very expensive, two-button joystick—the other buttons, cool add-ons and

throttle wheels don't seem to work. It's likely that you have an older, multifunction I/O card that only supports a single joystick. Reconnect your joystick to either a sound card or a dedicated joystick card.

Then there are the *speed-compensated* game cards. Thrustmaster, CH Products and Advanced Gravis all offer cards that ostensibly compensate for the speed of the CPU. What they really do is adjust the duration of the joystick signal, and have been a boon for some older software whose joystick routines have trouble running on very fast computers. The real benefit of these cards is the use of higher quality components, which minimizes thermal drift.

Another culprit of joystick problems is poor game design (surprise, surprise). For example, some calibration routines ask you to press a button when the joystick is in the upper-left or lower-right position. Then they read the values and assume they're correct. But what if you haven't quite gotten the stick jammed against the corner when you press a button? The result is instant joystick drift. Some games assume that computers will never get faster. They use smallish numbers (say, 8-bit integers) to count the joystick pulses. When the user doubles or triples the computer speed (let's say they move from a 486/33 to a Pentium 100), suddenly the joystick doesn't work right. There have been a number of game patches issued for older games to solve this problem.

Are joystick problems going to be with us forever? The art of programming the game port is arcane and not well understood, even among many game developers. As games move to Windows 95, game developers will begin using standard ways of accessing the game port. The Windows 95 Games Software Development Kit will even have a set of tools called *DirectInput* that lets manufacturers of sophisticated controllers add drivers to Windows 95 that allow any DirectInput-enabled game to use their controllers.

For today, however, we still have to live within the limits of the old IBM game port technology. The best solution today is to get a good joystick, a dedicated game card and be prepared to re-calibrate early and often. ☹

CG TIPS!

Logitech
WingMan
Warrior—

Logitech seems to have scored a direct hit with id's John Romero, who endorsed the new Warrior as the ideal controller for DOOM. The Warrior is the latest addition to Logitech's family of joysticks which include the WingMan and WingMan Extreme.

What makes the Warrior different is what Logitech has dubbed the SpinControl, a horizontal knob located to the left of the joystick.

Using the SpinControl, players can make faster turns and quickly spin a full 360°, a much-needed capability for surviving frag-fests. There are plans to map QUAKE's "free look" feature into Warrior's repertoire of maneuvers, but these won't be complete until QUAKE ships. The Warrior connects to a serial port, so if you've got a mouse in your first serial port and a modem in your second, you'll need to unplug

one of them to use the SpinControl. You'll also have to unload any DOS mouse driver you've got loaded, and load Warrior's driver. Future plans include a Plug-and-Play serial port card for Warrior, and a version that connects via Intel's upcoming Universal Serial Bus (USB).

Is Warrior worth the fuss? We recently received a shipping version, so we'll test it and let you know what we find. The Warrior lists for \$99. For more information, contact Logitech at (800) 231-7717. Dave Salvator "Green PCs"—If you have an energy-efficient PC that automatically powers down when not in use, you might deactivate the green features while playing joystick-



Logitech WingMan Warrior

enabled games. Since joystick calibration is dependent on the speed of the CPU, the joystick will go completely out of whack when the system shuts down, and will not return to exactly the same calibration when your computer comes alive again. This is particularly true if you have one of those speed-compensated game cards.

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The Falcon Flies

If You've Got The Money, The Mach V Will Deliver The Goods

by Dave Salvator

We're always eager to test Falcon machines, because they're fast and they're designed for gaming. The company's Mach V Pentium 166 took top honors in our Ultimate Gaming Machine roundup in January. But the fastest just got faster: now the Mach V is a Pentium 166 with all the trimmings, and for those with a serious speed jones (and deep pockets), this may be just the fix.



First, the laundry list o' bundled goodies: 16 MB of EDO RAM, 256 KB synchronous burst L2 cache, a 2.1 GB EIDE hard-drive, an STB graphics board based on S3's Trio64V with 2MB of EDO DRAM, Sound Blaster 16 with a Roland SCD-10 General MIDI daughterboard, Princeton Graphics Ultra 17 monitor, Acoustic Research 622 speakers (satellite/sub-woofer), and Microsoft Natural keyboard. There's also a CH high-speed game card, F-16 CombatStick, and Pro Throttle. The rig ships with Windows 95 pre-installed, and out of the box, it's good to go. Rebooting from Windows 95 into MS-DOS mode, Falcon sets up the DOSSTART.BAT file to load real-mode drivers for the CH game card, Sound Blaster, and mouse.

BURN BABY BURN...

The good news is that all this heavy-duty hardware comes together to deliver very good DOS performance. The Mach

Performance Comparison: Falcon vs. Zephyr

	FALCON MACH V	ZEPHYR ONYX	HOW FALCON RATES
CPUmark16	328	305	8% faster
CPUmark32	331	300	10% faster
Graphics WinMark 96 (800x600x65K)	22.7	25	9% slower
Disk WinMark 96	1090	657	66% faster
CD-ROM WinMark 96	459	609	25% slower
Price	\$4,888	\$4,080	20% more

V cruised smoothly through FLIGHT UNLIMITED (running at 640x480 with all rendering features at max), and DUKE NUKEM 3D running at 800x600 VESA mode using UniVBE 5.2 (recently renamed Display Doctor, see related article in this month's "READ.ME"). Even in QUAKE—whose default frame size is 320x200—the Mach V delivered 30 frames per second running QUAKE's UniVBE-assisted VESA vid_mode 20 (512 x 384) display mode. In Windows 95, DirectDraw-based MEGAWARRIOR 2 also ran smoothly.

The Mach V's WinBench numbers were also very good overall. Compared to the Zephyr Onyx 166 MHz system we reviewed in April, the Mach V's CPU performance was about nine percent faster overall for 16-bit and 32-bit code, and disk performance was much better, coming in about 66 percent faster than the Onyx. The two machines had comparable graphics performance, and the only place the Mach V didn't quite deliver was in its 8x CD-ROM's performance, which came in about 25 percent slower overall than the Onyx. Also, its CPU usage during CD-ROM file I/O, at 54 percent, was 12 percent higher than the Onyx. But looking at sequential read performance—the kind of file I/O games usually use when loading a new scene or level—the Mach V consistently delivered 8x (1.2 MB/sec) throughput. To address the spotty CD-ROM performance, Falcon plans to use Toshiba's 6x CD-ROM drive, which they say will deliver better overall performance, as well as solid sequential read throughput.

The Mach V's CH joystick/throttle system made for smooth navigation through all the flight sims we ran, and the units are easily re-calibrated using CH's utilities. The Pro Throttle software comes with config files for many flight sim titles, and also action titles like DUKE NUKEM, and QUAKE.

A convenient aspect of the Mach V series is that Falcon will build to order. If, for example, you want to swap out fancy speakers and the MIDI daughterboard for more RAM, they'll do it. And while the rig we reviewed has all the bells and whistles, Falcon can build a "base" Mach V system for about \$3,500.

The 166 MHz Mach V continues Falcon's uncompromising commitment to making screaming game rigs, but be prepared to pony up. At \$4,888 as reviewed, the Mach V is not for the faint of cash. But if you've got the bucks, they've got the goods. Maybe it's time to finally take a hammer to ye olde piggy banke... ☛

APPEAL: Hard-core action and flight sim aficionados looking for ferocious overall performance.

PROS: A solidly fast system all around with top-notch peripherals, ready to rock out of the box. Handy MS-DOS reboot mode from Win 95.

CONS: Significantly more expensive than comparable machines from major manufacturers; somewhat spotty CD-ROM performance as tested.



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How To Bake A Quake

Id Programming Gurus John Carmack And Michael Abrash Explain The Techniques Used To Create QUAKE

QUAKE has been heralded as the "next great thing," yet the software engine which makes the world of QUAKE possible is anything but revolutionary. It's the result of a long, hard evolutionary process by programmers John Carmack and Michael Abrash to enable real-time 3D graphics on home computers. The goal was lofty: a true 3D world with six degrees of freedom, 3D graphics with dynamic lighting effects, 3D players, monsters and objects, and a minimum frame rate of 10-15 frames per second. From these objectives, one of the most complex and sophisticated 3D engines ever to bog down a Pentium began to evolve.

HOW'D THEY DO THAT?

Imagine creating a level in any given 3D design program. You apply stone textures to walls, fix vertical beams, install arched doorways, etc. You place a few lurking demons here and there, along with weapons and ammo boxes. Add some lighting, and you're ready to go.

The trick is converting that data into a world

where you can move at high speeds, with a consistent frame rate despite varying levels of graphic complexity, as you battle monsters and try to survive. With the 3D rendering program 3D Studio, you could create a nice animation of this world, but it would take hours to render, and it would be totally non-interactive. How do you make this world come alive, and fit the parameters outlined above? Where do you even start?

If you're John Carmack, you start with what you know: the Binary Space Partition (BSP)-driven engine of DOOM.

"I actually had DOOM up and running before I knew about BSP trees," says Carmack. "I learned about them when I was doing WOLFENSTEIN for the Super Nintendo, because I had to make it go a lot faster."



THE SWORD AND THE SORCERER After making a killing with DOOM, id's John Carmack is out to beard the programming dragon of 3D space.

Taking the knowledge gained in that project and rethinking the world in three-dimensions, John began the arduous task of creating the QUAKE engine. Meanwhile, he recruited one of Microsoft's most-respected programmers, Michael Abrash, and together they would strain for nearly 14 months, inventing a hybrid approach never before attempted.

The first problem for all first-person engines is how to distill the 3D data created by the level

designer into a localized scene. For any given frame of gameplay, that means focusing the engine's attention on just the immediate parts of the world.

"There's two stages," Carmack says. "The determining what's visible and then the actual drawing of the pixels."

That's where a BSP tree comes in. A BSP tree is a software tool to order all of the sectors of a virtual world (think of a sector as an area of floor, a column, etc.). QUAKE uses a number of BSP trees. Two are used for the game world, to help determine line of sight and to allow the player to traverse the world. In addition, each movable object has its own BSP tree (objects like ammo boxes, but not animated beasts).

"It's esoteric, technical stuff," Carmack admits. "A lot of people said that we couldn't use BSPs for a general 3D engine, but we think they're wrong."

In DOOM, a single BSP tree was the key to drawing each and every frame, but things get far more complicated when you toss in the third dimension. How do you cull out the unneeded sectors during gameplay? With levels averaging around 10,000 sectors, having to consider extra sectors becomes very inefficient, even with the help of a BSP tree. That problem occupied Carmack for several months,

“ I totally believe that 3D is nothing but a mess of cheats. ”

—id programmer

Michael Abrash

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and then during one slow, cathartic week-end, he solved it.

Using the world BSP data, Carmack devised a routine that *pre-calculated* the Potentially Visible Set (PVS) of sectors. To calculate a PVS, imagine standing in a spot at the center of a room. Now just figure out what sectors are visible from any viewing angle. For a closed room, this isn't too hard, since the floor might just be a single sector, and a wall another sector, and so on.

The PC only gets into complicated calculations when you run across a portal (a doorway, for example), which is a non-polygon, and it is the only way to see out into other areas. Through portals, you simply calculate what sectors might be visible until your line of sight runs out. This PVS information is calculated for each sector in a level.

"You only really have to do this [pre-calculating] once for a level," said Abrash, "or once each time you really want to see it perfectly. For development, you just don't do

this at all; you run around and it's kind of slow."

UP AND RUNNING

Once the game is underway, the *QUAKE* engine takes in the PVS information for the sector that the player is in and the direction they're looking. Next the engine processes that data to determine the edges of the visible polygons, which are then converted into "spans"—properly clipped horizontal pieces of the polygons—that the player will see.

"Frame by frame," Abrash says, "I go through the potentially visible set and generate the edges, and in the next pass, I go through the edges and generate the spans."

As this is going on, the surfaces of the polygons are built in a memory cache. These "meta-textures" are a combination of the texture maps which the level design-



MICROSOFT CAN KISS MIKE ABRASH... good bye. The programming talent left Microsoft to help build *QUAKE*.

ers chose to apply to a particular sector, plus the lighting information, gleaned from a separate, pre-calculated lighting map.

As the frame is being built, information about any objects, such as ammo boxes, is then merged into the above data. All of this information is "z sorted" (sorted by the distance from the viewer). Next, as the engine constructs the final frame data, the monsters and other players are drawn

in, using a technique known as z-buffering, a rather "old-school" 3D technique of comparing the z distance of each pixel on the object before it is drawn: if it's closer to you, then draw it, otherwise ignore it.

Lastly, any sprites are added to the mix. *QUAKE* uses only a few sprites, most notably for the flames flickering in the wall-mounted braziers.

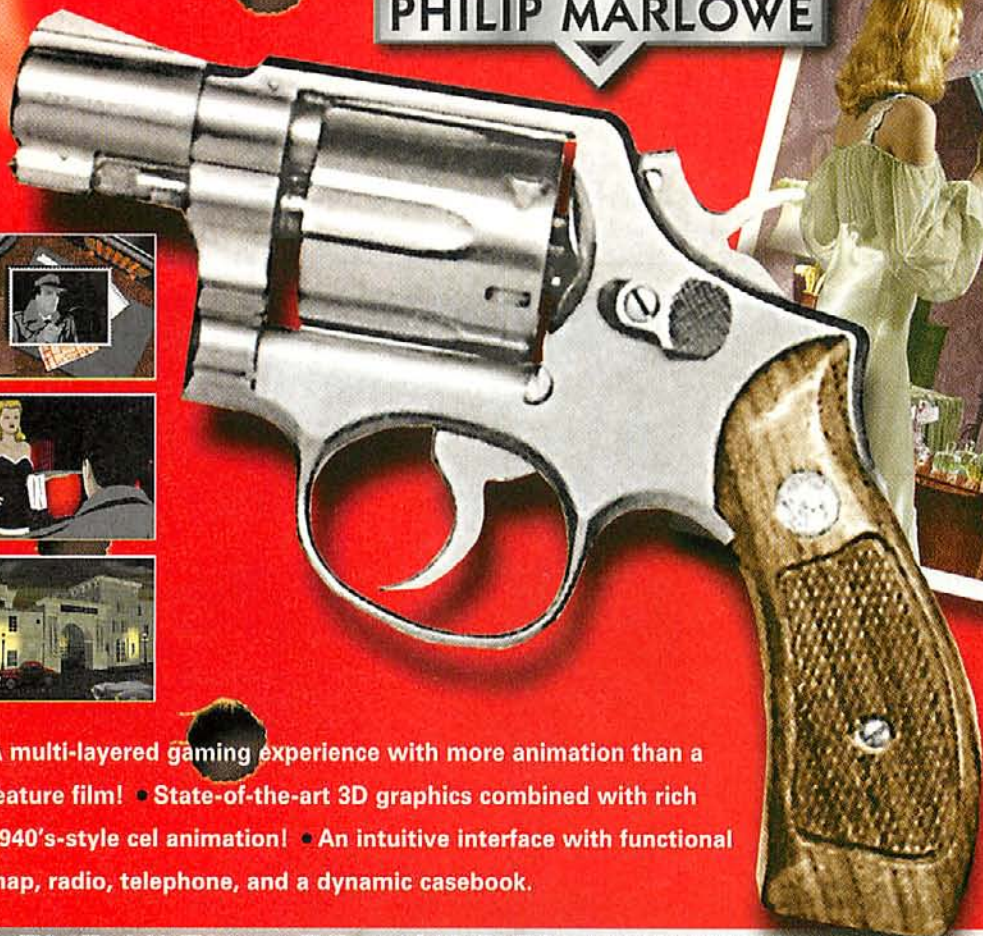


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The Men Behind the Curtain

QUAKE's level design and gameplay will be the deciding factor in whether gamers go nuts over it, but id is truly a technology-driven company, and at the heart of it all is the programming savant John Carmack.

"This is what I do," says the programmer who is fundamentally responsible for the DOOM phenomena.

"Programming really is the defining part of my life. Ferraris and girlfriends and stuff like that—okay, that's there, they mean something, but I am a programmer. I would do it for free. It's just sheer luck that something that motivates me so much can also make us rich."

In early 1995, after a long "courtship," Carmack lured Michael Abrash away from Microsoft.

"To be honest, a lot of the other companies did a big, scared double-take when they heard that I convinced

Michael to come here," Carmack says. "He's a world-class talent." Abrash had been a noted author and speaker on esoteric PC programming. Before coming to id, he was also used to being the leader instead of the follower, and he had to make peace with that before signing onto the QUAKE project.

"Without question, John is the leader here," says Abrash. "He's had five years more experience at 3D stuff than I did, he's better at this stuff than I am, and he works more than I do, so, it's pretty clear that if I wanted to get into any pissing matches, it'd be stupid."

Modesty aside, Abrash offered these parting words on the merit of QUAKE: "I think, unequivocally, QUAKE is the best 3D technology that I've ever seen."

Finally, this frame of display information constructed in system memory is sent to your video card's display memory, to appear on the screen as a compelling, 3D gothic world. And then the process begins all over again for the next frame.

BUT WHY?

All of these complex gyrations are necessary to assure a reasonable frame

rate. Sure, you could create a high-res ray-casting engine, but the resulting frame rate would be unacceptable. Even more importantly, the speed would fluctuate, slowing down in complicated areas, speeding up in simpler rooms. The PVS, by pre-calculating much of what a ray-casting engine does on the fly, presents a continuous amount of data to the engine, thereby

ensuring a consistent frame rate.

Inner-workings aside, the end result is going to be a remarkable 3D game that will surely launch a thousand imitations. And even though you may have a perfunctory understanding of the game's inner workings, if the id team has done its work well, you won't even notice. **E**

ZEN GRAPHICS

If you want to know more about the nuts and bolts of the QUAKE graphics engine, Michael Abrash's *Zen of Graphics Programming* has just been released in its second edition, and contains chapters exploring the QUAKE engine in depth.

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Murder Most Foul

Put Down That Knife—Scorpiia Melts The ICE To Help You Locate The Ripper

So the days grow longer, the weather milder, the games fewer, and Fred ever grumpier. He's always that way around this time of the

year, especially once the clocks are moved ahead. "Daylight Thieving Time" he calls it, and considers it a monstrous crime. Perhaps, but there are yet more monstrous crimes to be considered. Murder, for instance, and murder in a most unpleasant way...

RIPPER is a murder mystery set some years ahead of the present, in a time when most everyone has a computer and "decks in" mentally to the net. Our hero, Jake Quinlan, brash-mannered reporter for a great cybernetic tabloid, is on the trail of a serial killer known only as—you guessed it—the "Ripper." With a little luck, and some help from you, Jake might man-

age to crack the case without becoming a victim himself.

"THE BLOODY PLAY HAS FOUR ACTS"

The first two acts of RIPPER set things up, so to speak; the third act determines the identity of the Ripper, and Act IV is



CYBERBULL'S-EYE This is Falconetti's secret well in Cyberspace. Have your trigger-finger ready, and don't be embarrassed to switch to "easy" arcade mode to get on with the adventure.

the showdown between Jake and the Ripper in a virtual Whitechapel. Regardless of who the Ripper turns out to



be, the first two acts are always exactly the same. Even much of Act III will remain the same; typically, the differences are in certain conversations and visual evidence that occur in some situations but not in others. It is therefore Act III to which you must pay the closest attention, for only here is the evidence that pinpoints the Ripper's identity, and you don't want to

miss it or be led astray.

The hints and tips that follow are for a puzzle level of moderate (the default) and a cyberspace combat level of easy. In some cases, a puzzle solution may be different if you have a different level set. Combat doesn't vary, except that disposing of the ICE becomes harder as the difficulty level rises. Since the game Prologue is covered nicely in the back of the manual, I am skipping it altogether here.

Act I—Jake begins at the police station. He'll want to talk to everyone here (three people, in fact), and snoop around Magnotta's desk, as well. It's a pity that Catherine's WAC (palm-top, all-purpose

“ RIPPER is a murder mystery set some years ahead of the present, in a time when most everyone has a computer. ”

CRYSTAL BALL

▶ Well, the game that started the current multimedia craze is finally siring offspring: MYST II is tentatively planned for this fall; but if the ambitious project slides into winter, well...

▶ Rumors also abound that Broderbund is hard at work on a sequel to the popular courtroom game IN THE FIRST DEGREE. Like any good prosecuting attorney, however, the company isn't revealing its opening arguments as yet.

▶ Seems that Harlan Ellison wasn't content to have an excellent game, I HAVE NO MOUTH & I MUST SCREAM based on his award-winning short story; he filed suit for "unpaid royalties" from Cyberdreams, the game's distributor. The irony is that with the way the retail chain works, Cyberdreams probably hadn't turned a profit on the game at the time the lawsuit was filed (we're not talking sales of WARCRAFT II here, folks).

computer) isn't available, but maybe we'll catch up with it later, like in Act III.

Speaking of Catherine, now is a good time to check her condition at the hospital. Not that Dr. Burton is all that cooperative, but perhaps she has her reasons. Farley in the Morgue has some interesting things to say, though; happily, you won't have to look at the bodies without their sheets (one of the better features of this game is that it *doesn't* pander to trashy sensationalism.)

Let's hit the newsroom and see if Catherine left anything that might help. Sure enough, there's an obscure-sounding note on Jake's desk. While you're at it, check her desk, too. There are probably some leads in that Rolodex file.

You wanna play with the crystals in her apartment, right? Why not, it's important, after all (heh). If only you knew what to do with them. Well, there's an astrology chart on the wall, and a birthday card sitting there. I bet they're all connected, somehow. And when it's figured out, what do you get? A word. What word? Let's pass on that for the moment, and go chat with Gambit Nelson at the Cafe Duchamp.

You'll probably want to drop in on Soap Beatty, too, and don't overlook the magazine rack on your way out. Then we get to the tough stuff, at the Wofford cottage. There are three puzzles to solve here, each one providing a vacuum tube you need. (Vacuum tubes—in this futuristic age? Don't think too much, just grab 'em and move on.)



I TOLD YOU ONCE, PUNK You're going to get roughed up by Magnotta (be thankful *real* VR isn't here yet), regardless of what you do. So, be sure to check out the corrupt detective's apartment and pilfer his desk at the police station.



THE MALFEASANT FALCON You have to depend on Joey Falconetti, the Falcon, to help with Catherine in Act II. Just don't forget that he's a suspect, and dangerous besides.

The maze puzzle can be annoying; the gates have to be set twice (in different patterns) to get the ball to the bottom. Watch this carefully. The clocks are tricky; they all have to be set to the same time, sort of. What time? Maybe you'll see another clock elsewhere, and keep that time zone chart in mind. As for the coins puzzle, take a real good look at that plaque on the way up.

There's a deck port at Wofford's, so let's use it to visit virtual reality and a few wells. Catherine's has ICE to defeat. It's vulnerable at the bottom, so aim for the jets and blast away. Use your shield if it gets too close. The journal, alas, is encrypted, and you won't obtain the keyword until Act II.

Here we are at the library, and a nasty little puzzle. Look closely at what's inside the brackets. With a little thought you should be able to see clearly—very clearly—without any help at all. Unfortunately, you can't do anything with the book except haul it around with you.

Round about now, you should be able to visit Joey Falconetti (called variously in the game "Joey," "Falconetti," "Falcon," "Falcon Eddie," and "Eddie." From here on, I'm calling him "Falcon"). 'Tvig isn't helpful, but the password should be obvious. In the shooting gallery, the good guys are usually

a brown or green color, and they don't move. Bad guys are skeletal, hold weapons, and have red eyes. Shoot each bad guy as many times as you can. After you win, you can talk to Falcon in person, ending the act.

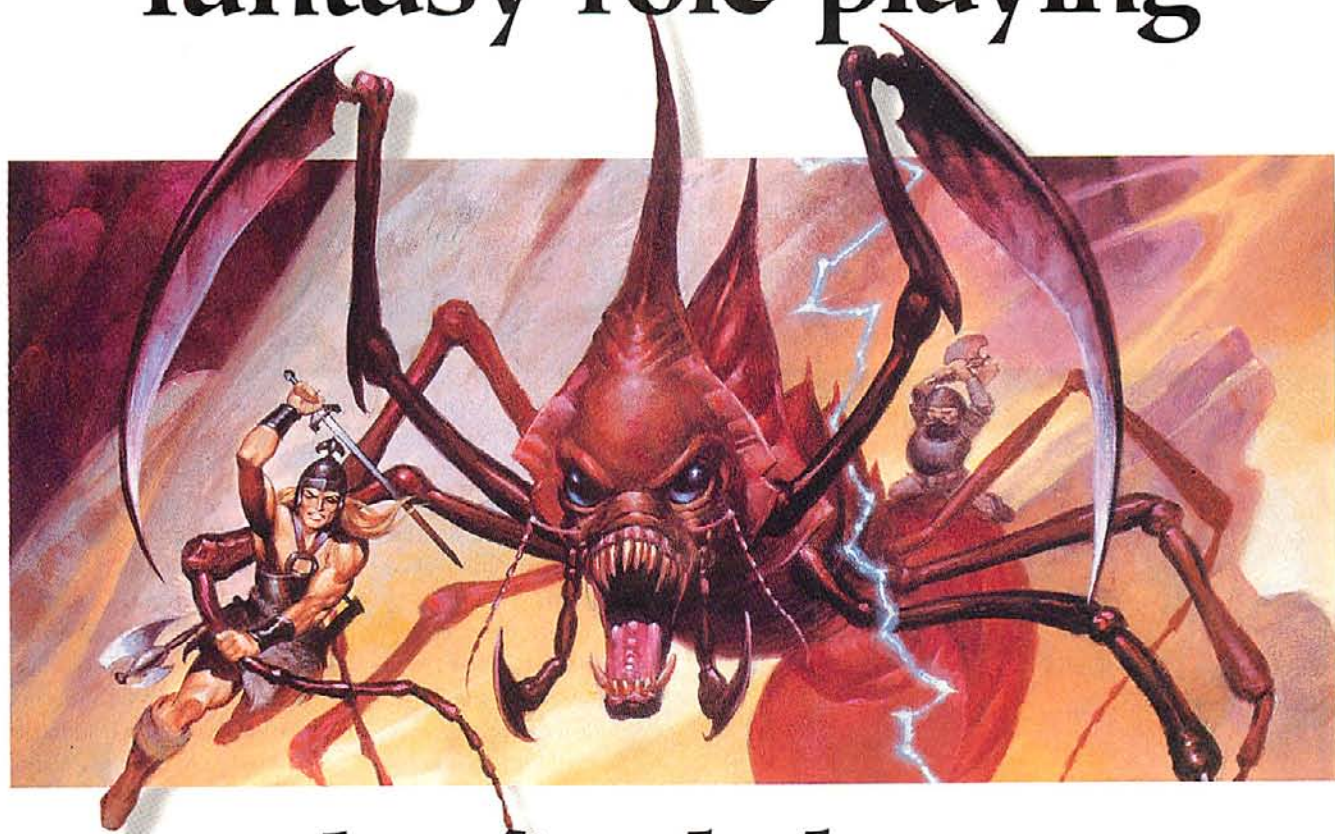
Act II—The scene begins at the hospital, where you have to ride shotgun while Falcon decks into Catherine's mind. Do the best you can here; Falcon will join in eventually to wipe the ICE when it gets heavy, but you must do your part. However, you can't talk to Catherine yet. Instead, come back here from time to time during the Act to tell her what you've learned.

In the meanwhile, snoop around the police station. Catherine's journal was encrypted by Magnotta, and you may find something helpful in that regard. Half comes up right away; the rest of the journal will decrypt over time during this Act.

The legible section holds the key to the book vault at the apartment. I'll just say that the lock is a numeric one; that should be enough to get you started. Then you obtain the mystery calculation. Where does one usually do calculations? You don't know? That's news to me (grin). By the way, that "X2" is "X squared."

Since you've read the journal, you know what to do with the two bugs (transmissions from these will come in from time to time during Act III; there won't be any during this act). Enter Burton's office much the same way you got into the

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I'm the Ripper! No, I'm the Ripper! No, I'm...

There are four suspects in *RIPPER*, and there are enough oddities about each to make you think that any of them might be the Ripper. Well, guess what? Eventually all of the suspects *will* be the Ripper, as a new killer is chosen randomly each time you start a new game. Theoretically, the program will keep track of the various Rippers, and select a different psycho killer for you each time. Some versions of the game, however, have a bug, and will continue to give you the same guilty party. If that happens to you, get *RIPPER* version 1.02 (available on this month's CG-ROM), which corrects this bug as well as other errors.

police files. Check everything there carefully. Be sure to pop down to the Morgue for a little surprise.

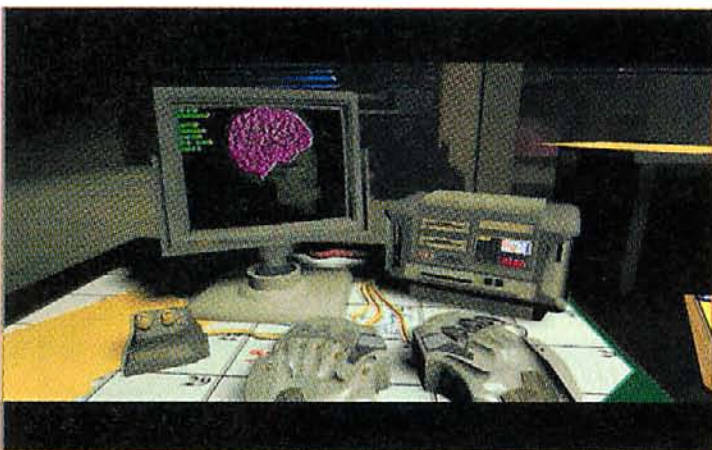
At the university, you have to deal with the bulletins. Five of them are the right ones. Remember, you're looking for an

address, and don't overlook the bottom of each flyer. When you get to the hang-out, you'll pick up a little info and the password to a well. The ICE, on this one is a simple block puzzle. Take your time with it and work from the bottom up.

Sooner or later (probably sooner), you'll hear from Stephanie. Unfortunately, by the time you get there, she's become another victim, and her body's been hauled away. Now you have to deal with Mr. Eppels in the Morgue, or rather, the nonfunctioning computer.



NEED A CONSULTATION? Dr. Burton's suspicious nature comes from her having a *lot* of secrets to hide, so she'll be evasive even if she isn't the Ripper. You'll know more after talking to Haman in Act III.



CYBERMAN 2020 After you enter cyberspace at the newsroom, solve the sliding block puzzle at the Runner Archives—try working from the bottom up, then listen to the bios of the Runners.

ICE, here is another block puzzle, but along slightly different lines. Play with it first to see how the pieces shift when you click them. As with the other block puzzle, work from the bottom up. There's some very interesting reading in this well.

Of course, during all this you've also been talking to people I may not have mentioned, and naturally Catherine, too (you'd better have!). So eventually you'll get a call from Farley to meet him at the Cafe Duchamp. This ends the act, and I'd advise you not to watch too closely as it ends.

ROUGH CUTS

Act III—This one starts with a couple of automated sequences, first with Jake being roughed up by Magnotta, and then saving Wofford's life from a mysterious assassin. (The Ripper? Maybe, maybe not.) The real start is in the police station, where a call comes in from Nelson. It's a good thing to follow up on.

The book puzzle is tricky. I'll just say there's a certain relationship between the letter and the book titles. Take it line by line and you'll solve it. At the Wofford well, you learn about the three parts of the weapon to use against the Ripper. You can pick them up any time you like; there's no rush. Two of the wells have hostile ICE. While they look different, both are vulnerable in the same place: the glowing gems on their heads. Aim for those.

The third well has the most-hated puzzle of *RIPPER*: a chess-like strategy game against the computer, and you don't know the rules. In brief, it goes this way: Pawns move one square in any direction. After the first capture, a Pawn changes to a Super-Pawn that can capture any piece on the board. Knights cannot move unless they can take a piece exactly two squares away. After a capture, or after all your pawns are taken, Knights change to "real" Knights, that can move one or two squares any direction, any time it's your move. Kings can only move one square at a time, horizontally or vertically, and only along the back two rows of the board. I cheerfully admit to playing this one in "easy puzzle" mode and you may want to do the same.

The chip numbers were made as confusing as possible (naturally), so take your time (you can't break anything if you make an error). Read the chip guide to help you. Keep an eye on the meter to the left; each proper circuit completed will cause one of the lines to rise to the top.

This gets you into Animal Storage, but now you have the voice lock to worry about. Well, I'm sure someone you know has a little expertise in these matters (do a bit of reading). The sample, I may add, must be *very* precise. Clip just exactly what you need, and no more.

The monkey puzzle is mainly trial and error; there are no guides to the proper lever settings, aside from the reaction of the monkey itself. Pain is not what you want here. Hmmm. Matters are not looking good for the good doctor, but there's more to come.

More, for example, in Falcon's secret well. The



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TIPS!

► **Stonekeep**—For those who haven't started this game, or haven't gone too far with it yet, there's a terrific easter egg, right at the beginning.

When you're standing at the lever to open the door, pull it three times in a row. Turn around, step into the hall, and go around the corner left. About three or four walls down, on the left side, is a panel. Pulling the switch there opens a secret passage behind you. In the passage, on a left wall as you enter, is another panel. Behind that is a *very* powerful dagger, that will make most of the early (and even not-so-early) combats much easier. Note, however, that this weapon is available *only* if you have not yet gone down the stairs! Once you've entered Stonekeep proper, the dagger is lost to you (my thanks to Roe Adams).

► **Dark Seed 2**—Those who have managed to get into the back room of the Morgue (cheery place) are having a bit of difficulty in obtaining the key from around the corpse's neck. This is an instance (one of many in the game) where conversations with the right people can help a lot. The carnival is the place for the answer here—especially for seeing double and looking into the future. When you've taken care of that, getting the key won't be a puzzle.—*Scorpio*

But there's more to do than play games with ICE. Have a chat with Catherine, for instance. That puts you on to George Rhodes and a safe deposit box. What's the combination? Heh, I'm sure you can think of something related to Rhodes for that one.

The Berman well puzzle is something like Concentration, only here you have to uncover the same three bar code numbers in only three moves. Watch how the pieces move when the puzzle resets, then get all the numbers on the board. Keep track of them, and you should make it through here pretty quickly.

Now is a good time to visit Soap Beauty for a couple of reasons, not the least of which is a little protection from the Ripper.

He sends you on to Cain, who points you to a pair of wells. The ICE on one is an irritating jumping puzzle (I did this in easy mode, too). Head left, up the left side, then work your way gradually to the right and up where the machine is hovering. Do not waste time here; keep moving.

The other well has a puzzle with an Egyptian motif. The vulture is the beginning, eh? The beginning of what? It looks hard, but really, it's as easy as ABC (even so, you still have a lot of work to do before you obtain the answer).

Anyway, enough of cyberspace for now; matters in the real world demand your attention, too. Magnotta's apartment, for instance. Check the left side of the door as well as the right.

You'll also want to talk to Haman (in three of four scenarios, this is quite important for determining the Ripper, along with a couple other things). If you haven't turned him up yet, think: who'd know about crooks?

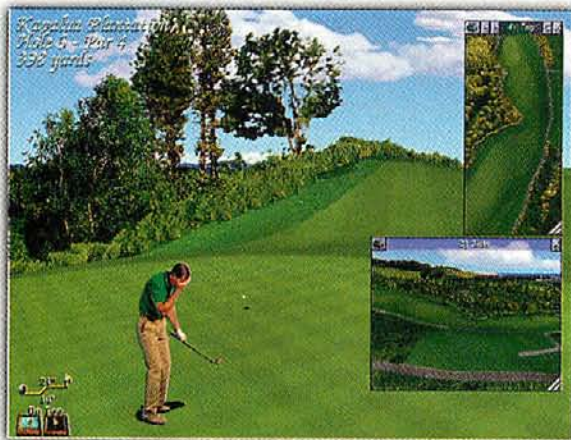


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And, of course, you'll be speaking to the other characters here and there. One of them will give you a picture of the supposed Ripper. Is it real, or is it Memorex? Good question. Show it to the most likely person to get a lead on

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what you should do about that.

Eventually, when everything has been done (in whatever order), Dr. Cable will call with the news that the image of the Ripper (the real image) is about to become clear.

Naturally, it disappears just as you hot-foot it into the lab, and the Ripper invites you to visit the library and read a certain book. Do you dare?

Act IV—Well, you'd better dare, if you want to win. However, just in case you've settled on the wrong suspect (or otherwise foul up), I recommend saving before you deck in; it's your last chance to do so.

Jake turns up in virtual Whitechapel, where the weapon parts must be merged into a whole. This is simple; just listen to the song lyrics. Then it's off to the crossroads, where the four suspects appear one at a time. When

you see the one you think is the guilty person, click the weapon on him or her.

You'll know pretty quickly if you're right or not. I hope you chose correctly.

Whew! A little too close for comfort, that was. If you need help with an adventure, feel free to drop me a line at any of my addresses. Until next time, happy adventuring! ☞



NO TIMELY RESCUE The last fateful call you receive from Stephanie comes too late to prevent her from becoming a victim, but don't grieve so much that you miss important clues.

2

LEVELS OF PLAY

3

NARRATIVE PATHS

7

DIFFERENT ENDINGS

THE
Pandora
DIRECTIVE

23

UNIQUE CHARACTERS

58

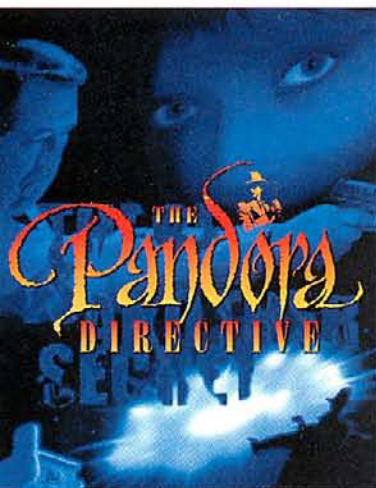
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The Cast— Enjoy the difference Hollywood cinematography, acting, editing, stunt work, music, and direction make as the world of Tex Murphy becomes amazingly real. Starring Barry Corbin (*Northern Exposure, War Games*), Tanya Roberts (*View to a Kill, Beastmaster*), Kevin McCarthy (*Invasion of the Body Snatchers, Just Cause*), and Chris Jones (*Under a Killing Moon, Martian Memorandum, Mean Streets*) as Tex Murphy. Directed by Adrian Carr (*Quigley Down Under, Man from Snowy River, The Power Rangers*). Original music by Richie Havens and Nicole Tindall.

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I, Spy



Activision's Adventure Immerses You In A Great Espionage Story

by Mark Clarkson

"Espionage is the world's second oldest profession and just as honorable as the first."

—Michael J. Barret, CIA

Activision's new multi-million dollar adventure, **SPYCRAFT: THE GREAT GAME** submerges you in the dark world of international espionage as a newbie CIA operative. As usual, the fate of the free world hangs in the balance, and you're the would-be hero assigned to pull humanity's collective bacon out of the fire. Fresh from your training at "The Farm," you are thrust into action by the twin assassinations of your CIA instructor and Russian politician Fyodor Dubanski early in the game. The same intelligence source that predicted Dubanski's death has warned of an attempt on the life of the President of the United States, and the big bosses want answers, fast. Who shot Dubanski? And why?

IS THAT A CAMERA IN YOUR POCKET?

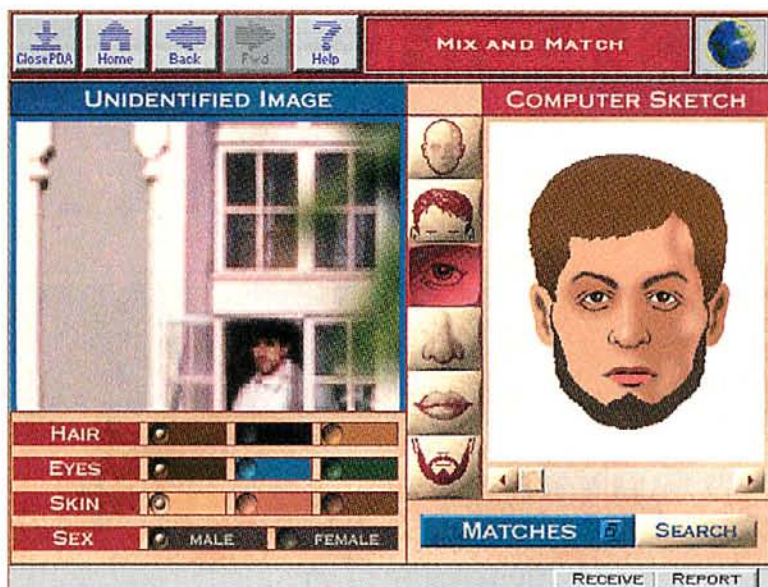
In **SPYCRAFT**, you're immersed in the toys of the espionage trade: voice analysis, image enhancement and database searches. The game's various tools abound with 3D models, infra-red photographs, and databases of all description. You can eavesdrop on phone calls, scrutinize people's use of elevators, and peruse lists of known associates. You'll doctor photos, and even pop a cap in a few bad guys. Most of the time, though, you're skimming from computer to computer, program to program, gathering and analyzing data, and building computer models of crime scenes and suspects. Each program itself is actually pretty shallow—I

wouldn't want to use the game's Kennedy Assassination Toolkit to solve a real assassination—but as a device to present a puzzle and advance the plot, it works.

The people, projects and programs all have code names and acronyms. **SPYCRAFT** abounds with Harmonicas, Bird Songs, Eagle Shields and Photo Docs. The game owes much of its realistic feel

While most computer games get up to speed after about 10 minutes of game play and then struggle to hold that plateau, **SPYCRAFT**'s plot unfolds as you go along. The game feels a little shallow at first, but it becomes deeper and deeper as you play.

James Adams, the writer of **SPYCRAFT**, has written an adventure that openly invites comparison with the works of Tom



TALL, DARK AND UGLY With the Mix and Match tool, you can reconstruct the faces of suspects, then submit them for database searches.

to Oleg Kalugin, Former Major General of the KGB, who oversaw the US-based counter-intelligence operations for the KGB for 12 years, and former CIA Director William Colby. Both served as advisors on the game, and put in brief cameos.

GET SMART

SPYCRAFT does something so new, so amazing, that I'm still in a tizzy about it: all the puzzles, derive directly from the plot! There are no thinly disguised games of Master Mind. No magic squares. No mazes. Plus, **SPYCRAFT** has plenty of plot.

Clancy and John LeCarre. In fact, the game's story could have made a good novel. (How many adventure games have you played recently that you can say that about?) The game effectively adds little bits and pieces, such as biographies and news articles, that simply wouldn't work in a book or movie but serve to add texture to a computer game.

The game's plot is very linear with a few branchings, but not enough to make you actually want to go back and play the game over from the beginning. For the most part, the structure is simply go to location A, solve puzzle; advance to B,



Price: \$49.95

System Requirements:

486-DX66 or better (Pentium recommended), DOS 6.0, 8 MB RAM, 30 MB hard disk space, 16-bit High-Color SVGA graphics, 2x CD-ROM (4x recommended), Microsoft-compatible mouse, Sound Blaster 16-compatible sound card.

Protection: None (CD must be in drive).

Designer: Activision

Publisher: Activision

Los Angeles, CA

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Reader Service #: 320

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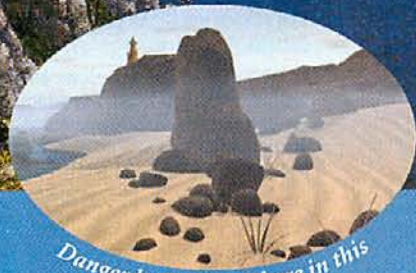
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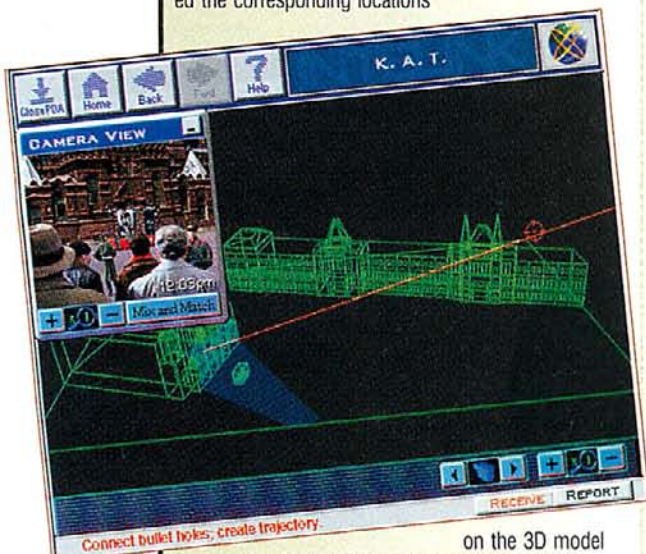
solve puzzle, and so on. Still, the story line that develops—full of electric guns, heart-attack rays, renegade spys and nuclear terrorism—is very satisfying.

A Sackful of Tools

A quick walkthrough of your first assignment—locating the shooter in the Dubanski assassination—will give you a feel of playing SPYCRAFT.

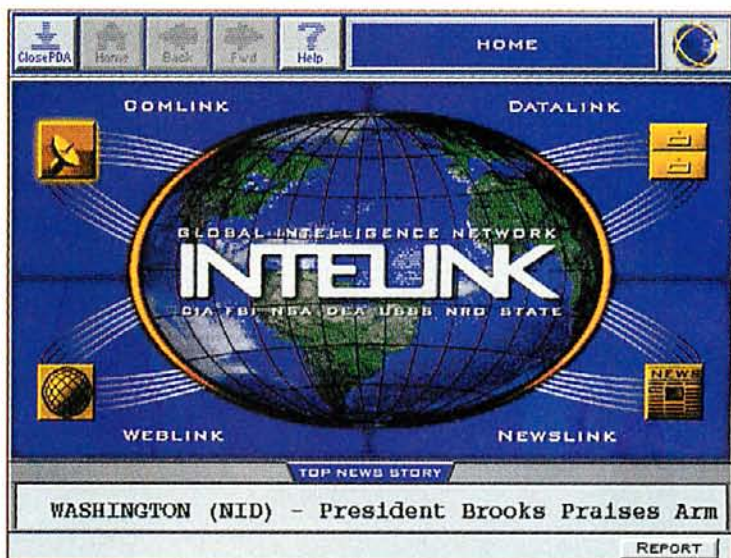
None of the hundreds of witnesses to Dubanski's death heard a shot, so I start my investigation by loading up a database of stealth weapons. (On the video of the assassination, however, there is a definite rifle-like report, which will throw many people off. But this bang is evidently a bug in the game. Ignore it.) Close examination of the video taken after the assassination reveals a peculiar pattern of bullet holes. At first I thought this was a typical game blooper; no single shot projectile would leave a pattern like that. A quick search through a CIA database of stealth weapons, however, revealed a secret (fictional?) weapon that just might leave such a pattern. And it's a silent weapon, to boot. Aha! That wasn't a blooper; that was a clue!

Next, I pulled up the Kennedy Assassination Toolkit, which combines a 3D computer model of a scene with the video. Careful inspection of the video revealed bullet holes in two locations. I selected the corresponding locations



on the 3D model and the KAT plots the bullet's trajectory. Odds are the guy standing at an open window at the end of that trajectory is the shooter.

I zoomed in on the suspected shooter's face and employed another program, called Mix and Match, to build up an image of the shooter's face by selecting the closest match from an assortment of face shapes, skin colors, noses, eyes and so forth. A database search provided me with a match. But if this guy is the shooter, then things are even worse than anyone thought.



SPIN A WEB Spycraft's Intelink, sort of a miniature WWW, provides you with access to e-mail, news and the CIA's databases and tools as you hunt for the killers.

SPOOK CITY

SPYCRAFT'S FMV sequences are well-written, well-shot and generally well-acted, but for the most part are not interactive, serving mainly to deliver plot-advancing lumps of exposition. You'll interact with the game primarily through Intelink, a Web-like secret network serving the CIA, FBI, NSA, NRO and the whole alphabet soup of spook shops. Users of Web browsers like Netscape and Mosaic will feel right at home here.

SPYCRAFT'S PDA browser incorporates integrated e-mail, video mail, teleconferencing, and access to your tools and toys. You also have a home page, and you can jump forward or backward, or follow hyperlinks to other pages and applications. The PDA also features Weblink, which, paired with some supporting software, provides a portal to the real World Wide Web, where you can post hints and questions and chat with other armchair spies. The PDA is very easy to use, although it's sometimes cumbersome to get somewhere on Intelink (you can't create bookmarks or keep a session history). SPYCRAFT'S Web-like interface helps suspend disbelief and immerse you in the game—since you're already sitting in front of a computer running software, it's not that much of a stretch to imagine that you're sitting in front of a different com-

puter, running different software.

SPYCRAFT does suffer a few interface warts. First, you must read all the text—and there's a lot of it—yourself, rather than hearing it read aloud, and you can't change the text's typeface or size. Worse, on one of my machines, the text was improperly aligned, so that sentences ran off the right side of the window.

You must always start the game from CD #1, saving your game is a minor pain, and Activision's funky sound drivers play far too softly. Still, there's nothing here that should keep you away. SPYCRAFT is an excellent, groundbreaking adventure game, setting a new standard for plot depth and realism. When you're finished, you'll be eager to head to Arlington and put those sleuthing skills to work. **C**

APPEAL: SPYCRAFT is a game for anyone who's ever wanted to enter a Tom Clancy novel and push all the buttons themselves.

PROS: Great plot and clever interface immerse you in the adventure. Plenty of depth, texture and detail provide a realistic atmosphere. Every puzzle derives from the plot.

CONS: Despite the tense plot, there's not much action. A few interface blemishes make the game awkward at times.



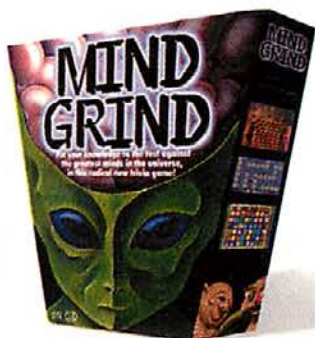
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Looking Through The Mind's Spy

Play Head Games In An Interactive Movie That Lives Up To The Name

by Arinn Dembo

As a gamer, you learn to take the ads with a grain (or maybe a metric ton) of salt. Every company wants you to believe that their game is going to be the greatest thing since the flushing toilet. Eventually, a gamer gets downright cynical.

Nowadays, when I hear the buzz for a game billed as the first interactive movie worthy of the name, that comes complete with a cool premise, state-of-the-art graphics and professional live-action video, part of me says, "Yeah, right. And I'm the Queen of England."

But every once in a while, I find a golden needle in the haystack, a game so good that I leap up from my seat, grab the game box, and go running down the street in my bathrobe, screaming, "Eureka! Eureka! The ads are all true!" And then I rush home and pack my bags for Buckingham Palace. *PSYCHIC DETECTIVE* is one of those games.

SOMEONE'S IN MY HEAD

PSYCHIC DETECTIVE is the first interactive movie that lives up to the label. By interactive movie, I don't mean that it's an adventure game with live-action video and recorded dialog. I mean that you're in a movie where events take place in real-time, and life continues around you whether you do anything or not.

Gameplay is woven into a rich net of characters and plot. You begin as Eric Fox, a cheap lounge act who calls himself The Psychic Flash. He's just minding his own business, making an easy living reading pocket watches and silk handkerchiefs in a dingy night club. One day trouble

comes in the form of Laina Pozok. She wants him to help her "keep an eye on things" at her father's wake by using his psychic powers to invade the minds of her late father's friends and family.

This gig might be a piece of cake, except that Laina and her family are a bunch of ruthless sharks. Laina's father was Vladimir Pozok, a famous Soviet researcher into the paranormal, and his friends and family are falling over themselves to sell his notes and papers; some are wheeling and dealing with the highest bidder before Vladimir's body is even cold. And, speaking of bodies, one of them will be dead before the party's over...

Gameplay consists of hopping from one person's head to another, eavesdropping, making snap decisions and reading objects. When a person passes close enough for Eric to hop in, an icon of the

individual appears in the area surrounding the movie screen. Eric enters that person's mind by selecting the icon. Once Eric transmits, he can see through that person's eyes, hear what they hear, and can hop again to any other person that passes within range. Once he's in a host, there's no limit to how far he can ride them; the victim can go for blocks or even miles without shaking him, and Eric can return to his own body at any time.

Reading objects is another matter. Eric's clairvoyance is an extremely visceral experience; touching a charged object will hit him with an incredible montage of images and emotions. Sometimes he can make sense of that mess, but more often he needs other clues. Ditto for reading the deep psyche of another human being.

As in life, the moment in which to take action quickly passes. If you don't jump



Price: \$59.95

System Requirements:

486 DX-50 (Pentium recommended), 8 MB RAM, 21 MB hard drive space, VESA-compatible SVGA video card with 1 MB RAM (2 MB recommended), 2x CD-ROM (4x CD recommended), digital audio card.

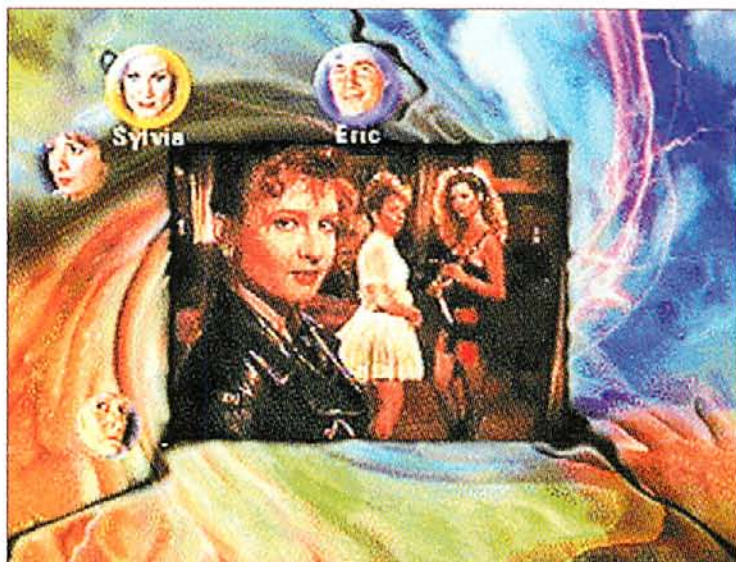
Designer: Colossal Pictures

Publisher: Electronic Arts

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on the chance to hop into someone's head, follow them in your car, save a life or read an object, you will lose your opportunity. Events are transpiring in real-time; at least two or three things are always happening at once, usually in separate rooms or even opposite ends of town, and Eric can't be everywhere at once. Your decisions guide the movie toward one of 14 endings but in all scenarios, Eric will end up playing Black Diamond, a fiendish game of psychic chess with the biggest, baddest Headhopper of them all. The stakes are high; if he loses, Eric could wind up a drooling idiot. The decisions he's made in the course of the game will determine whether his pieces on the Black Diamond board are Queens, or worthless pawns.



PSYCHEDELIC SENSATIONS The "interactive movie" tag is actually applicable in *PSYCHIC DETECTIVE*, due to the often bizarre cinematic flow of the adventure.

PARTING IS SUCH SWEET SORROW

Is there any downside to this game? It's hard to find one. The production, writing and premise are some of the best I've seen in any computer game. The script is original, sensitive, mature and tasteful, and although there's a good deal of violence, it's not gratuitous. The gameplay is engaging, and the interface is easy to use with first-rate graphics and effects.

If I was to put my finger on the one

thing wrong with *PSYCHIC DETECTIVE*, it would be that gameplay is too short; a full game takes less than an hour. But since there are so many endings, the replay value is amazingly high. Nevertheless, many players will exhaust the entertainment potential of the game after 20 hours are up, and as adventure games go, that's not long at all. Still, the 20 hours I played it were the most rewarding time that I've spent with a game in months. **E**

APPEAL: A good game for those craving a truly original title.

PROS: Very strong, very mature plot, spiced by an original premise and interesting gameplay. The first real "interactive movie" we've seen.

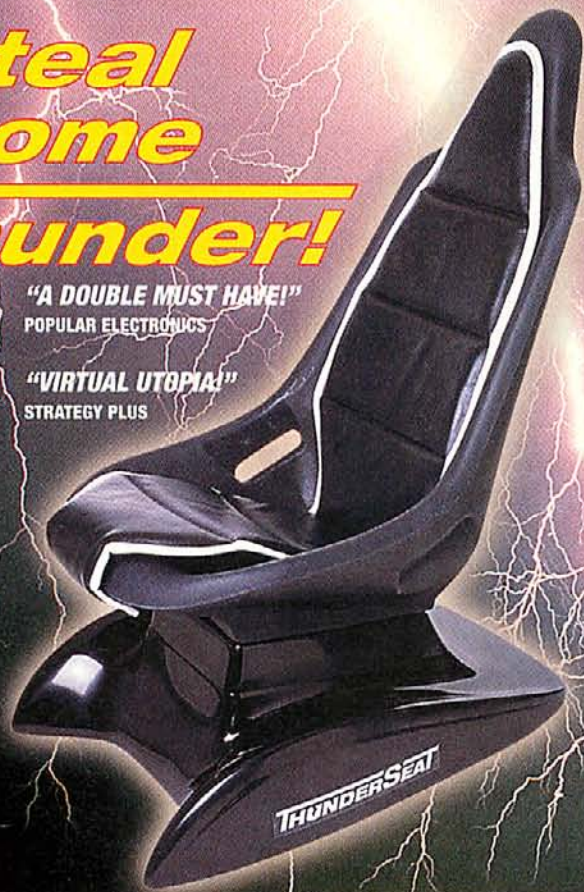
CONS: Quite short. Average player will get 20 hours of play. Good quality, but not much quantity.



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Firing Blanks

They're Mean Streets, Indeed, In THE DAME WAS LOADED

by Charles Ar dai



Raymond Chandler, creator of Philip Marlowe and master of the hard-boiled mystery, said: "The average detective story is probably no worse than the average novel, but you never see the average novel. It doesn't get published. The average—or only slightly above average—detective story does.... There are even a few optimists who buy it at the full retail price of two dollars, because it looks so fresh and new and there is a picture of a corpse on the cover."

Well, times have changed, but Chandler's observation hasn't. True, *THE DAME WAS LOADED* comes on a CD-ROM rather than between the covers of a paperback, costs \$40 instead of two, and has a picture on the cover not of a corpse but of a pouty-lipped brunette holding a smoking gun; but for all that, it is as average a mystery as Chandler could have imagined.

CLICHÉS GALORE

I don't think there is one thing in *THE DAME WAS LOADED*—not one character, one situation, or one weary

wisecrack—that you haven't seen before in a dozen private eye movies. The story goes like this: P.I. Scott Anger is hired by a doll named Carol Klein to find her missing brother, and two CDs and many saxo-

same motionless screen. Until you see this for yourself, you can't imagine how cheap it looks.

This is not the only example of poor production. Better game designers would



TIRED AND TRUE Scott Anger's world is private-eye vanilla, right down to the unused Smith-Corona typewriter on the desk.

phone riffs later, Anger saves the day. Along the way, he feeds a donut to a corrupt cop, plays poker with some hoods in a speakeasy, investigates the theft of some diamonds, flirts with the sister of his dead lover, and exercises his self-flagellating sense of humor so often that you want to put a bullet in him just to shut him up.

Gameplay consists of choosing one of a dozen locations from a map and then either hunting for clues by moving the cursor around the screen or questioning a character by selecting topics from a list. Each location starts off with full-motion video but after the intro, the scene continues only as audio with a still photo of the talking character filling the screen. Occasionally, the shot moves to an extreme close-up of the character's eyes in an attempt to hide the fact it's still the

have known that requiring players to return to Anger's office any time they want to save or load a game is a rotten idea, and might have caught the bug that kept crashing the game every time I tried to talk to Anger's partner. And better writers would have written narration that makes sense. When you look at your watch and Anger says, "The heat rises off the sidewalk and the bankers pick their teeth and make another three percent." Huh? Better jokes might at least have made the whole thing work as a deliciously cheesy gag.

But *DAME* isn't better, and it isn't delicious. Philips made a serious attempt to produce a good hard-boiled mystery game and they failed. Chandler would have advised you to save your two dollars, and he'd have been right. ☹

APPEAL: If you like your detective stories hard-boiled and familiar, this one comes with all the clichés in place, right down to the hero's fedora and trenchcoat.

PROS: The video segments are well-filmed and the theme song is catchy.

CONS: Bad writing, bad acting, bad game design; it's the multimedia equivalent of a hat trick.



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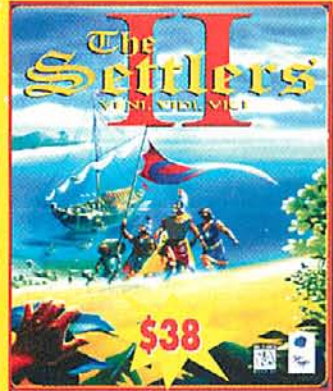
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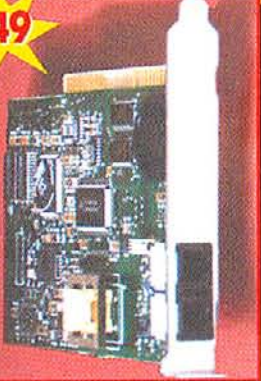


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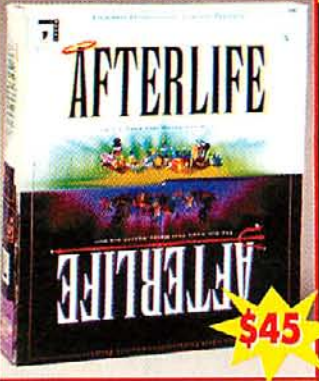
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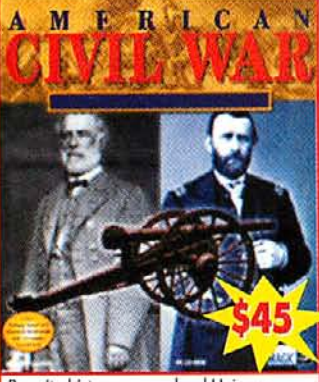


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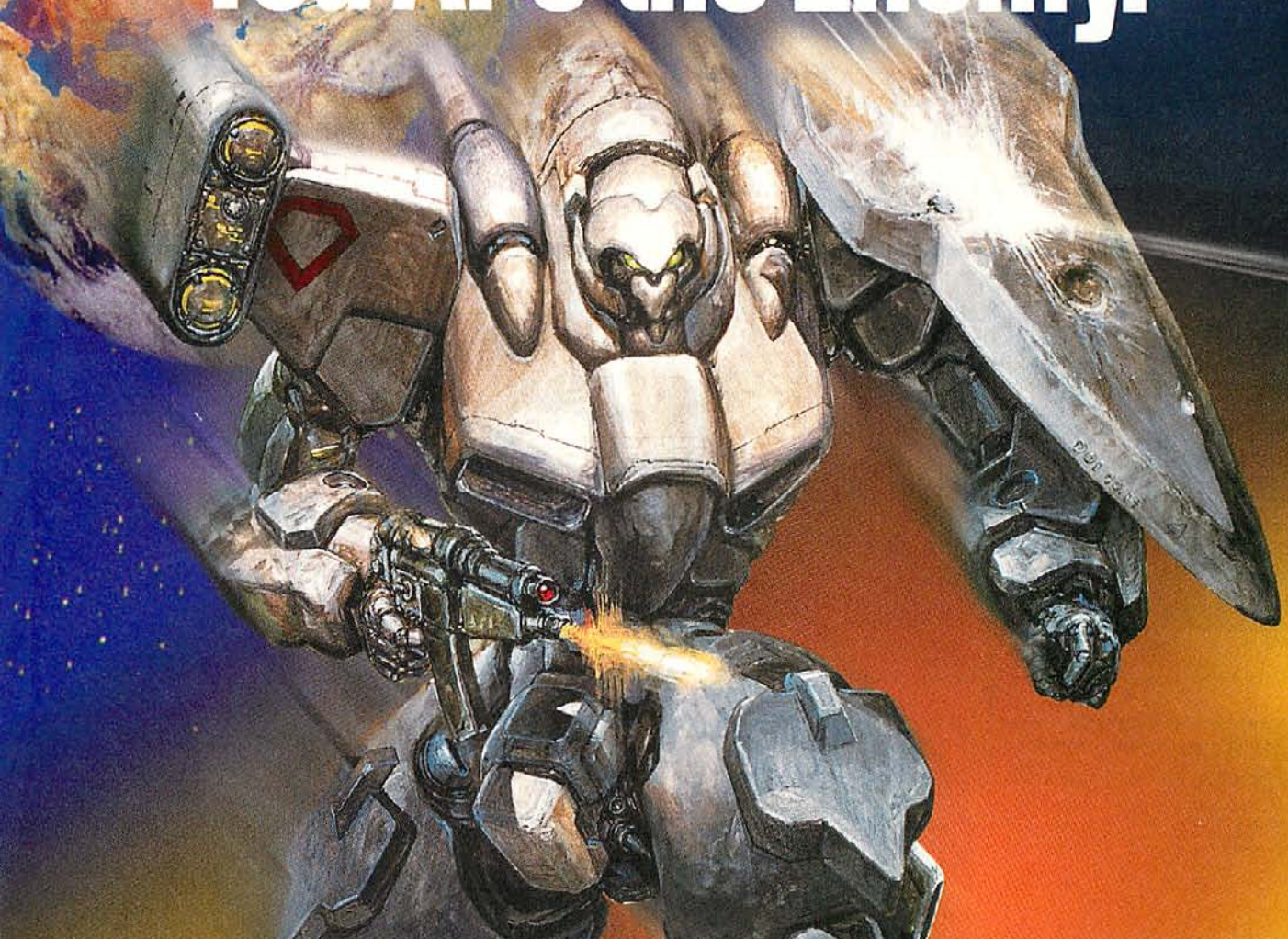
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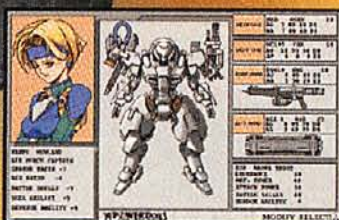


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The Lost Art Of War

Choppers And Tanks Prepare To Enter The 3D Action Arena



Call it the forgotten war. The combat-based shoot-em-up has become something of a lost art. DOOM has so redefined the 3D action-game industry—much as *Die Hard* did the action-movie industry—that, were BATTLEZONE to surface in mid-1996, it would probably be declared as “DOOM in a tank.”

On the consoles, of course, DOOM was a late comer, and the art was never lost to begin with. One of its finer expressions surfaced in 1993, when Core Design's sumptuous helicopter shoot-em-up, THUNDERSTRIKE, appeared on Sega CD.

Core has since taken that technology to the next level, and two offshoots have found their way to PC CD-ROM: JVC's AHB THUNDERSTRIKE: AIR ASSAULT (THUNDERSTRIKE 2 on the 32-bit con-

soles) and U.S. Gold's SHELLSHOCK. The results are at once encouraging and disappointing. While each game sports some intriguing features, neither is entirely satisfying—though for very different reasons. Indeed, they seem like opposite sides of the same coin.

KILLER BLADES

Of the two, AHB THUNDERSTRIKE comes much closer to pure shooting satisfaction. With all the graphic details enabled, it looks like a million bucks, and that buys realism. The undulating, textured terrain—great rocky outcroppings, tree-covered hillocks—whiz by at a fluid frame rate with no hint of the polygon underpinning (as in, say, Domark's TANK COMMANDER).

I'm a big fan of classy explosions—it's payoff for good work—and THUNDERSTRIKE has splendid, metal-wrenching conflagrations.



HELICOPTER TOURS Taking a jaunt around the scenery in THUNDERSTRIKE, targeting hapless enemies and watching the wreckage, makes for great sightseeing.

Communications and guard towers slowly keel over and crash to the ground. Components of destroyed vehicles soar in

“ I'm a big fan of classy explosions, and THUNDERSTRIKE has splendid, metal-wrenching conflagrations. ”

INSIDE ACTION

Bungie, the company behind MARATHON and MARATHON 2, is now creating original content for the PC. After they port over MARATHON 2, their PC development team will dive full-bore into creating a game that combines the genres of fighting games and DOOM-style 3D shooting, with a few platformer concepts as well, to create a truly genre-busting game. It hasn't been named yet, but from what we've heard, it has us chomping at the bit. Imagine

throwing Akira from VIRTUA FIGHTER into a level from DOOM. Add in the ability to fully interact with the environment, by picking up objects and scaling walls, and you have a game that transcends fighting and DOOM-style games. The game will be entirely 3D, and the worlds, of which there will be eight, will be rendered solely with polygons. Up to six players will be supported, since Bungie is designing it specifically as a multiplayer game. Although the level

setup is like DOOM, this isn't a first-person perspective game, since the dynamic camera will float and pan around the character, even more so than in BATTLE ARENA TOSHINDEN. Imagine throwing an uppercut at an enemy (a la MORTAL KOMBAT), and then watching as the camera flies up from underneath your legs, following the path of your fist and flying with it straight up into the enemy's jaw. Expect this “virtua DOOM”-game to ship in late 1996.

different directions, leaving independent trails of smoke. (All that's missing is a whiff of burning diesel fuel.) An active enemy—not so much smart as thick on the ground—proceeds to turn you into smoke unless you smoke it first.



DIVIDED THEY FALL Core's two games are opposite sides of the same coin; THUNDERSTRIKE has great sights and sounds but poor atmosphere, while SHELLSHOCK suffers the opposite problem.

Flying through bosky hills under the radar ceiling to nuke an enemy convoy with rocket fire, you start to feel that this is more than a game, it's an experience. A nice touch that reinforces the feel is the blasted wreckage, or at least the evidence of explosions, which often stays on the map. Too bad there's no smoke.

Core could have added one more feature: the ability to control the depth to which the terrain is drawn. I frequently found the program filling in the slopes in the foreground as I flew by. There is no surer way to lift the suspension of disbelief than to watch a game doing behind-the-

scenes stuff on the main stage. This may have been necessary to make allowances for slower machines, but there's no excuse for it on a 133 MHz Pentium. I'd have been happy to take a frame-rate hit so that terrain wouldn't fill in as I flew over it.

Fortunately, this didn't happen all the time—it may be a function of the level of activity on a section of the map—and my disap-

pointment had little to do with the game's performance during the missions. They're very entertaining. What's disappointing is the sense of emptiness that follows completion of a mission. There's a terse evaluation of your performance—three strikes and you're out—and a decoration if you've completed one of the eight short campaigns. But the game lacks a drawstring to make you feel part of a process.

LOW-TECH TREADMILLS

SHELLSHOCK has more of that sense of progression and transition. It finds you as the newest member of the commando unit "Da Wardenz." You command a tank on a 25-mission tour of thinly-disguised real-world hot spots—assigned by a "Charlie's Angels"-like commander whose

face is hidden. In a given scenario, you might have to destroy an armored division, blast an enemy base or free hostages. Along the way, you can fill your own pockets as well—not exactly a noble cause, but a necessary one—by driving over crates for cash that can be used to cover repairs and equipment upgrades back at the base.

While it's handing out lessons, SHELLSHOCK could take one from THUNDERSTRIKE. It doesn't have that technological dazzle. In fact, as far as dazzle goes, it just doesn't have a clue. It doesn't matter where you are; the terrain is always flat as a pancake (just as in the original THUNDERSTRIKE), and I don't care what fruit has been piled on top. It's still a pancake. The only cover you get in this game is obtained from trees and buildings, and the washed-out buildings remind me of nothing so much as the ones in Virgin's grim MECHWARRIOR variant, IRON ASSAULT. The simple explosions have no kick, and leave no remains. And the less-than-impressive enemies make for you like iron shavings to a magnet.

For a dedicated shoot-em-up, SHELLSHOCK does behave a lot like a sim, allowing you to rotate the tank's turret independent of the vehicle's heading, and giving you independent control over the

right and left treads for fast handling. The final version will have eight-player network play—again, something that might have slotted nicely into THUNDERSTRIKE.

SHELLSHOCK also displays a penchant for spreading features around different locales, features that might better have been condensed into a single menu to more convincingly create the semblance of a place. In one case, the unit's home base is an abandoned island prison. Each of these locations has an attendant character, and they'll sometimes offer context-specific advice and counsel.

TANKS IN DA HOOD

And here's something of a twist: The members of "Da Wardenz" all appear to be African- and Hispanic-Americans who speak to you in messages flecked with urban slang. ("D-Tour," who rides with you, opines at the outset: "Gettin' respect from the Wardenz ain't a given, y'know. Ya gots ta freak to earn it.")

Why am I lingering on this? Well, for a long time, to judge from in-game characters, you'd think computer games had been conceived when the Anglos met the Saxons. Games recently have become more dedicatedly multicultural, but I've never seen a one that seemed to feature specific ethnic groups.

If it's to further the plot, well, then it's different—and it contributes a great, grinding bassy theme for the base scenes—and never gets in the way of the story. And if it's for marketing reasons, well, it's a little obvious, but it can't hurt. While the computer-game market has expanded enormously, its penetration is still relatively low. To grow, it will have to find ways to speak to groups beyond the twentysomething middle-class white men on which it made its bones.

It's just a shame SHELLSHOCK isn't better. And it's a shame these two games didn't meet up at some early stage of their creation. I suspect that, together, they would have made one marvelous combat shoot-em-up (THUNDERSHOCK?). Standing back to back, they might have propped each other up. Apart, each falls down where the other stands. And that's no way to fight a war. ☹

GTIPS!

DUKE NUKEM 3D: Try these cheats on for size, Duke.

dnstuff—receive all weapons and ammunition

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dncashman—toss out dollar bills when the spacebar is hit

Cheats supplied by Gamewire

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There are more pinball games than ever to choose from these days. Most claim realistic ball motion and offer multiple tables as if quantity might be more important than a superior table design. While we don't think any offer the super-real ball motion of Loony Labyrinth™, there's a lot more to great pinball than ball movement. Just like in the arcades, some pinball machines last for years and others come and go in a few months. The creators of Crystal Caliburn set the standard for championship table design and super-real ball movement. Now with Loony Labyrinth™ they've taken that standard one step further. If you're looking for a game that will keep you challenged all year, take a step up and see what real pinball is all about. With a 90-day money back satisfaction guarantee, you've got little to lose.



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Circle Reader Service #76

Intelligent Gamer Online - "Loony Labyrinth is the most faithful, complex, and downright enjoyable reality based pinball game you can find on any computer platform or game console today." (Rating 92/100)

Computer Game Review - "This is still the best computer pinball game." (Rating 90/100)
Winner—Golden Triad Award.

MacUser - "Like all really great games, Loony Lab has a high just-one-more-try factor." (Rating 4.5/5)

Inside Mac Games - "...not only one of the best vid pins ever, but one of the greatest Macintosh games of all time." (Rating 4.5/5)

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Nukin' The Competition

DUKE NUKEM Ushers In The Next Generation of 3D Action

by Peter Olafson

Duke is king. The veteran of Todd Replogle's two Apogee arcaders has been resurrected in **DUKE NUKEM 3D**, and he rules the roost. For action gamers, this is heaven. **DUKE**'s pretty much the same citizen soldier as in those early platformers:

shock of yellow hair, tank top, blue jeans, big damn gun. The differences: He talks, he's lost the Coke habit and he wears trendy wraparound black sunglasses. Oh, and he's now running around in a 3D world like none other.

DUKE is very much a **DOOM**-style game: a sort of 2.75D splatterfest in which our hero lays waste the local population, opens keycarded doors, collects



DUKIN' IT OUT **DUKE** has a truly interactive environment; when you kill the aliens and watch their blood permanently stain the floors and walls, you'll agree.

IT'S TIME TO KICK ASS...

Never before has this genre seen a game that transports you to such a totally immersive environment. When your shots hit home, they spatter enemy blood on the walls behind them, and it will be there when you come back. Walk through blood, and you'll leave behind bloody footprints. When your shots miss, they leave bullet holes in the walls—and not some generalized notion of bullet holes, but the holes from your particular bullets. At the end of each level,

Duke doesn't calculate abstract percentages, but tells you how many aliens you've actually scratched.

DUKE's creators know the value of secret levels as well: There's at least one for each episode, sometimes more, and finding them is a task that will have you coming back to a level again and again.

GROOVY

In the classic **DOOM**, weapons were essentially ever-more-powerful incarnations of the shotgun—you pointed it, pulled the trigger and the aliens went down. **DUKE** certainly has its share of similar weapons. But there's also the Freezethrower, which fires a stream of reflecting ice crystals, setting up frozen aliens to be shattered with a well-placed kick from **Duke**'s jack-booted leg. The Shrinker temporarily reduces all but the strongest enemies to the size of a kewpie doll, which said leg happily smushes to pulp.

My favorites weapons are the pipe and tripbombs, which allow you the luxury of hitting the enemy where you ain't. The former is effectively a grenade which can be thrown and then remotely detonated to delightful effect. The tripbomb is a TV-remote-sized box that, fastened to a wall, emits a thin red beam. Break the beam, and anything nearby is cooked.

The inventory in **DUKE** is an improvement over id's **HERETIC**: It's a real tool belt



Price: \$39.95

System Requirements:
IBM compatible 486-66, 8 MB RAM, VGA graphics, 2x CD-ROM drive, 25 MB hard drive space; supports Sound Blaster compatible sound cards
of Players: 1-8
Protection: None
Designer: 3DRealms
Publisher: FormGen
Scottsdale, AZ
1-800-APOGEE1
Reader Service #: 322



BULLS-EYE A handy feature in **DUKE** is the optional crosshair, which comes in handy when you want to lodge a rocket in an alien's forehead.

bigger and better mousetraps and activates end-of-level auto-destruct mechanisms. It starts out in downtown L.A., moves to near space and then back to Planet Hollywood for the denouement. But while **DOOM** set the stage, **DUKE** fills in the details in splendid fashion on almost every level.

Prepare for the Assault—We descend upon them with Fire!



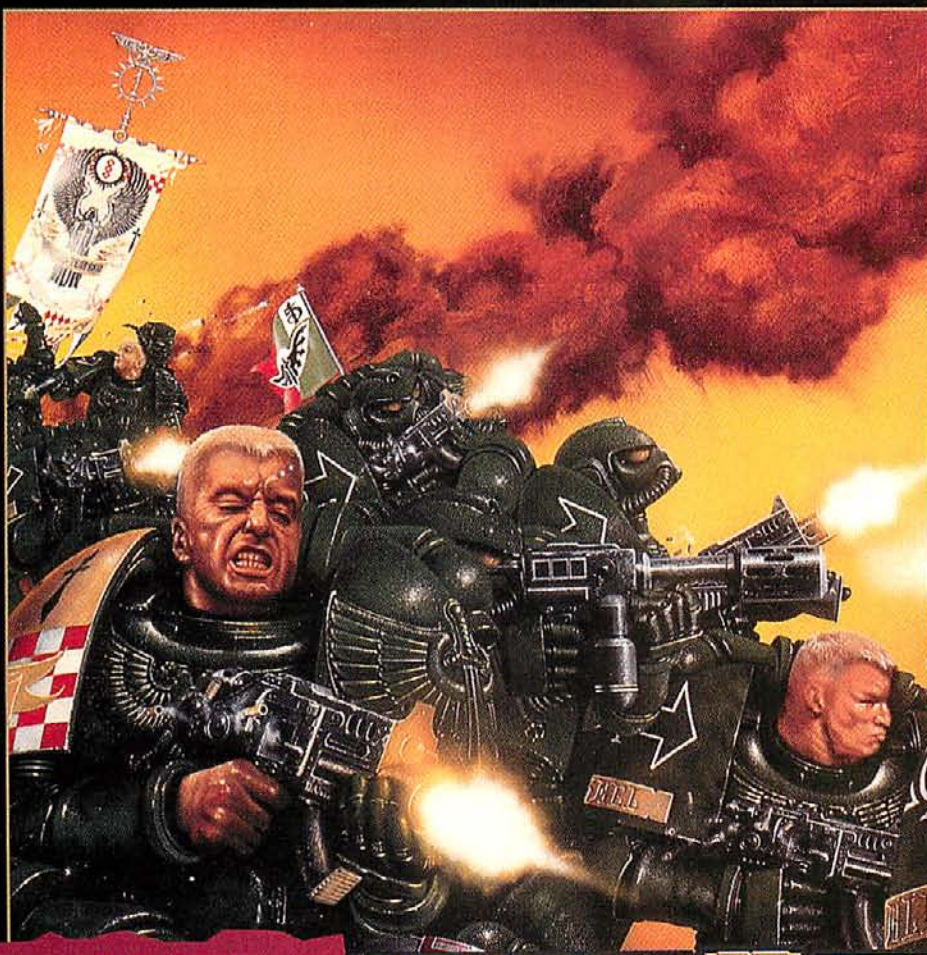
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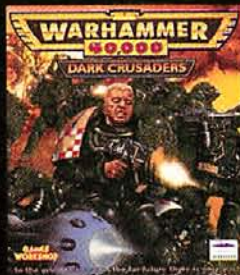
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which you'll call on throughout the game. The items you'll find and load into the belt are essential to winning. The jetpack allows you to reach otherwise inaccessible high places. Night vision goggles will display enemy silhouettes in utter darkness,

and, sometimes, reveal hints inscribed on walls. Boots delay the toxic effects of muck underfoot, and scuba gear allows you to breathe underwater.

If you can't use it, or open it, or otherwise interact with it, there's a chance you

can just blow it up. Mirrors shatter to expose their plywood backing. Toilets collapse in fragments, unleashing mini geysers of blue water. Bunks disintegrate. And certain walls can be destroyed to reveal new paths, hidden regions and shortcuts

Duke's Hollywood Adventure

DUKE NUKEM 3D is a regular cornucopia of references to movies, other computer games and recent history. Here's a sample of what awaits popular-culture vultures, and tips on where to find them.

Doom

In a secret area behind the prison chapel in E1L3, you'll find a familiar-looking corpse clutching its bloody throat. Duke's comment: "Hmmm. That's one Doomed space marine."



Star Trek: The Next Generation

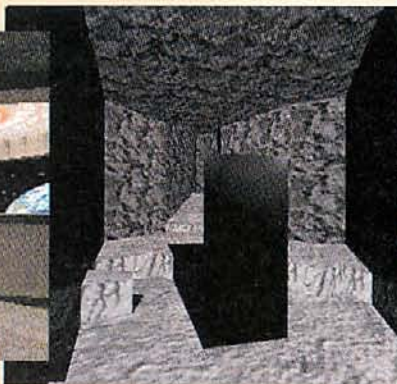
The layout of the spaceship you explore in E2L3 should look familiar. A rough replica of the bridge of the starship Enterprise—complete with Ready Room (and a few non-regulation surprises)—can be found above the main body of the ship. After you use the conveyor belt to reach the circular forward area, open the lighted panel to the right and shoot the button high on its left wall. This opens a secret door on the left side of the room's central hub that will lead you to the turbo-lift. "Hmmm!" says Duke. "Looks like I have the con."

O.J. Simpson Case

On E1L1, you'll find a huge billboard read-



ing, "Innocent?" after you drop down the shaft from the starting point. You'll find Duke's answer to that question in E3L7. A large "GUILTY!" sign (with the exclamation point painted in blood) can be found in a crate-filled room on your right once you clear this level's first key-card door. And check out the TV at the far end of the bar in E1L2 for a chopper-eye view of the white Bronco and the "low-speed chase."



2001: A Space Odyssey

Beyond the forcefield off the arena in E2L8, you'll find a scarred rock wall. Destroy it, and follow the corridor it concealed, and you start to hear a familiar chorus and, eventually, find a familiar black, rectangular shape.



Indiana Jones

On E3L8, take the elevator to the upper level of the hotel and find the "L"-shaped swimming pool. Step into the waterfall that

supplies it, and you'll teleport into a hidden enclosure. Here you'll find the entrance to a secret level ("Freeway") and, at the enclosure's farthest reaches, a familiar figure hanging impaled on the wall. "We meet again, Dr. Jones," says Duke.



The Empire Strikes Back

On E2L7, descend the shaft in the right-hand barracks in the Crew Quarters, and enter the circular vent opposite your landing point. This will bring you to the brink of a deep, DARK FORCES-like ravine. In the opposite cliff, out of sight and slightly to your left, you'll find a jagged opening. Within, you'll find young master Luke strung up by his feet, a Shrinker in place of his light saber. "Now, this is a Force to be reckoned with," says Duke.

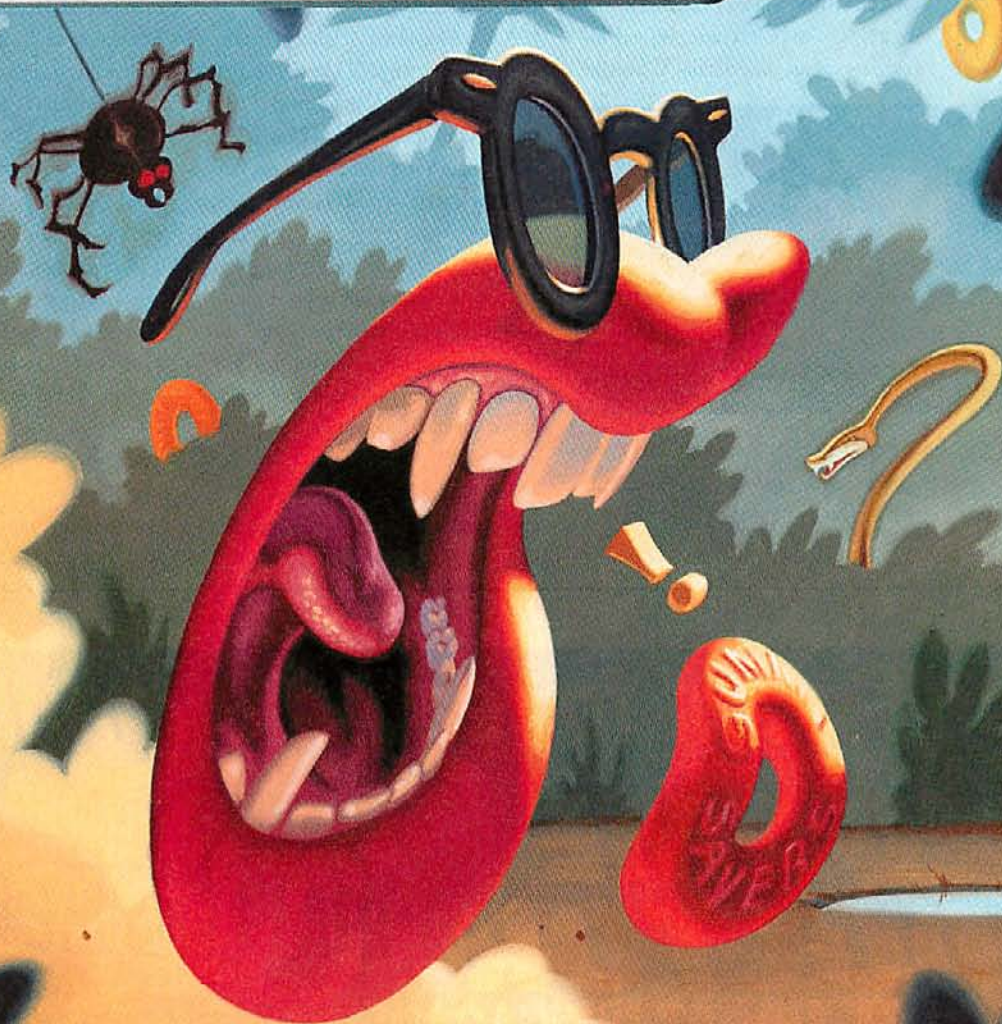
Quake

Once you emerge from the tunnels at the start of E3L4, you'll find yourself facing a black office building with a triangular sign designating it a "Quake site." This is a replica of the Texas HQ of id Software. Jump up on the ledge that fronts the building, and you'll set off an earthquake that leaves the structure in ruins. "I ain't afraid no Quake," says Duke.

The Simpsons

If you can find a spare moment in your battle with the final boss in E3L9, check out the sky for a blimp advertising Homer Simpson's favorite brew. (It's spelled "Duf" instead of "Duff.") Blow it up for an extra surprise.

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 Mission : To pig out. Or die trying.



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to previously explored areas. The levels in DUKE are a solid move in the direction of the mutable environment—one in which only the player is a given.

Of course, if you want more flexible levels, you can always build your own with the Build editor that is included on the CD, along with a range of utilities (including a DOOM-to-Build converter) and 40-odd pages of documentation. Also on the



CHILL OUT The Freezethrower, which turns enemies to ice, isn't the only unique weapon in Duke, but it is the coolest. Kick frozen enemies for some earth-shattering effects.

CD are the complete versions of the original DUKE NUKEM and DUKE NUKEM II, a raft of Apogee demos and screens for DUKE follow-ups SHADOW WARRIOR and BLOOD, and 3D Realms' next-generation game, the QUAKE-like PREY.

NOT QUITE 3D

And yet, for all that, it is not perfect. Duke's 3D is not true 3D, as will be immediately apparent from its textured 2D map mode. It's an effective simulation of 3D, with bridges, overpasses and ramps, but lacks the visceral appeal of a FUTURE SHOCK.

While the opening and closing episodes are consistently inspired, the middle space episode seems comparatively tame in layout, depth and challenge. (What happened to the notion of being blown out into space by blowing up the wrong wall?)

Technically, DUKE's very clean. However, the rich explosions sometimes

appear in front of some background objects but behind others—and in later levels I occasionally found graphical garbage tracking Duke's passage. Moreover, in certain respects, DUKE is too close to DOOM. The episode-ending confrontations with giant bosses are all set in arena-style levels. Indeed, the final one is in a real arena—a football stadium, complete with cheerleaders and goal posts.

There has to be another way to do this: the boss could pursue Duke into a section of city built almost entirely of destroy-able walls. Duke's task would be to avoid his enemy and the detonations around him and search for the one building that the boss can't destroy. This ending would have been more consistent with the interactivity of the previous levels of DUKE.

And last, but not least, DUKE is bound to elicit criticism that it demeans women. The original shareware version set off a small firestorm online when the reference "killbitch" was found embedded in the

"I don't want to read the manual!"

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and reviewed in
Sept. 95 CGW

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code. They won't have to look that far this time. Women here are represented as exotic dancers, cheerleaders and naked alien captives. And lest you think Duke should somehow be excused because of his ostensible role as rescuer and Earth savior, well, think again. Encountering a bikini-clad dancer, his contribution to her is: "Shake it, baby." When he takes the mike at a liberated radio station, his spiel

for KITT is "playing the breast...uh, the best tunes in town."

One other note on DUKE is its multiplayer mode. It is incredibly fun blasting your friends in a DUKEMATCH, but the levels in DUKE are much too large when playing with only a few people. You could end up spending more time looking for your friends and less time actually shooting them. The major problem with multiplayer, though, is that you can't enter and exit the multiplayer matches at will. So if you wanted to exit DUKE and change your name, or if a newcomer wanted to join a game in progress, you'd have to wait till everyone else quit and start a new game.

But, having said all that, DUKE is absolute fun. It's great deconstructing the alien aggressors into component eyeballs, teeth and limbs while listening to Duke's throaty bon mots. DUKE's environment isn't the most compelling 3D world I've seen, but it is the most fully realized: densely populated with things to



WHAT'S IN THE EGG? The women in DUKE are treated poorly, appearing in demeaning roles or as captives, like this woman in what looks like an *Aliens*-style egg.

discover, things to interact with and things to blow to hell. Yeah, the juvenile humor gets thin after awhile, but it gives the game attitude and personality. There certainly is room for improvement in DUKE, but the environment is right and the gameplay is fun. So maybe next time, we'll get a game that aims a little higher. Until then, I'll be shattering some aliens with my boot and the trusty ol' Freezethrower. ☿

APPEAL: Duke is for those who want to play the next level of fast, visceral 3D action in an immersive world with attitude.

PROS: The most interactive game of its genre; incredible graphics; cool weapons, levels and monsters; campy humor and a built-in scenario-editor.

CONS: It's not true 3D, there are some graphic inconsistencies in later levels, and the overall treatment of women is demeaning.



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Abusive Side-Scroller

Crack Dot Com's Baby Suffers A Few Deformities

by Paul C. Schuytema

Wenever I run into a platform game, I always mentally compare it to my favorite Sega cart: *CHOULS AND GHOSTS*. That game was one of the first Sega games, released in the late 80s. Yet, for playability and believability, *ABUSE* falls far short of the venera-

level. Honestly, I was pretty jazzed when I first dove into it. I was intrigued when my alter ego, Nick Vrenna, began the game breathing heavily, bobbing up and down from exhaustion. I controlled his legs with the keyboard, but aimed by using the mouse. The dual controls were useful, since I could run one way and shoot behind me, or snipe straight up if I needed to.

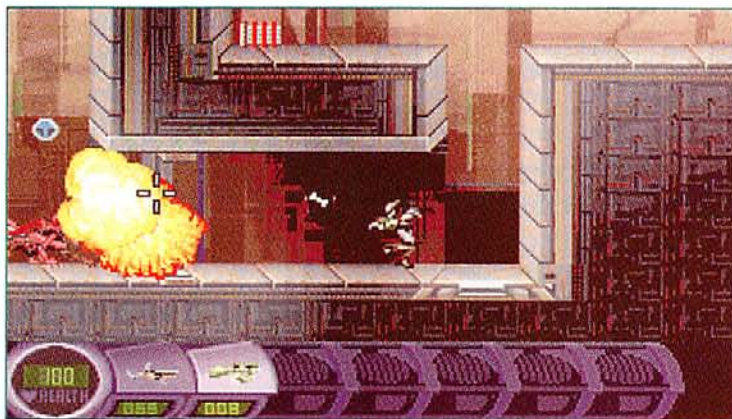
Off to a great start, I had high hopes for this retro game. Sadly, those hopes crumbled the first time I encountered a rabid

with each step, one foot was planted in thin air and the other was in front of the platform. There's just no excuse for such visual sloppiness.

The list of irritants goes on and on, from a large mining drill that pushes your character along, even though you're well above it, to switch puzzles created in such a way that there is no time to logically solve them—all you can do is stab at the keyboard and hope for the best. In fact, much of the design theory of this game comes from the "you must die first" school of thought, requiring you to sacrifice a life in order to get the needed information to advance.

OMINOUS SOUNDS

On the up-side, there are a few cool things in *ABUSE*. The digital effects are wonderful and ominous. There are lots of nifty powerups and a slew of weapons to snatch up. And you can play with up to 8 other players in a network game. In net play, some of the weaknesses of the single-player game fall away, but going mano-a-mano in *ABUSE* falls far short of the first-person *Deathmatch* experience. If you like side-scrollers, you're better off dusting off your old *Genesis*, because Crack Dot Com's *ABUSE* falls far short of even the status quo. ☹



RUN FOR YOUR LIFE *ABUSE* will appeal to side-scrolling junkies, but after the first rush you're not likely to get hooked.

ble side-scrolling classic. In Crack Dot Com's *ABUSE*, you're an innocent trapped in a prison, who must stop a mad scientist from unleashing a deadly virus onto humanity with nothing but your battle armor and laser gun. That, plain and simple, is the entire plot to the lamentable *ABUSE*.

PLATFORMS REVISITED

At its heart, *ABUSE* is a platform scrolling game, where you're running around blasting everything in sight in your search for powerups and the end of the

beastie. The *Alien*-esque demon was just a blurry, flickering mess of pixels, with no real personality. The creature ran around so frantically that any hope at careful aiming was futile. More importantly, though, was that the creature's chaotic behavior made it more of a "thing to shoot" than a threatening mutant. In short, the illusion of the game was broken many times, and I ceased to be "in" my alter ego anymore.

The illusion further disintegrated when I ran down a slope. No attempt was made to make it realistic. The same animation as a flat platform run was used, so that



Price: \$44.95
System

Requirements: IBM compatible 486-50 (486-66 for net play), 8 MB RAM, VGA, DOS 5.0 (Windows 95 for net play), 2x CD-ROM; supports Sound Blaster-compatible sound cards.

of Players: 1 (2-8 in net play)

Protection: None (CD must be in drive)

Developer: Crack Dot Com

Publisher: Origin Systems

Austin, TX

(512) 335-5200

Reader Service #: 323

APPEAL: Side-scroller junkies with nothing else to play or gamers longing for a customizable console experience.

PROS: Great sound effects, cool controls, and a level editor; supports network play.

CONS: Pixelated enemies and bad game design. Nothing new here—would have been a decent game on a *Genesis* in 1990.



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XENOPHAGA

ALIEN BLOODSPORT

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Dumptruck Derby

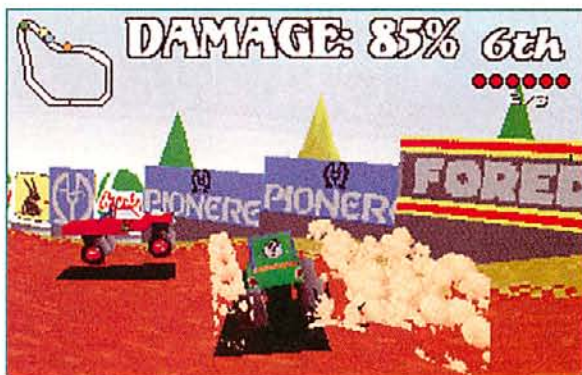
BIG RED RACING Is Even Too Juvenile For Juveniles

by Gordon Goble

I tried. I really did. I tried to put myself in the mindset of the young crowd at which **BIG RED RACING** is surely aimed. I swore a whole bunch, flipped through an old *National Geographic* to catch some skin, then listened to a *Green Day* CD. As a final measure, I rented the movie *The Jerky Boys*. It didn't work. I still found **BIG RED** to be extremely juvenile—most likely too juvenile even for juveniles.

As the name suggests, **BIG RED** is a racing game, backed with supposedly humorous witticisms, verbal effects and visual coolness throughout both the racing itself and the menu. As it turns out, the racing is chaotic, repetitive and confusing, and the attempts at teeny-bopper humor are tasteless, sexist and just not funny. Although the idea behind **BIG RED** really wasn't all that bad, the execution leaves much to be desired.

The idea? Well, let's just say that **BIG RED** offers the opportunity to race vehicles that are not normally seen in competition, on courses that are literally out of



BIG WHEELS The Ireland course is an easy one; just watch out for the sheep and the bouncing trucks.

Moon, Venus and Mars. It could have worked, but...

A REAL LEMON

The annoying stuff begins right from the start, with menu selections that seem to vibrate on the screen. Though it's meant to be way cool, most first impressions will be, "Hey, is there something wrong with my monitor?" Thereafter, each menuing keystroke will be accompanied by one of several witty audio bursts. If you're lucky, you'll get something only marginally irksome like, "I feel like drinkin' a gallon of turpentine and pissin' on a brush fire," while the truly blessed will enjoy the tasteful sounds of burping,

you'll find that **BIG RED** isn't all bad, as exemplified by its extensive gameplay options. Aside from the two dozen courses and 16 vehicles, you'll be asked to choose between one player, two player split screen, two player modem and six-player network modes. There's also

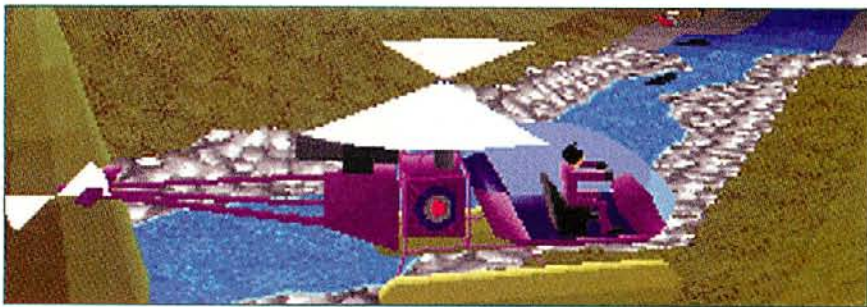
the driving control section, where you can make your choice of steering, acceleration and braking input, analog vs. digital joystick, and the like. If you're really into it, you can pick one of several arcade-type "characters" as your driver, a color scheme for his or her driving suit, and logo for your rig.

From there, it's on to the track, and aside from a somewhat enjoyable network situation, this is where bad goes to worse. It's hard to pinpoint what's wrong with racing in the **BIG RED** world, but it's easy to say that it's not compelling. Visually, it's a true 3-D affair, but the elements are beta simple, with off-kilter vehicles and strangely textured and confusing polygo-

nal terrain. There's little difference between the SVGA and VGA modes, and despite the graphic simplicity of the game, it ran slow even on my Pentium 90. On the upside, both resolution and window size may be changed on the fly.

Races are three laps long on any given track,

and they last three or four minutes. The action is hectic, as everyone tries to negotiate the wild dips, hills and turns that are present just about everywhere. Land-



UP AND AWAY Despite the innocuous track, the helicopter is one of the toughest vehicles to race with.

this world. Big rigs, snowplows, airboats and helicopters are just a few of the vehicles available, while racing venues range from Arctic snow drifts to circuits on the

farting and really stupid laughter, seemingly stolen directly from an episode of the television classic "Hee-I law." Yeech.

As you toggle through the menus,

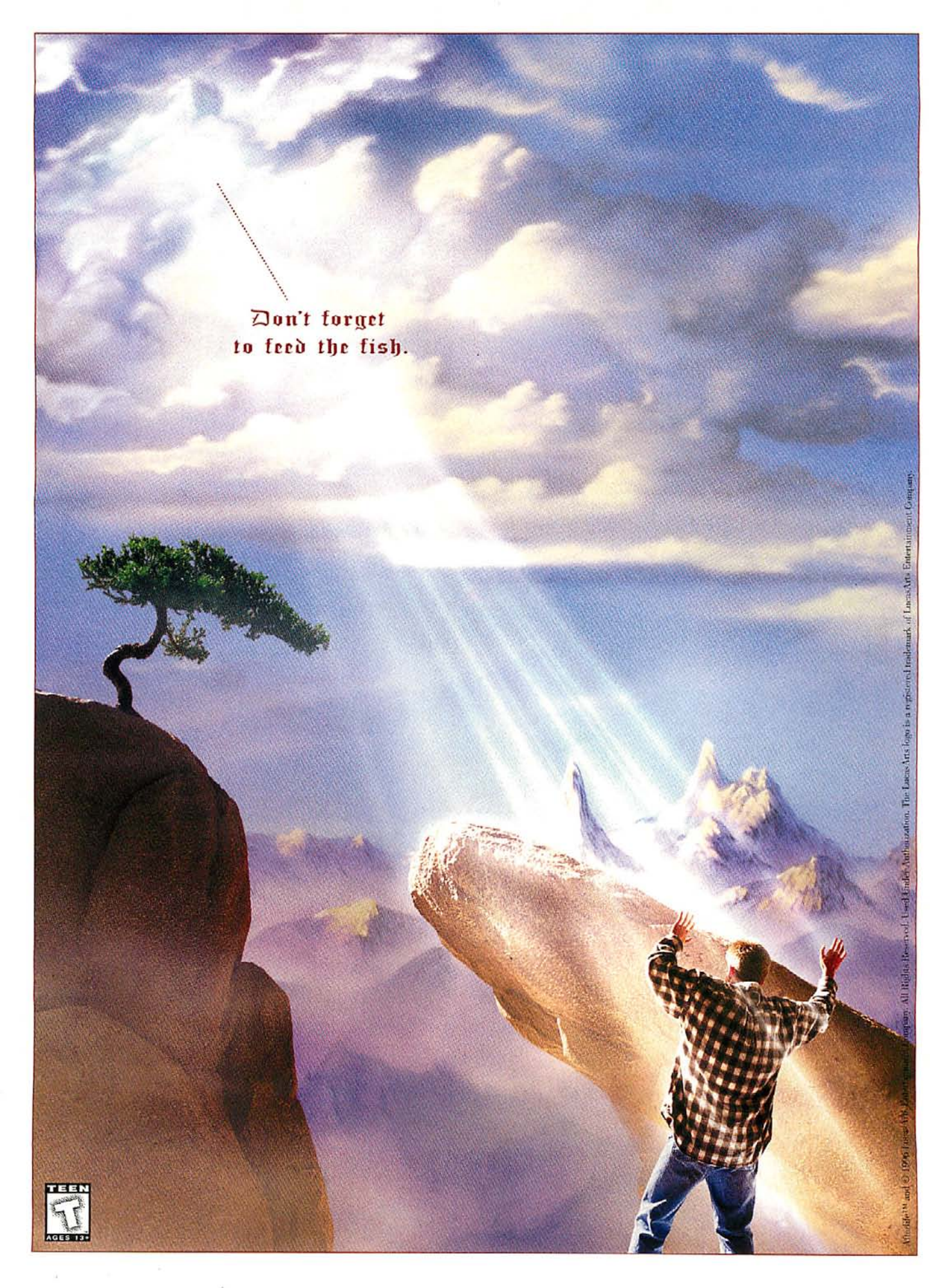


Price: \$29.95
System Requirements:
 486DX-66 or better,
 DOS 6.0, 8 MB RAM,
 2x CD-ROM drive,
 SVGA graphics, 42 MB
 hard disk space,
 mouse; supports
 Sound Blaster compatible
 sound cards,
 Thrustmaster steering
 wheel and pedals.
of Players: 1 to 6
Protection: None (CD
 must be in drive)
Designer: Big Red
 Software
Publisher: Domark
 San Mateo, CA
 (415) 513-8929
Reader Service #: 324



nd on the 8th day,
He split to Maui.





Don't forget
to feed the fish.

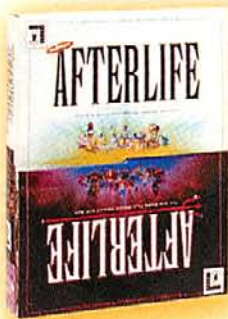
TEEN
AGES 13+

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locked vehicles will feel the wrath of water hazards and abrupt mountain faces, while boats will do their best to keep in the middle of their narrow fjords. On paper, this all sounds pretty good, but in practice it's tough to tell what's up, what's down and which way the dam course goes.

Adding to your woes, the driving model is sloppy, unresponsive and frus-

trating, even in comparison to the weakest of arcade games. Banging bumpers is quite common, and if the confusing graphics don't throw you miles off course, progressive damage to your vehicle might do you in. Multiple viewing perspectives, courtesy of rotating cameras, hinder rather than assist. However, with a couple of trial runs on each course the whole thing gets pretty easy, and as a final blow

to gameplay longevity, winning a race against computer competition becomes almost second nature. As mentioned earlier, racing against real people would improve things somewhat, but other arcade driving games such as WHIPLASH and SCREAMER also feature network play, and are infinitely better. Aside from the concept, this is one game that really can't be recommended to any age group. **E**

APPEAL: The immature and immature-at-heart who hunger for a wild 'n' wacky driving game that's got very little to do with known physics.

PROS: Good multiplayer game, lots of camera views, a variety of vehicles that includes high-performance dumptrucks and snowplows.

CONS: Perplexing and dated graphics, crummy driving models, easy victories, tasteless sound effects.



They're exactly the same, but somebody just paid \$100,000 for the one on the right.

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Blunt Instrument

No PUZZLE POWER In The CROSSWORLD

I can remember when the Sunday edition of the *New York Times* intimidated me. There was the newspaper's sheer size, the incredible range of critical thought in the *Times Book Review*—and then, there was that dastardly puzzle. Elitist, obtuse, arrogant, yes; but it was a turning point for me when I finally conquered the abstruse construction, finally fulfilling its all-too-geometric hori-

zontal/vertical layout to perfection. With the explosion of the gaming industry, it comes as no surprise that the granddaddy of all puzzles should go multimedia, along with that of its great competitor, the *LA Times*.

But PUZZLE POWER by Centron Software Technologies captures little of the grandeur of the *NY Times*. The puzzles are far too easy: where are the adjectives like "splendiferous?"; why does the accent of the announcer (as if you needed one) sound so middle

American, as he points out your hits and misses? (I would have been happy with a cabbie from the Bronx.) Why is it so boring visually? There is some variety in the six games enclosed. But you'll rarely need *Roget's Thesaurus*—it is included, by the way—whether solving the lame puzzles, or creating code of your own in Cryptos. Quote falls becomes an unfortunate pun, and Puzzle Master never lives up to its name. And while Kriss Kross might be educational, I'd rather listen to the band—they're a lot more hip.

“ These computer puzzles need an old-fashioned pencil sharpener. ”

CHECK!

►The big news for players of classic parlor games is that Hasbro Interactive is working with Westwood Studios, among others, to produce new versions of their classic board games. BATTLESHIP, for example, will include a basic and advanced version (don't think about that one too much). Risk! gets not merely a graphic facelift, but a new AI and more playing options than before. SCRABBLE will offer a "marble" board, stone and wood pieces, a tougher computer opponent, and a customizable dictionary. These games are getting the same royal treatment as MONOPOLY did, which means lots of flash, cool animation, and best of all, the promise of Internet play.



►Berkeley Systems continues to develop its YOU DON'T KNOW JACK franchise, with version 2.0 scheduled for October. Promised features include improved graphics, even more zany questions, a "High Score" list, and the possibility of mystery celebrities. Also, YOU DON'T KNOW JACK: SPORTS should make it in time for the Autumn playoffs.

CAUGHT IN A CROSSWORLD

If you approach a new medium in a linear fashion, you pretty much lose the strength of both the original (paper) and the new (computer). Gametek's experience in mediocre game show conversions to the computer, such as JEOPARDY, is well-employed here. A worse problem is the material: word searches are a lot like Tic-Tac-Toe, in that when you learn the secret pattern, play becomes mechanical and boring. Finding solutions in CROSSWORLD is thus a lot like looking for a pixel in a haystack in a particularly irritating adventure game.

In fairness, the production values of CROSSWORLD are a lot better than PUZZLE POWER. In fact, if creating professional crosswords and word searches for

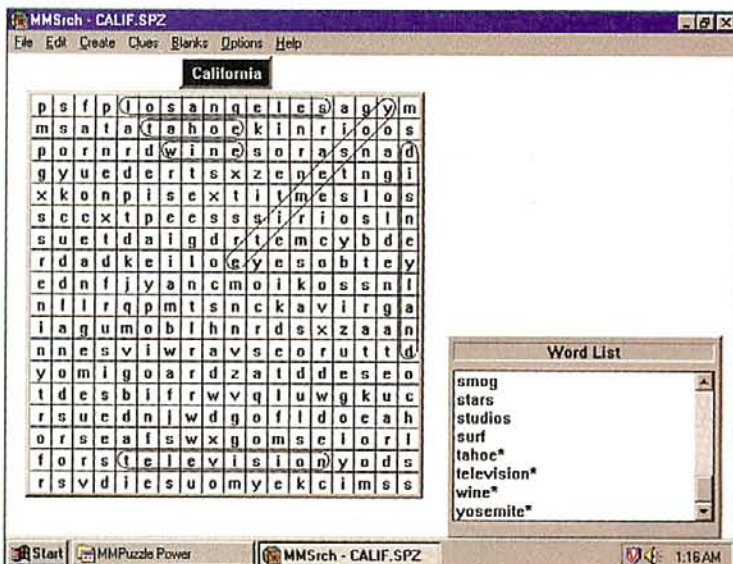
RESCUED ADRIFT

THEY SEND YOU

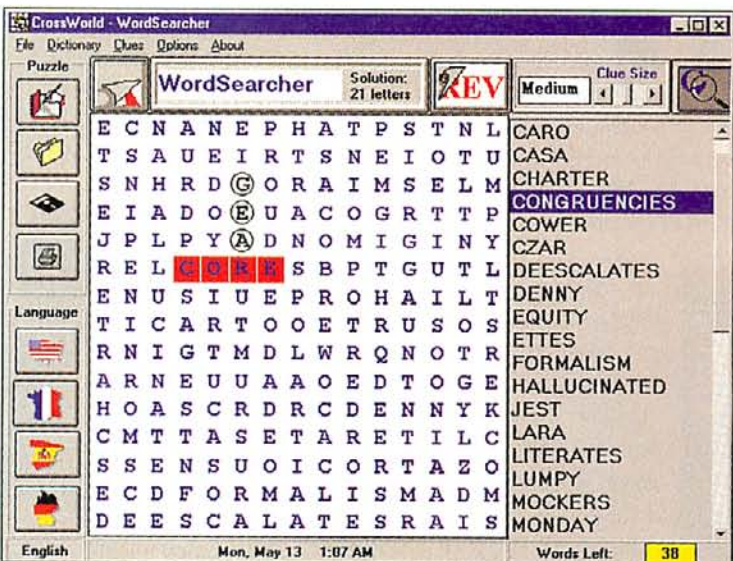
YOU'RE NOT ALONE

CLASSICS & PUZZLES

TERRY COLEMAN



BLACK & WHITE And read all over is PUZZLE POWER, nowhere near the magnificence of its NY Times brethren.



NO APPLE HERE While CrossWorld is a bit better, it still has some weird limits, often with several obvious words being left out of the puzzles.

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your local knitting club is important to you, then CROSSWORLD is a reasonable buy—but that's damning with faint praise, indeed. What most disappoints about both CROSSWORLD and PUZZLE POWER is that they are from top-notch publications, yet they constitute the great step backwards from such inspired fare as SMART GAMES (see Charles Ardai's review in this section). It's hard to believe that for my weekly crossword fix, the heavyweight class is still of wood pulp, rather than Pentium. ☹

GTIPS!

The most common letters in the English language are ETAIONS. An easy way to remember this is the phrase "eat ions"—close enough for solving puzzles. When working word searches, most people look for common words and phrases. Try searching for weird consonant blends and you'll solve things more quickly.

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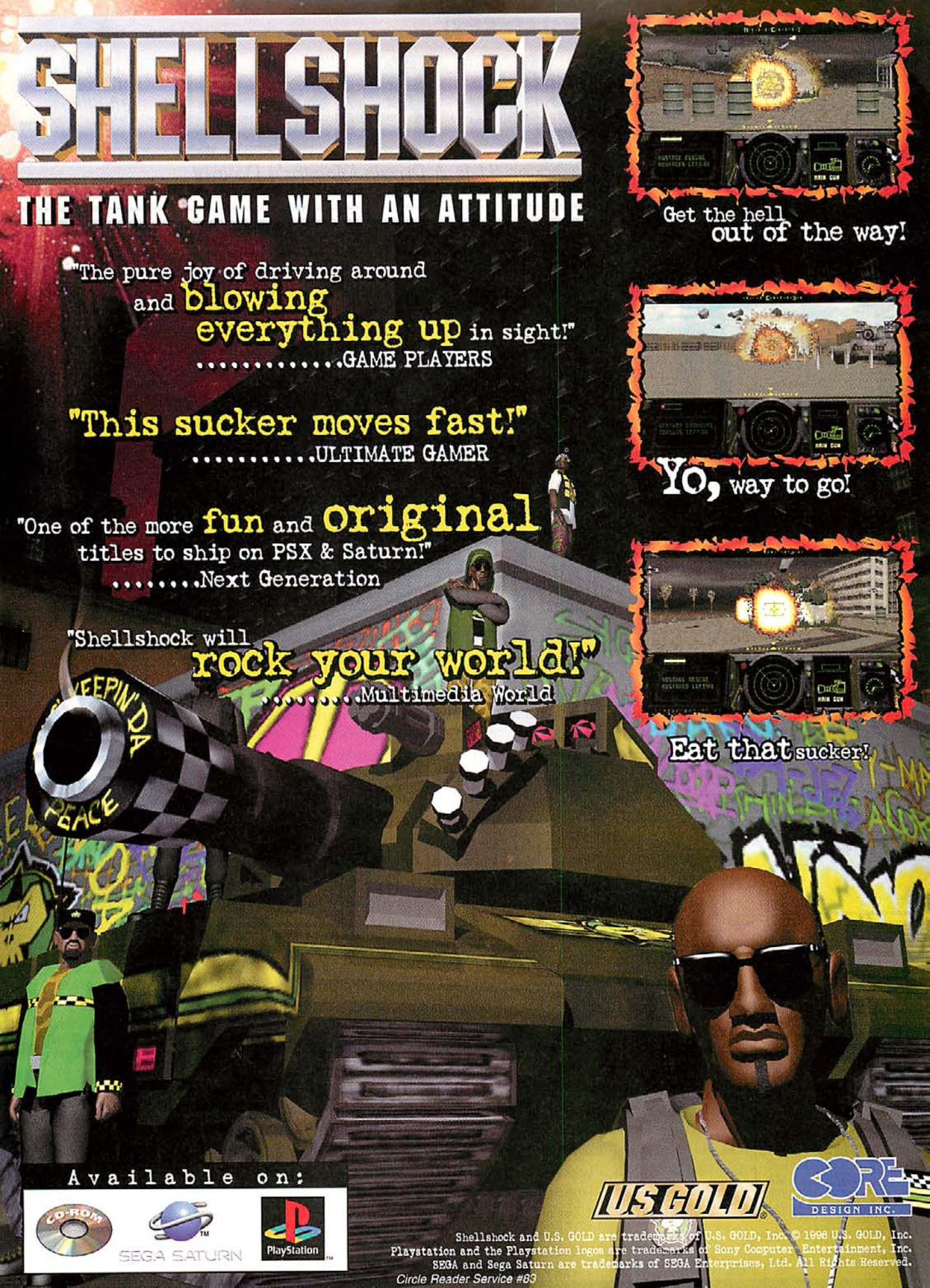
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Puzzle Pastry

SMART GAMES CHALLENGE #1 Is A Puzzle-Meister's Delight



by Charles Arday

A puzzle compilation is a fragile thing, like a soufflé. With a slight variation in temperature and improper blending of the ingredients, the tantalizing confection you were counting on can come out a soggy mess. Too many compilations today are made using creaky puzzles exhumed from the Brainteasers' Graveyard and a teaspoonful of fancy visual effects that is then carelessly mixed together in a CD-ROM. What comes out of the oven are fallen soufflés that lack the dash of the intelligence, imagination, and wit required to make the batter rise. But once in a while, a chef comes along who knows the difference between puff and pastry. The designer of SMART GAMES CHALLENGE #1 is one such, and people who sample his work will be satisfied diners indeed.

BOY, THAT SMARTS!

There are 20 different contests in SMART GAMES, including word searches, peg-jumping games, sliding-tile puzzles, and everyone's favorite, "Life." The wonderful thing is that not only are there plenty of fresher puzzles, but even the old groaners look downright snazzy. The screen does look handsome; the graphics and jazzy musical score are on par with those of Berkeley Systems' wonderful YOU DON'T KNOW JACK, but what really holds your attention is the chance for some serious mind-exercises.

Each game has between 6 and 20 variations, and while the first is usually quite basic, the 6th or 20th is guaranteed to leave veins in your forehead bulging. Take *Cryptograms*, for instance. The sucker bait, "TOBEORNOTTOBE," hardly



NATIVE TONGUE DEPRESSOR Translating "prehistoric languages" in SMART GAMES requires more than sticks and stones.

deserves to be called a cryptogram at all. But don't go jumping to any conclusions, the water gets deep awfully fast, and by the time you get to number 20, you'll be deciphering row after row of complete gibberish. What's nifty about SMART GAMES is that you can customize the difficulty level; there is no way to get stuck if a puzzle is too hard for you, and no need to work through puzzles you find too easy.

Many of the games test visual acuity, some vocabulary and some optimization skills. Some you'll recall from IQ tests of your childhood like, "Can this flat diagram be folded to produce this cube?" Others seem like the brainier cousins of video games. ("Use the forklift to move each ball into a container; balls can only be pushed, not pulled.") One of the best games teaches translation using an invented language where you learn vocabulary and sentence structure by example. You translate simple words and phrases like "tree" and "brown bear" first and finally complex sentences like, "I hunt brown bears with a stick."

Now for the dreaded question—is CHALLENGE #1 an educational game? Heavens, no. I refuse to give it that particular kiss of death. Sure, designers of other puzzle games that could look at it and learn a thing or two. But it's a game first, last, and in between. And what's most satisfying of all is its name, since it suggests that CHALLENGE #2 is being cooked up even as we speak. Keep 'em coming, I say. It's nice to have a reason to keep my mental oven warm. ☺

APPEAL: Anyone who remembers #2 pencils fondly will salivate over this souped-up IQ test.

PROS: Extremely clever variations on familiar puzzles and a graded difficulty scale that ranges from easy to Mensa-level.

CONS: Though the cleverness helps, you're still sliding tiles and jumping pegs and crossing words and doing all the other old dances yet again.



Price: \$39.95

System Requirements:
386-SX or higher processor, Windows 3.1 or Win 95, 4 MB RAM, 2 MB hard drive space, 256 color SVGA graphics, CD-ROM, mouse.
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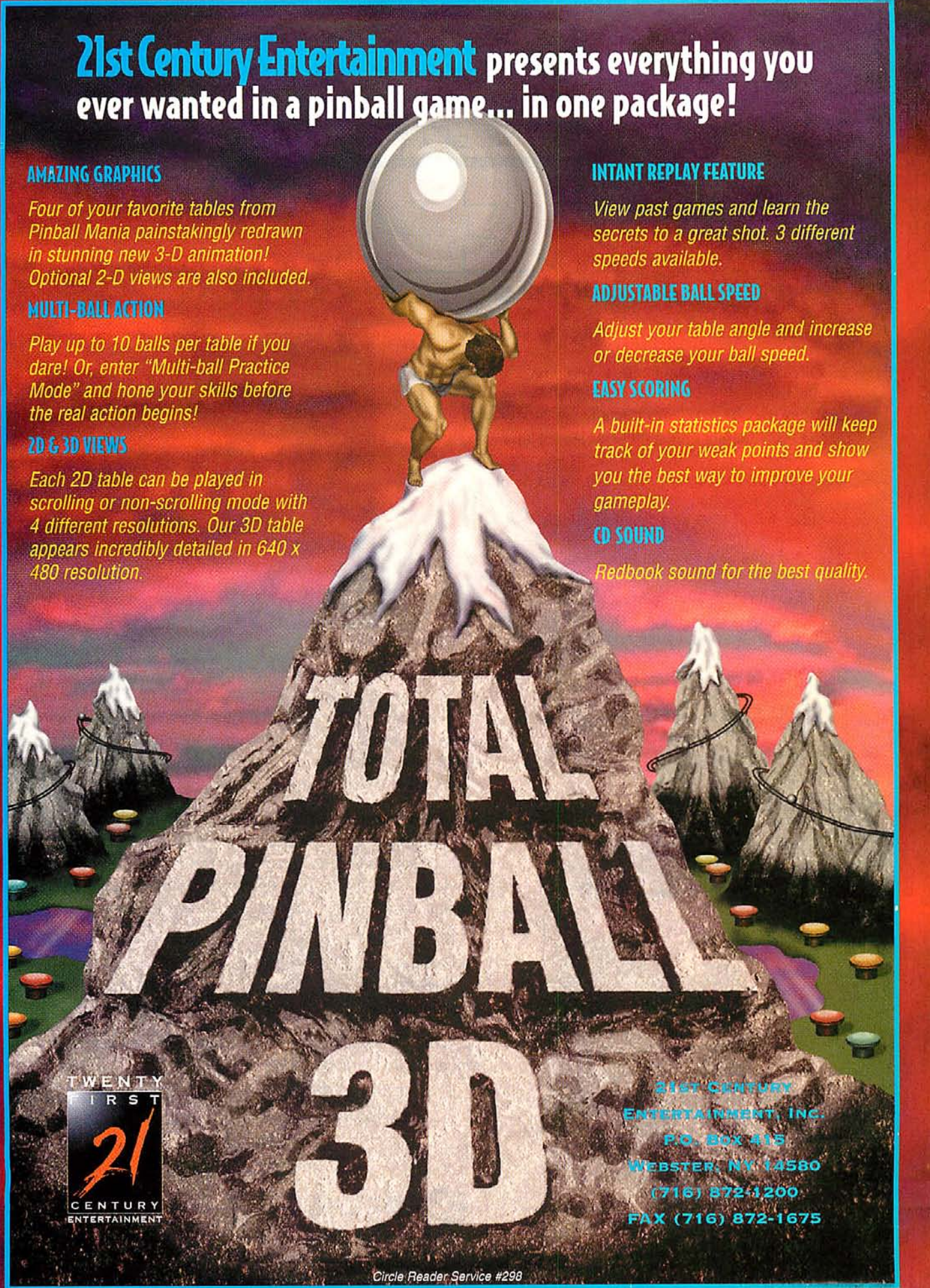
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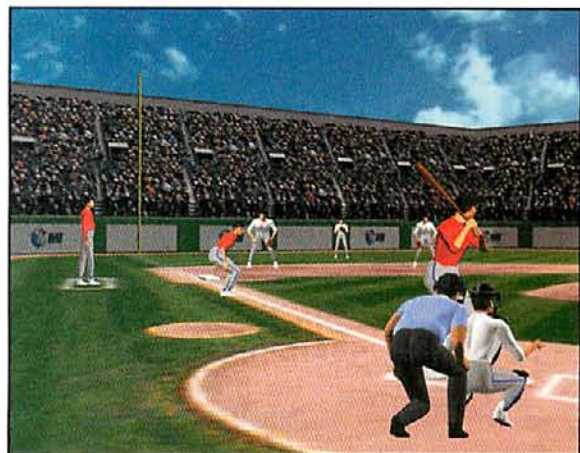
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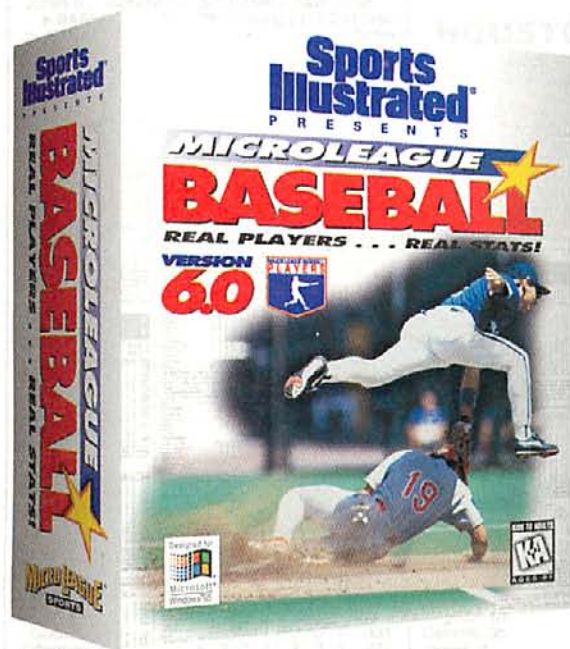
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Where Have You Gone, Dizzy Dean?

The Play's The Thing—Not The Play-By-Play

It's the over-hyped age of multimedia, and we computer sports gamers have offered ourselves up as willing captives to the new era. And yet, don't many of today's games seem so full of sound and fury, often signifying nothing other than big bucks? Just what does the audio-visual gaming "paradigm shift" mean to the average sports-crazed player? Aside from the need for a computer that carries a 30-year mortgage, games today need to be bigger, brighter, faster, and louder—all in an effort to make you forget the last big hit title. Funny, though: for all their competitive zeal, most entertainment software publishers seem to be rapidly converging on the same ground zero. The result? Every sports game that crosses my desk reminds me of—guess

what?—that same last big hit title.

Granted, sports games have built-in limitations based on the rules, history, and characters of the contests they model. Four balls will always be a walk, and ten yards a first down. An NBA simulation has to have Michael Jordan taking it to the hoop, just as a pro football game suffers without the strong arm of Brett Favre or Jerry Rice racking up yards after the catch. And where's a baseball sim without Ken Griffey, Jr., Mickey Mantle, and the House That Ruth Built?

By contrast, a role playing game or first-person shooter can go just about anywhere the design team wants to take it, leaving infinitely more room to demonstrate creativity. Want to base your new DUKE NUKEM game on a futuristic sci-fi version of L.A.? Cool. Sports game designers are a lot more restricted in their possibilities. That's not to say that there

isn't any innovation in sports gaming. There just isn't enough of it. How do I know? Simple—announcers.

VOICE-OVER, HOLD THE MUSTARD

Just about any sports title that wants to make a splash these days features a play-by-play voice-over to spice things up. Now, this isn't a bad idea. It ties in with the sports nostalgia craze, and, if nothing else, keeps old play-by-play men out of the soup kitchens. It's nice to see former Tigers announcer Ernie Harwell immortalized in MILLER ASSOCIATES BASEBALL FOR WINDOWS BROADCAST BLAST, especially after his unexpected and graceless dumping by the Detroit club in 1991 after umpteen years behind the mike.

But enough is enough. When I pick up a new sports software title, the first thing I do is scan the box to see what the designer thinks sets his game apart from the competition. If play-by-play announcers are a major part of the package, I'm immediately suspicious about the game's content. The announcer idea is done, guys. Stick a fork in it. It's getting too much like a Julia Child recipe: "Take one sports simulation. Fold in a big-name announcer. Half bake, and spoon the whole thing onto a CD-ROM. Serves 50,000. Oh, that's very nice."

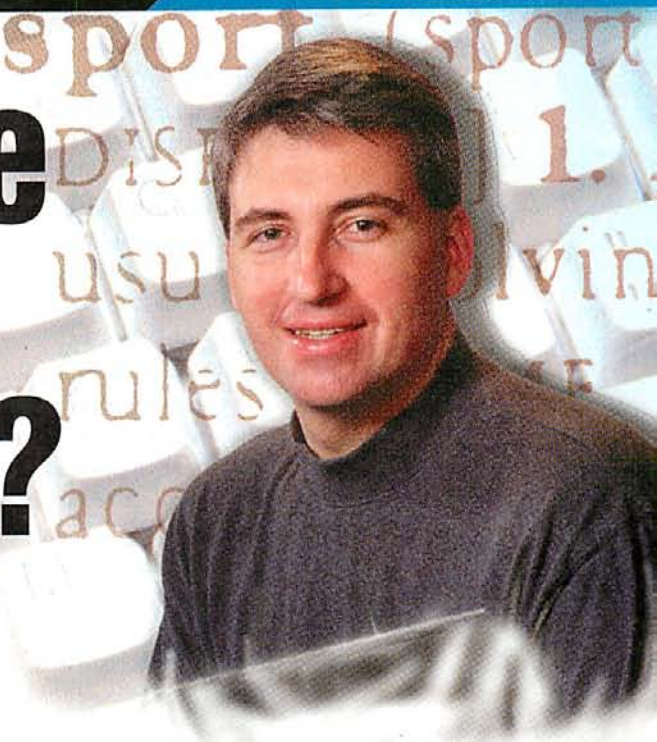
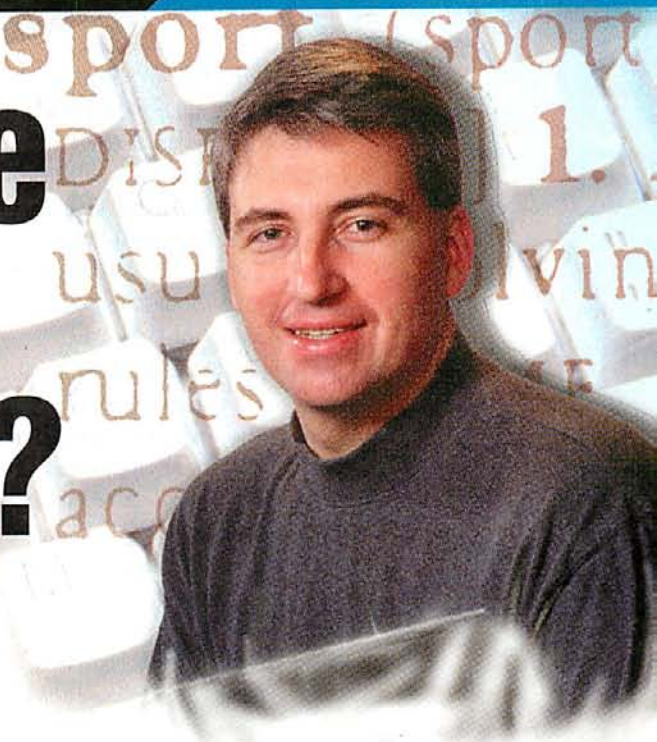
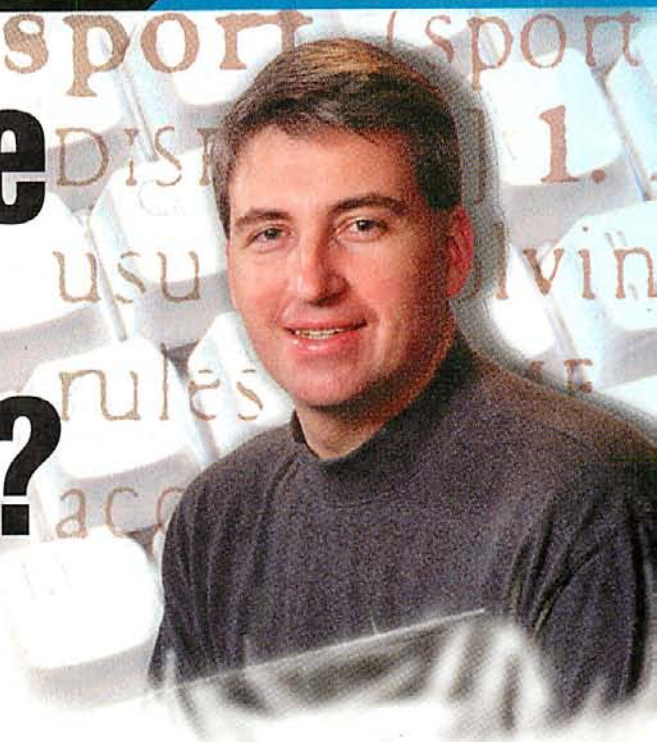
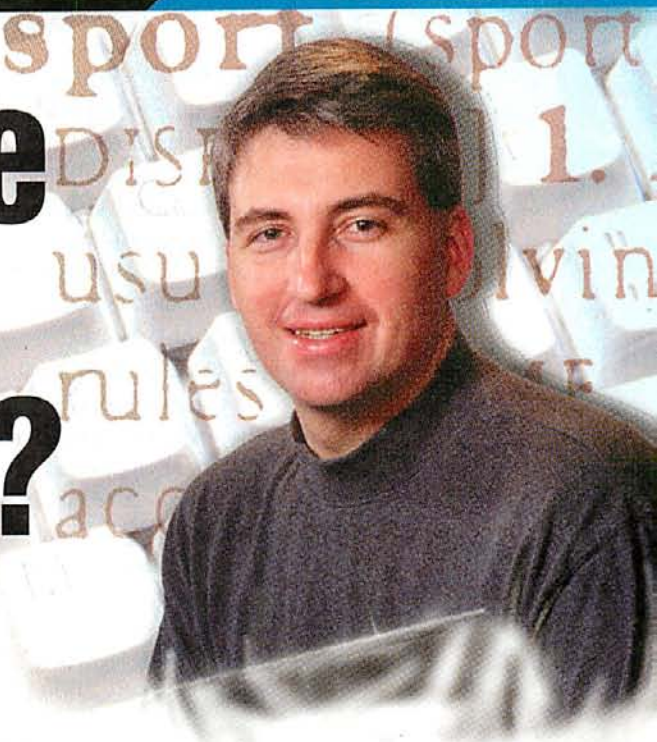
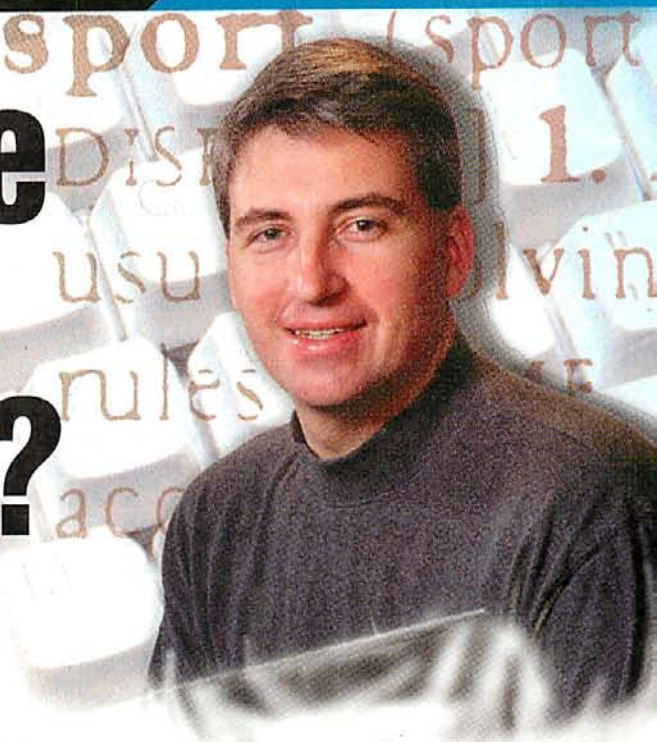
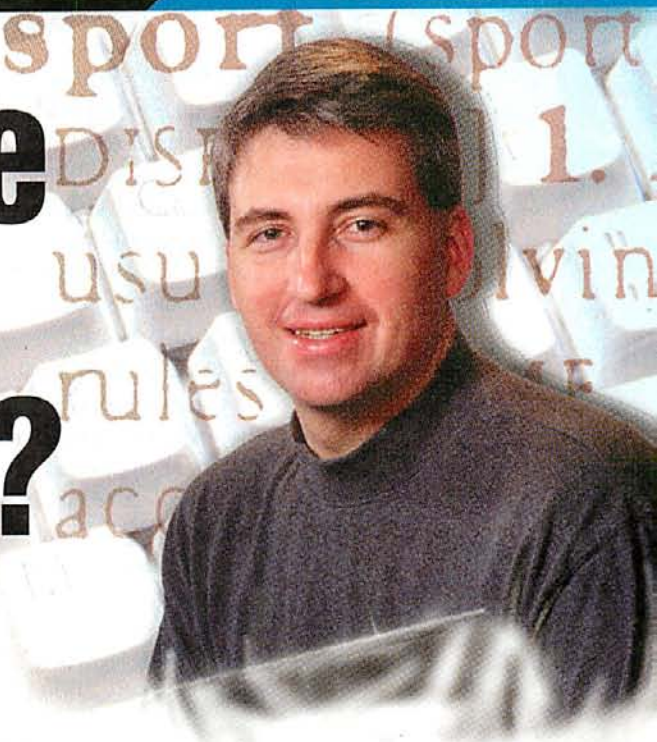
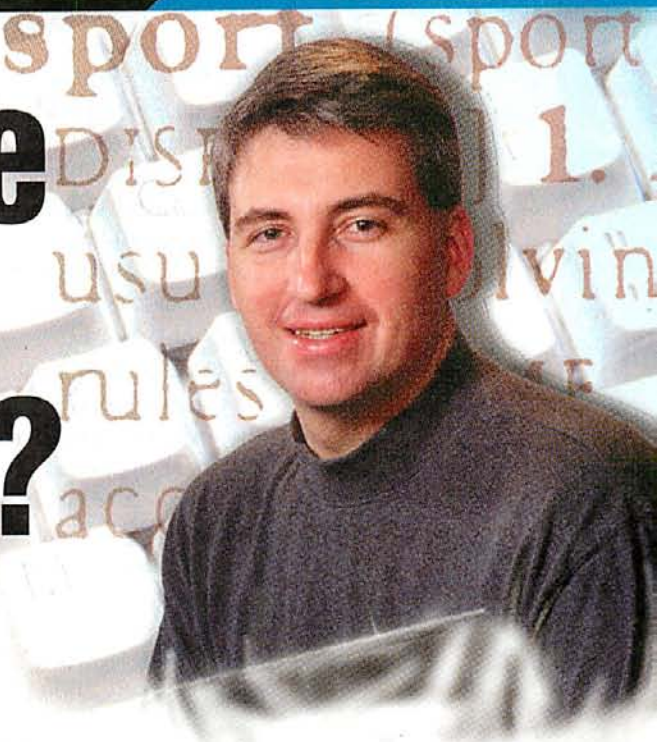
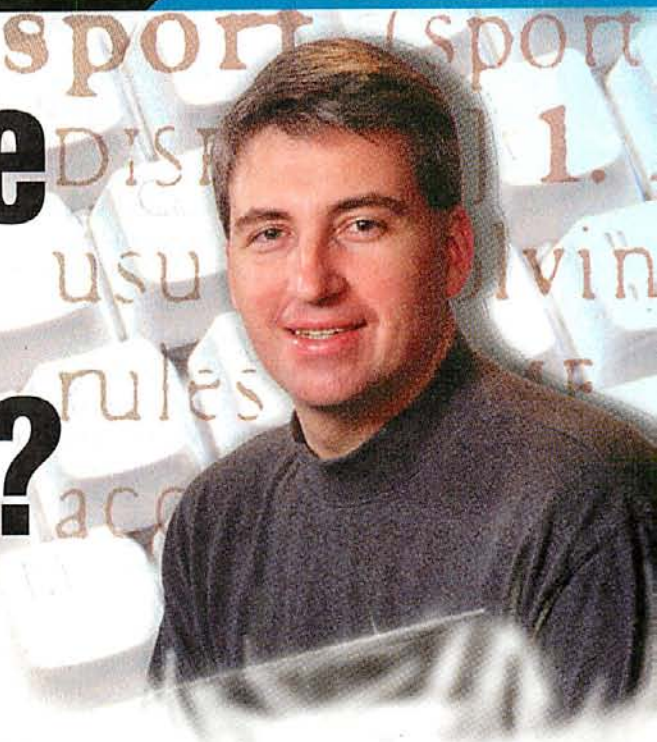
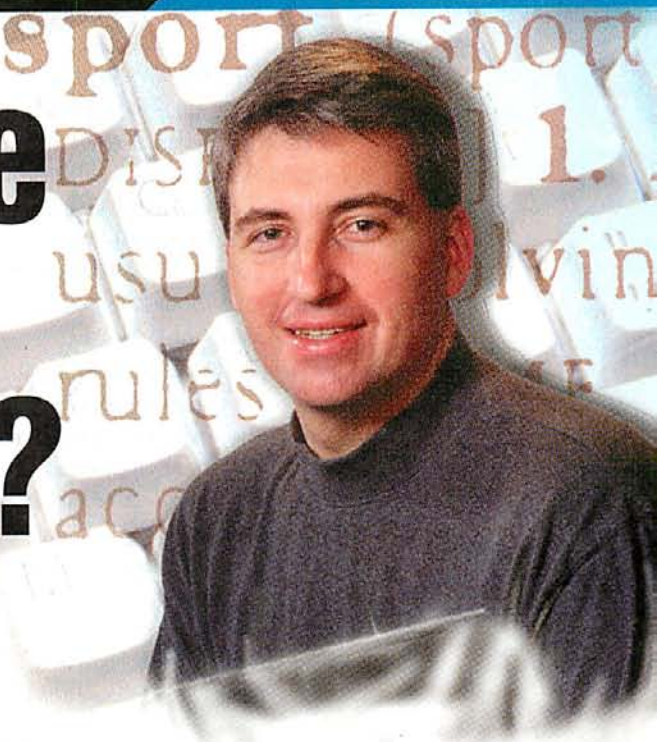
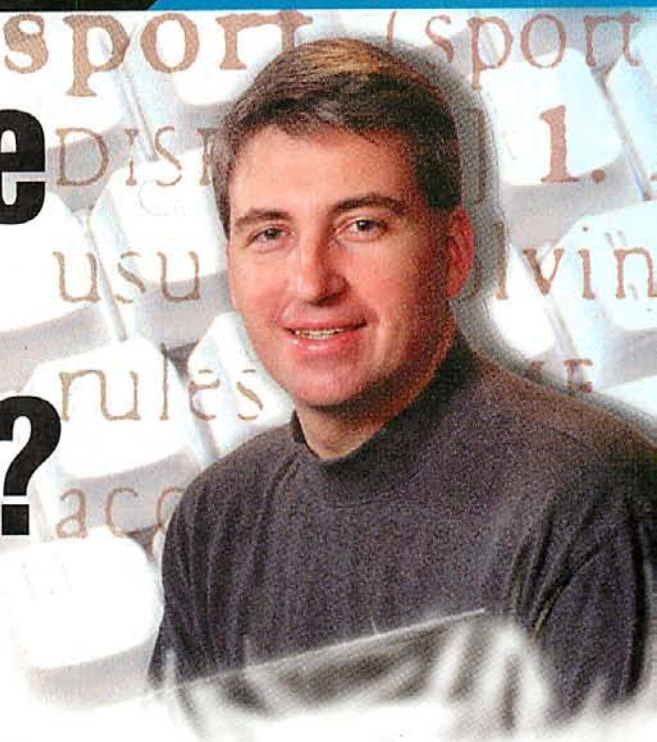
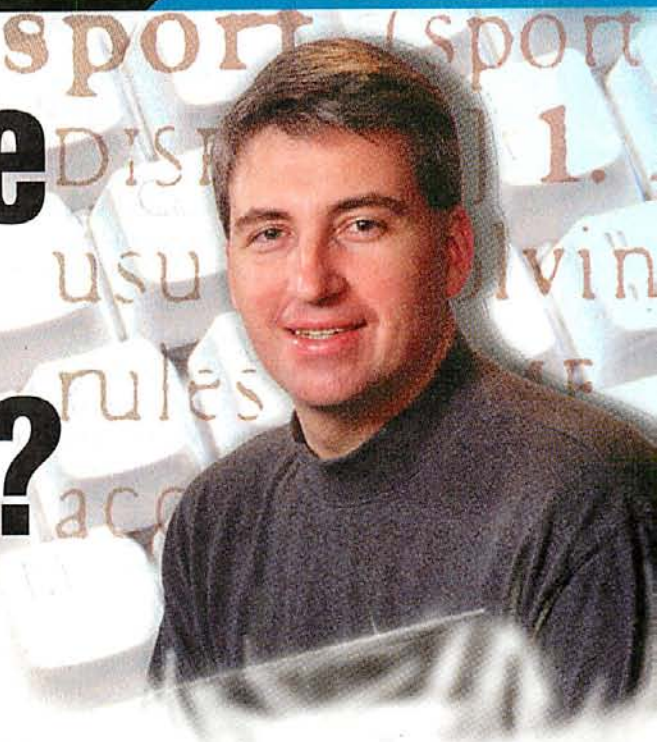
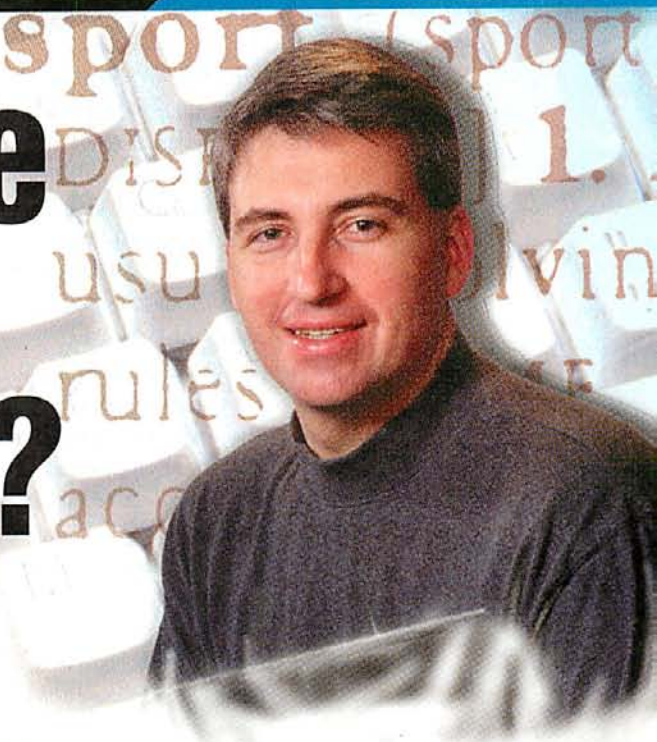
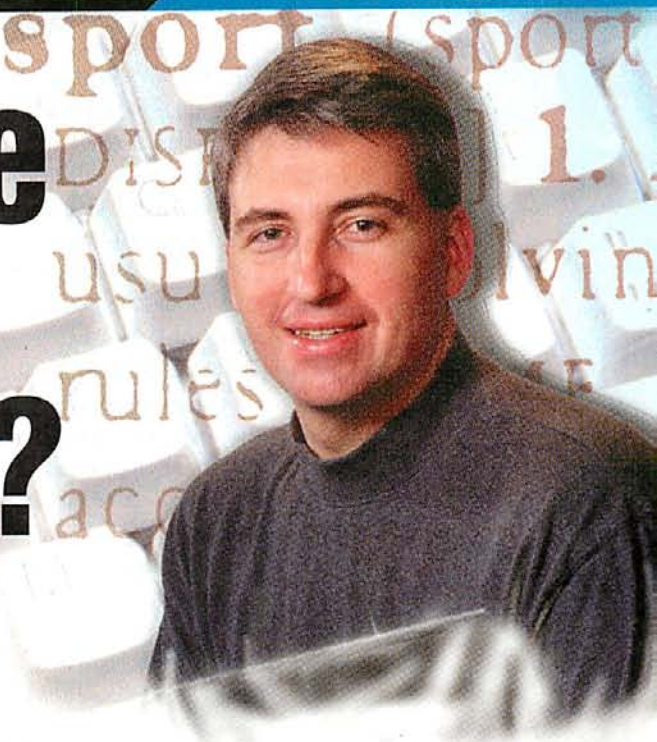
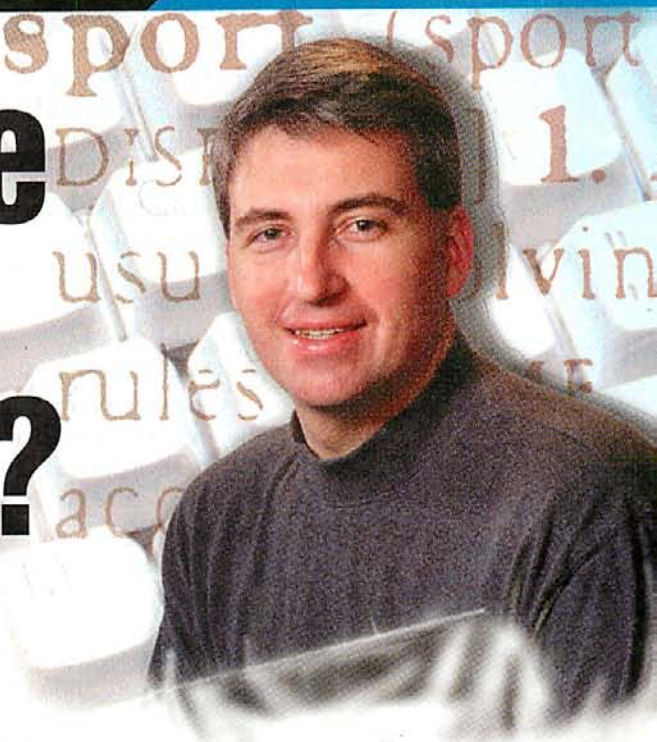
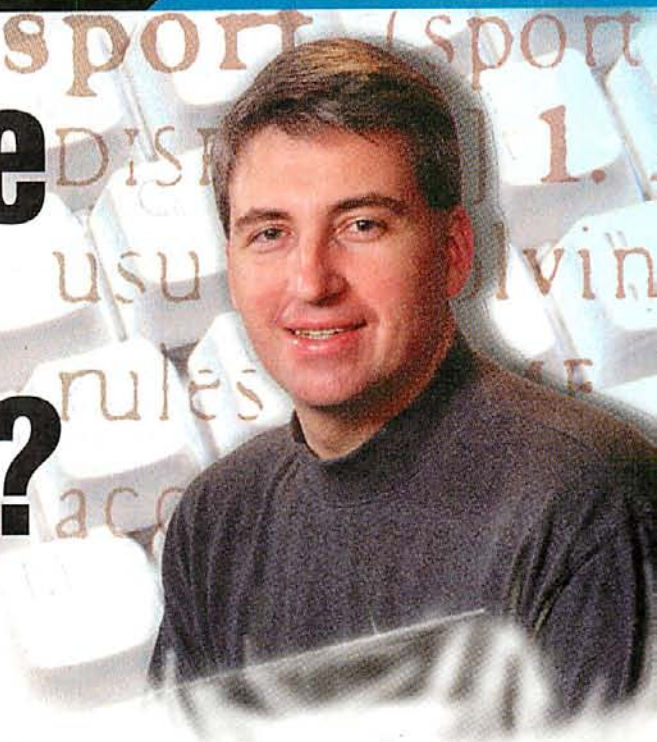
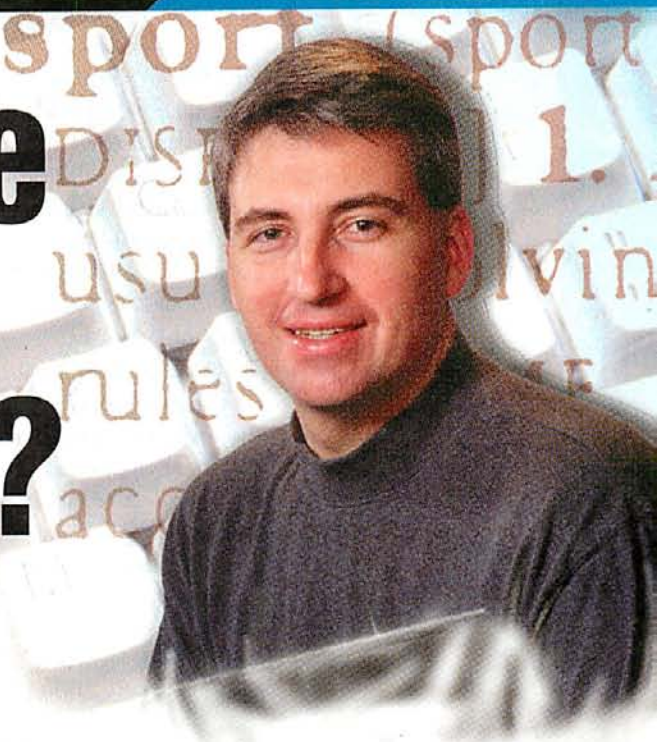
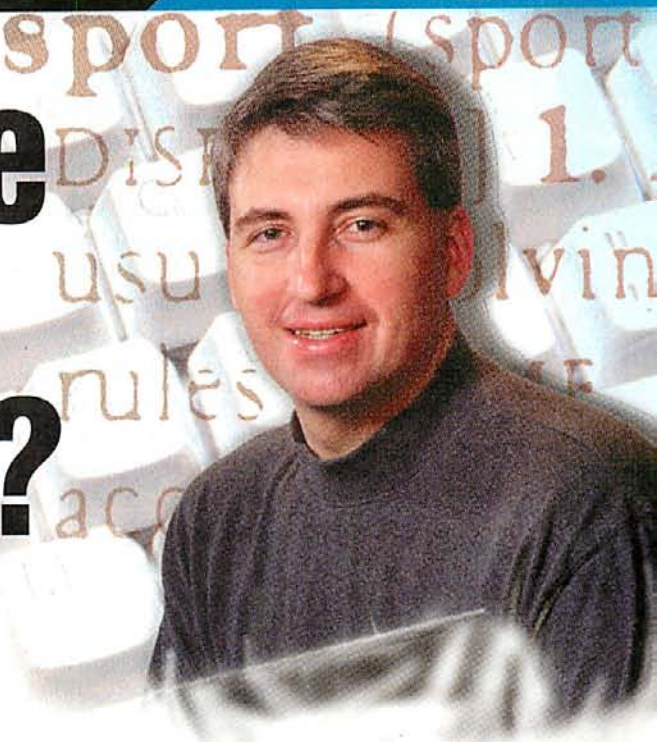
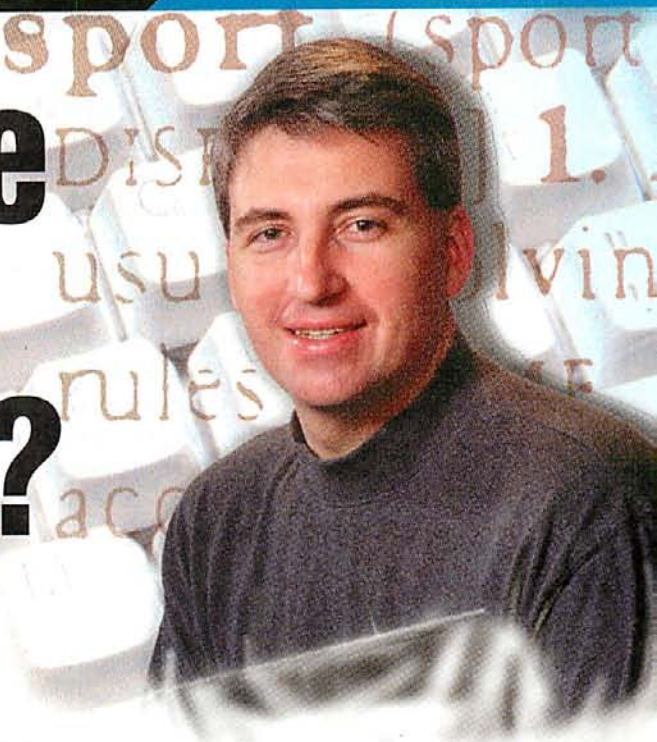
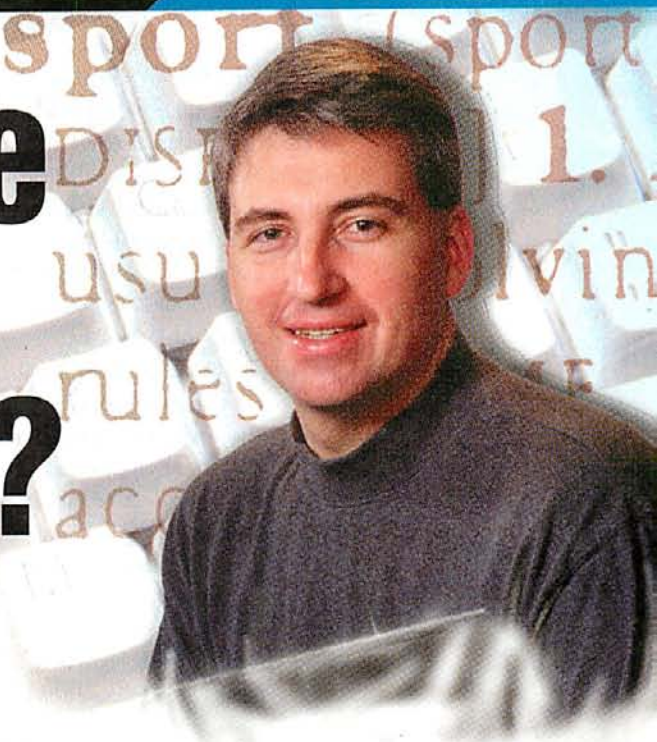
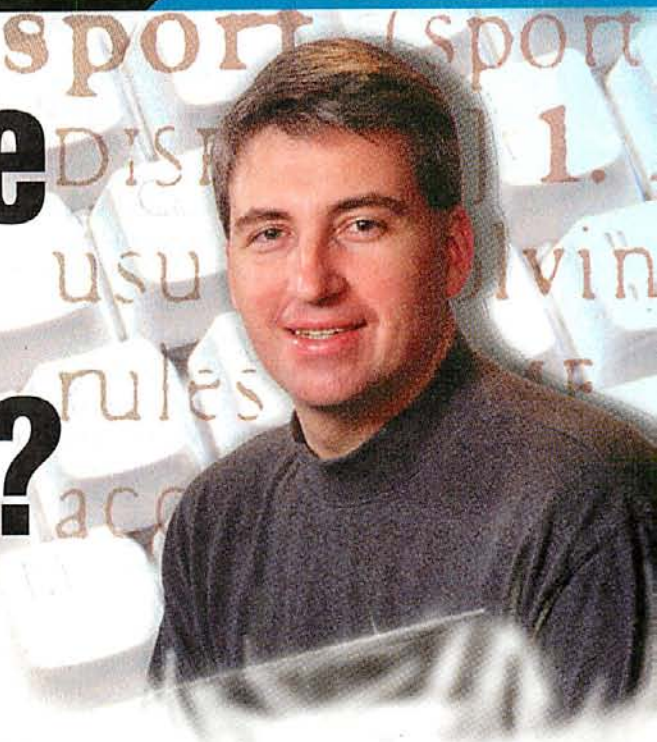
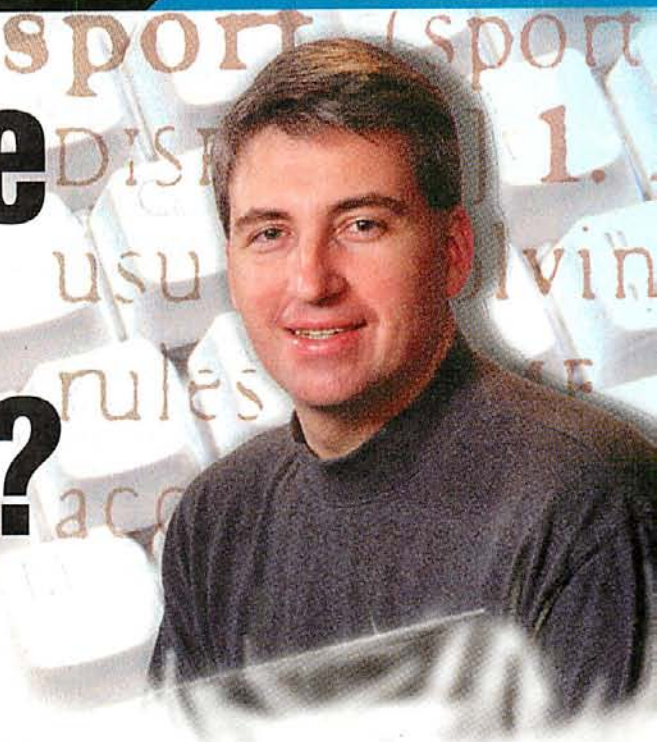
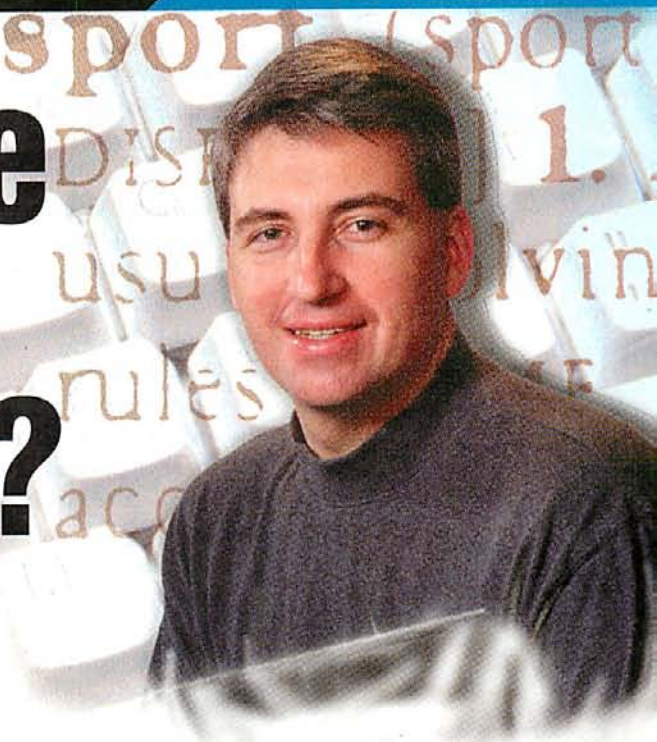
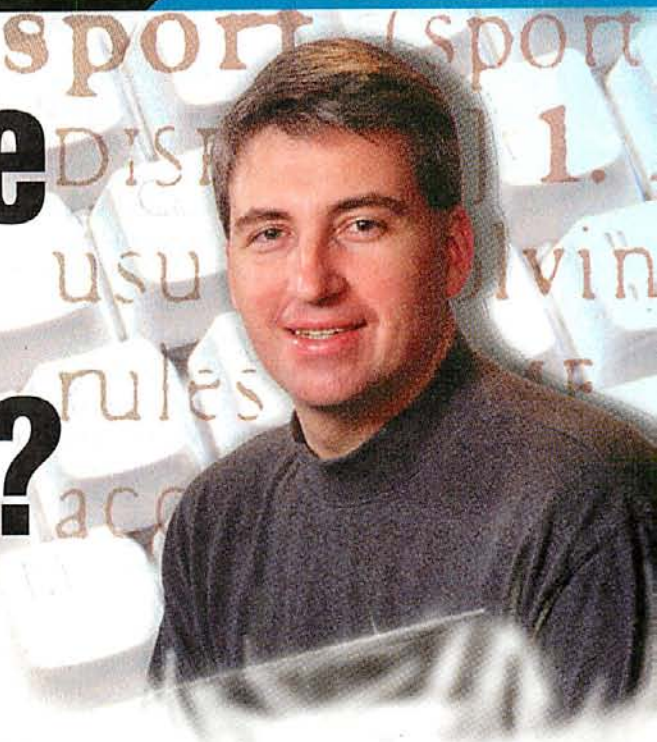
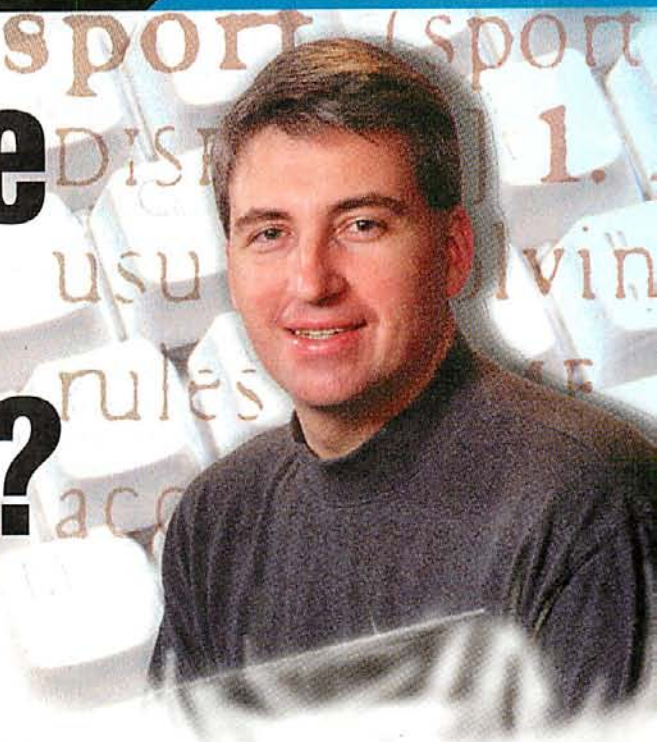
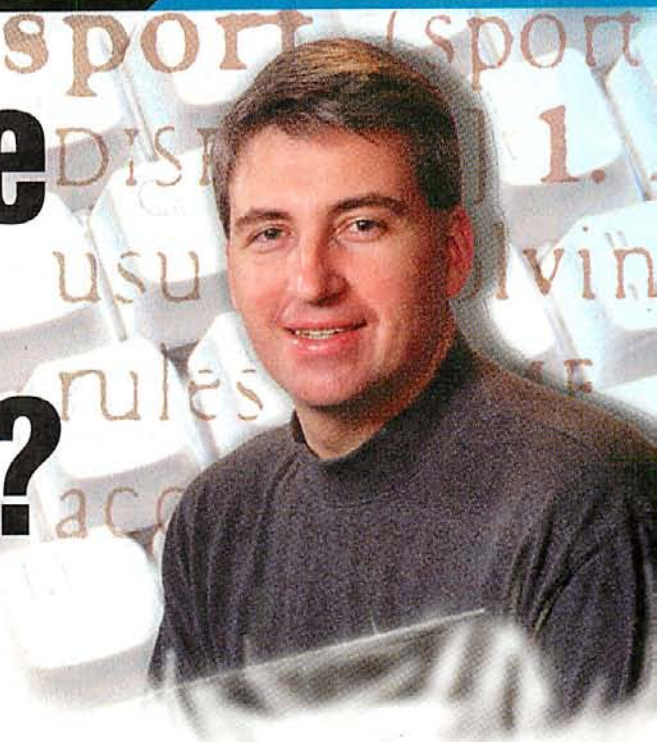
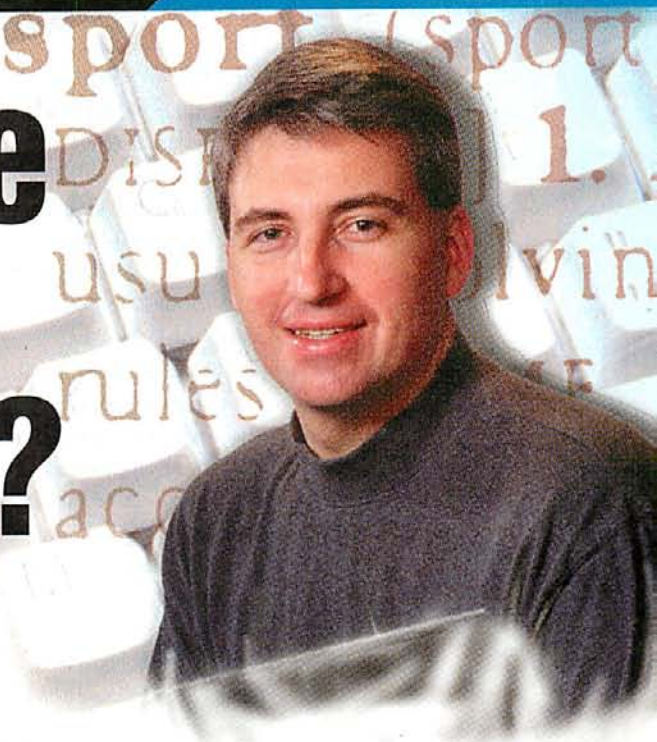
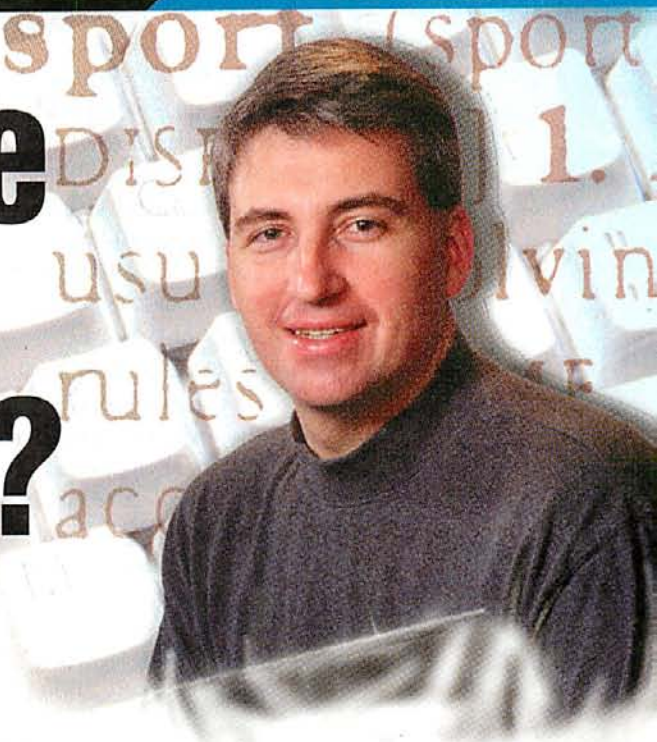
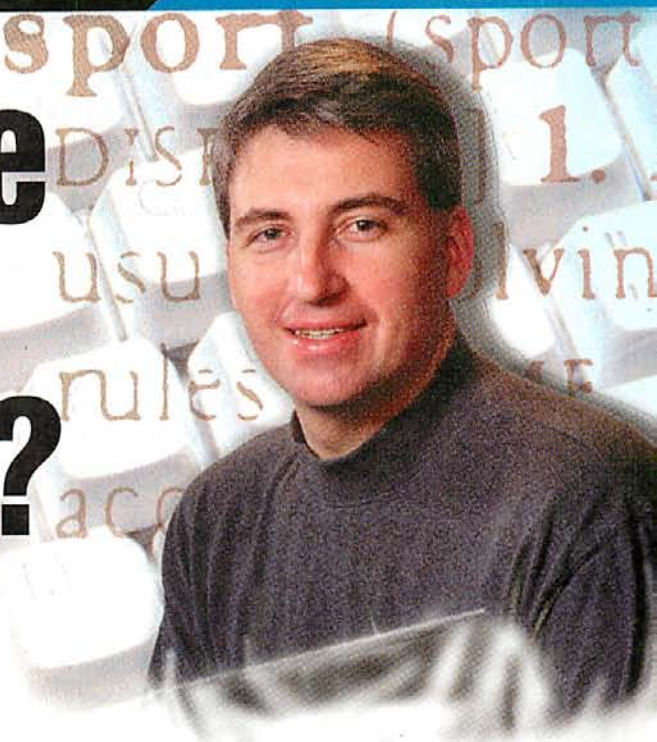
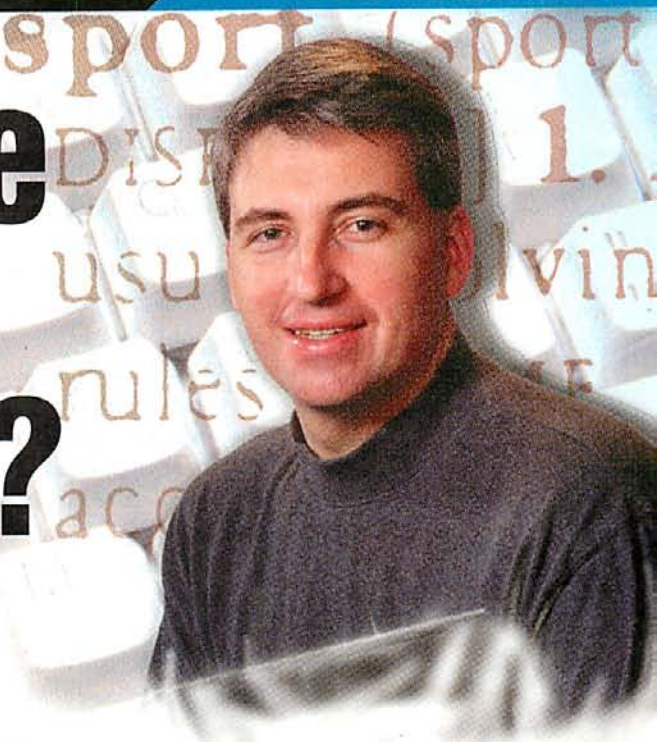
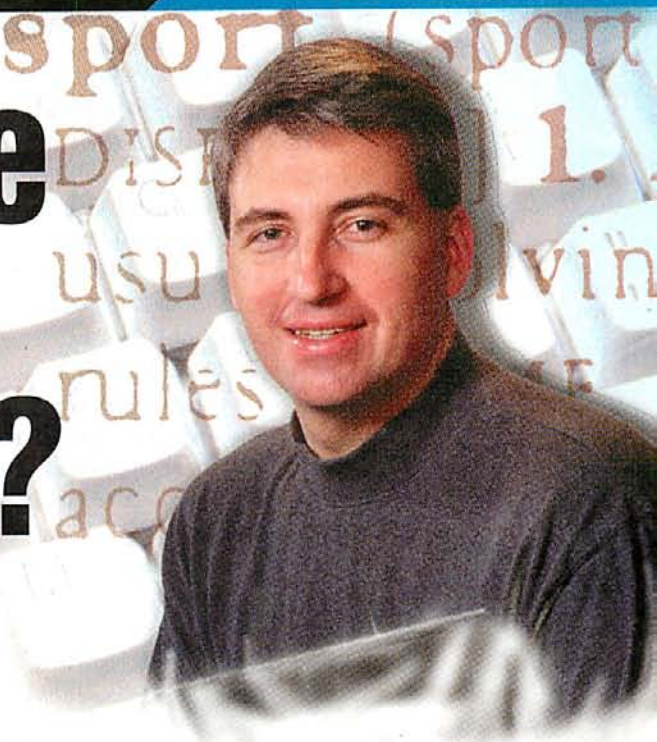
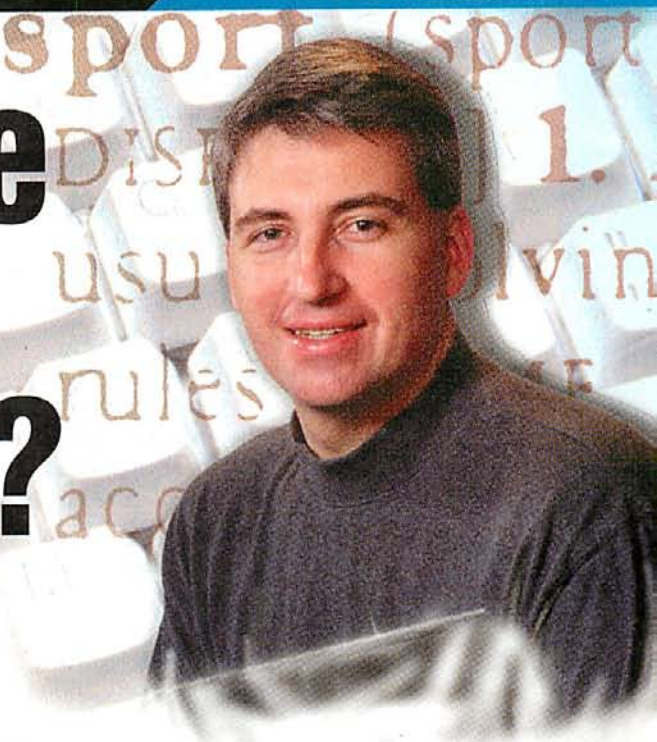
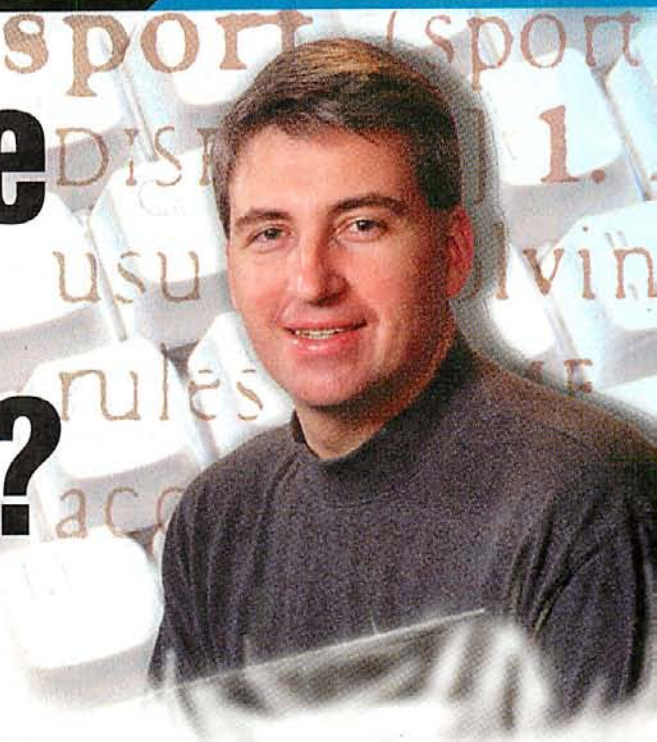
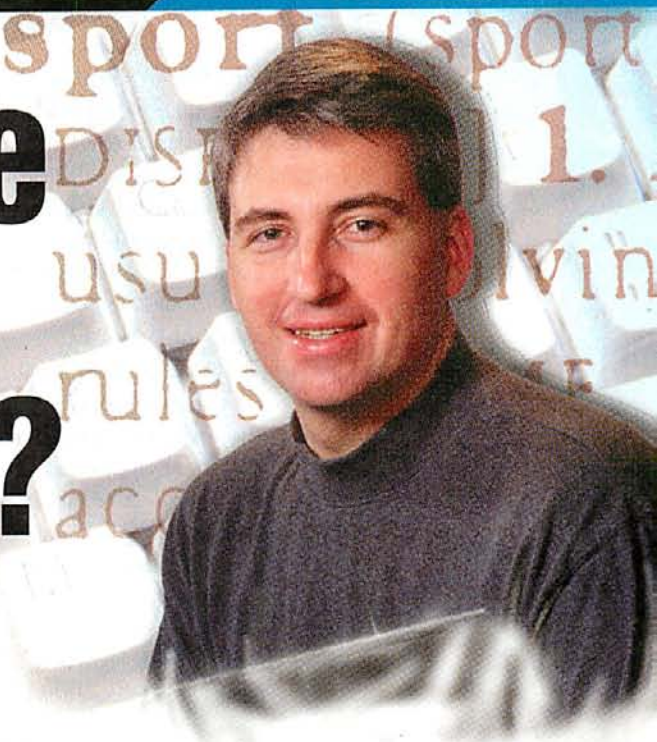
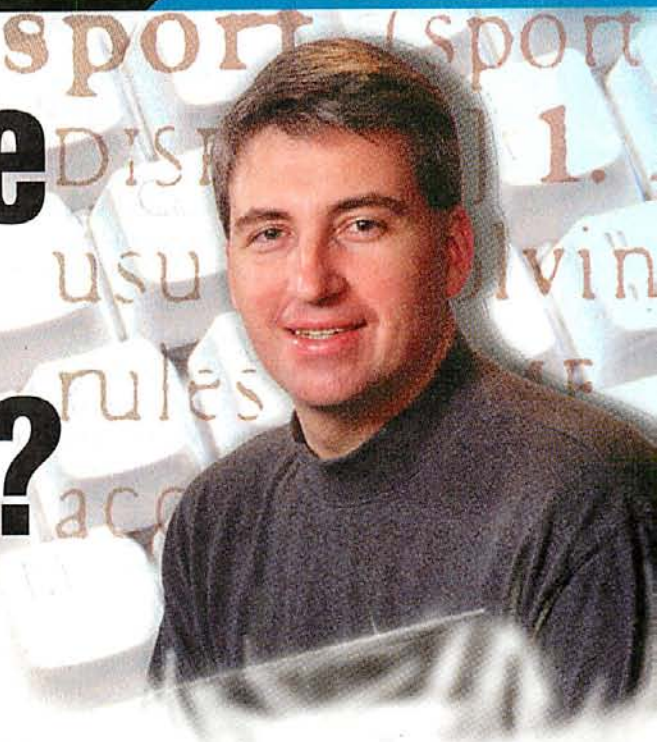
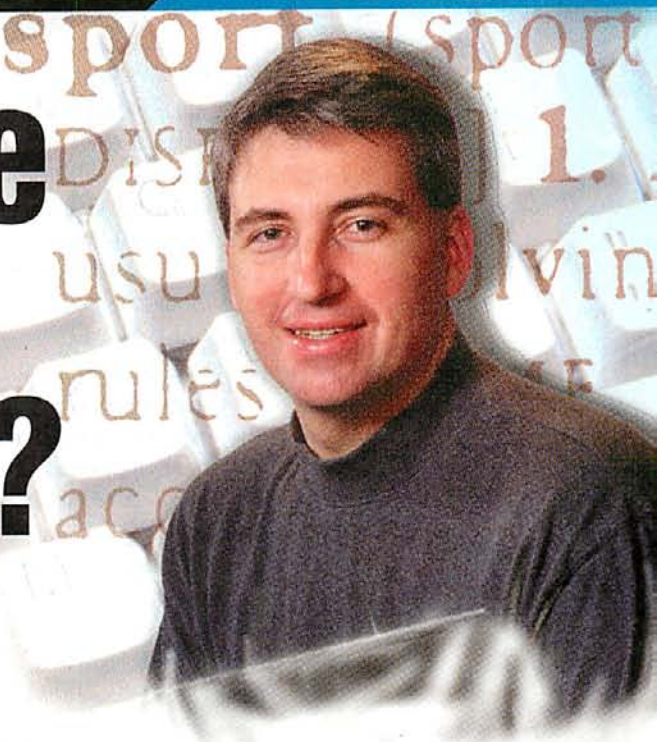
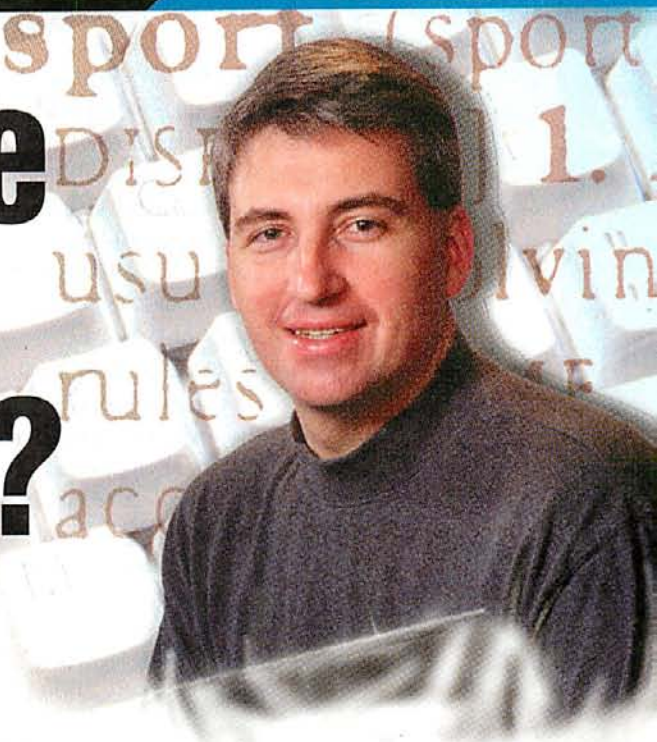
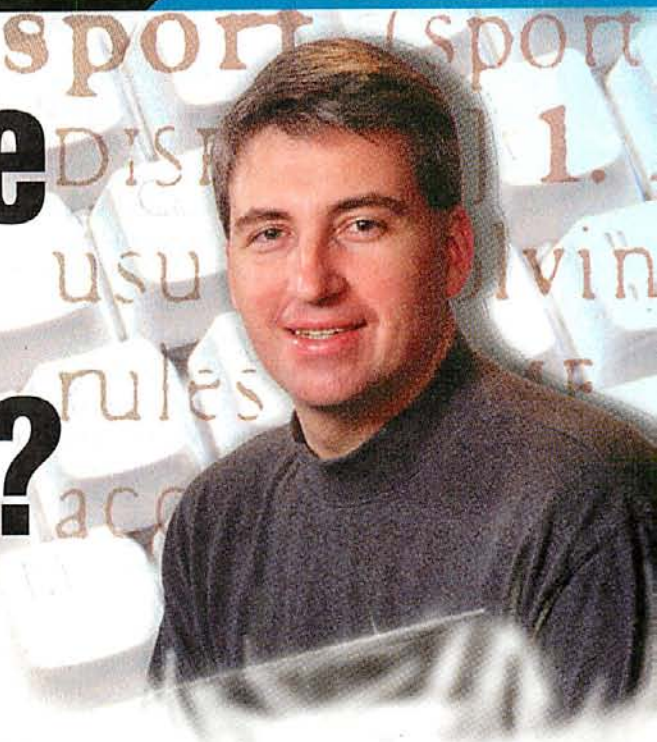
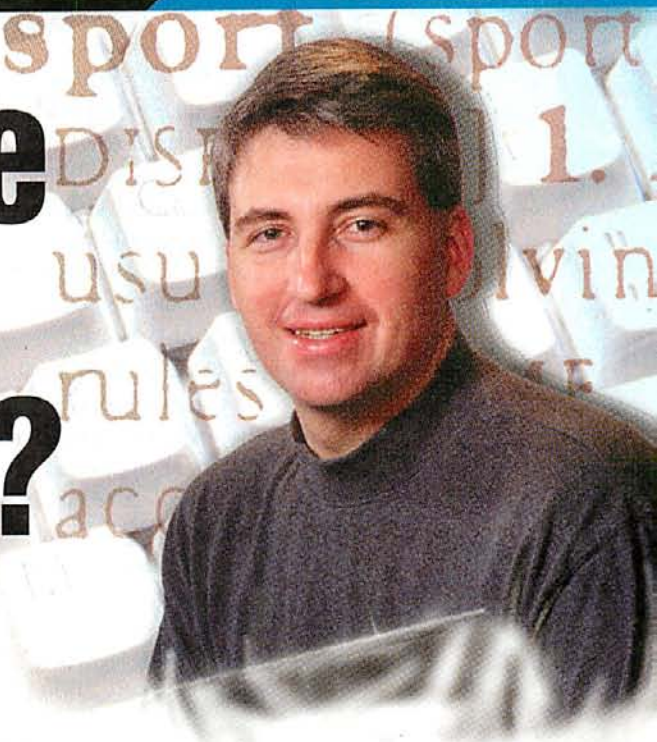
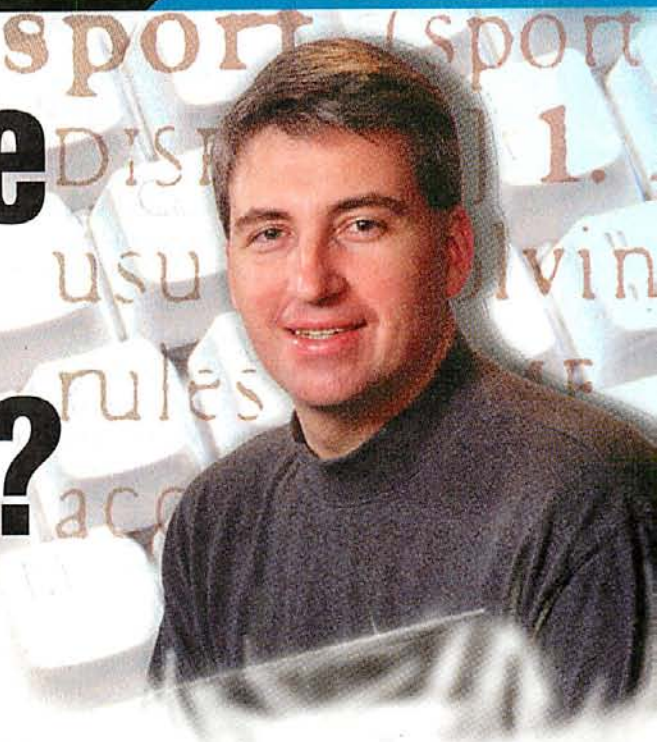
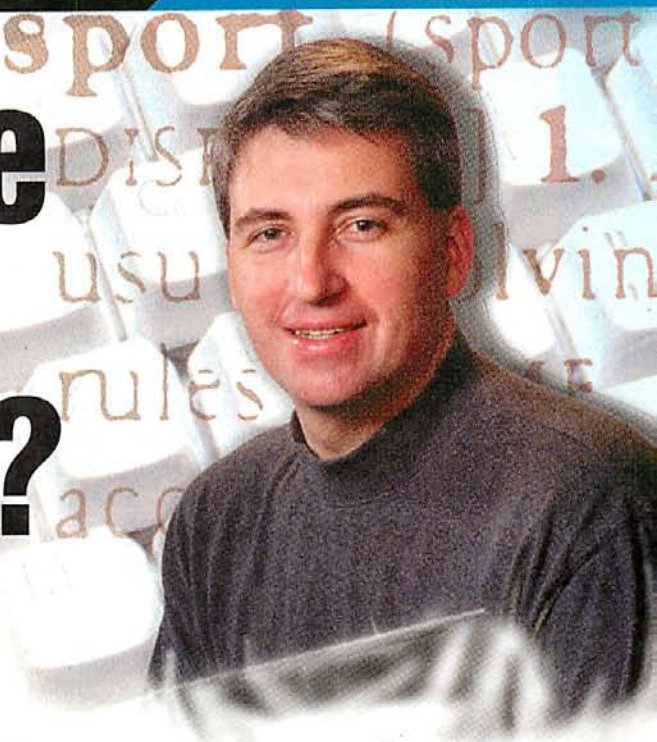
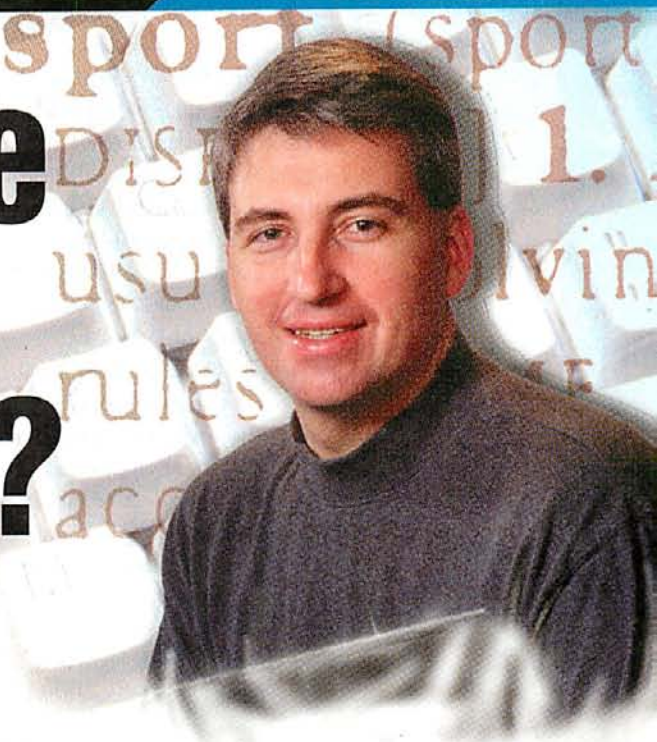
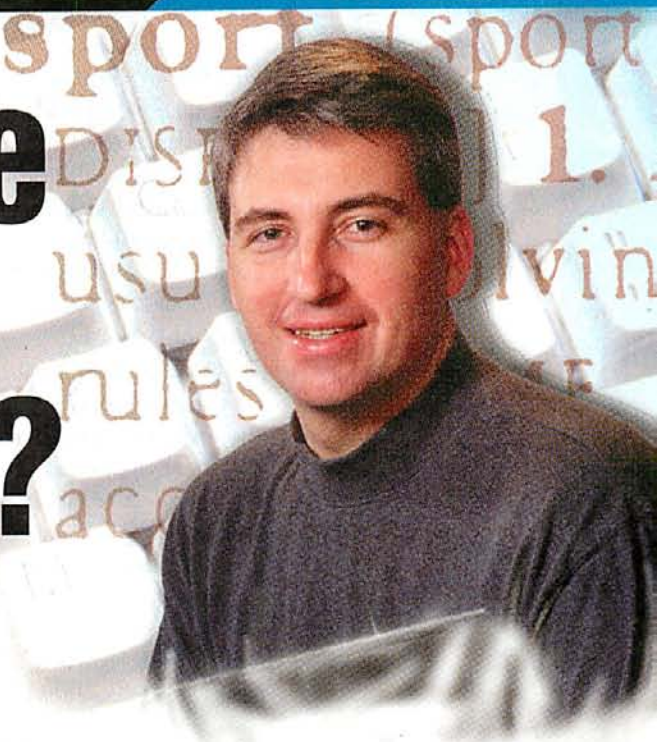
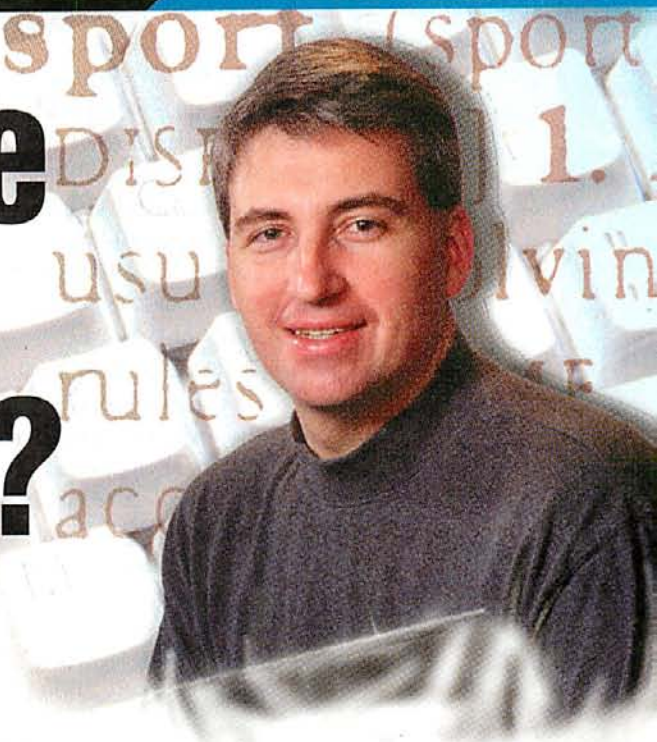
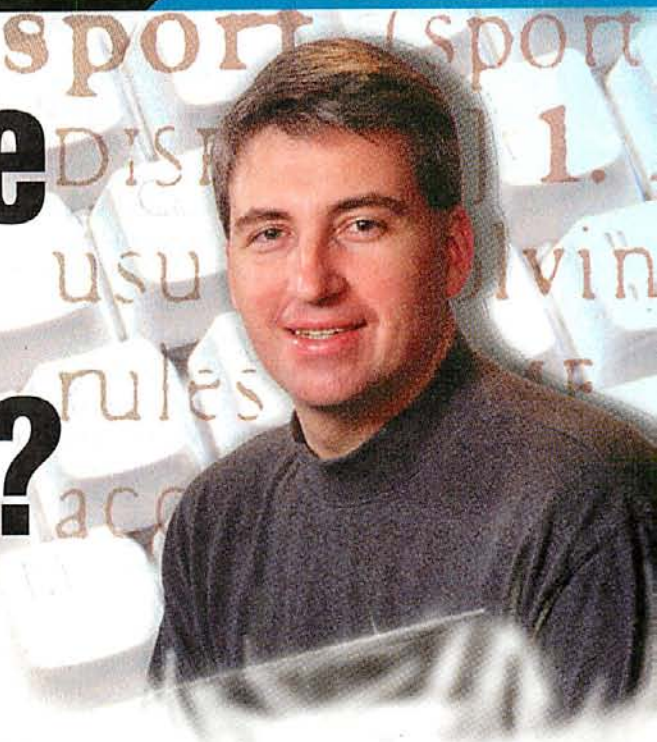
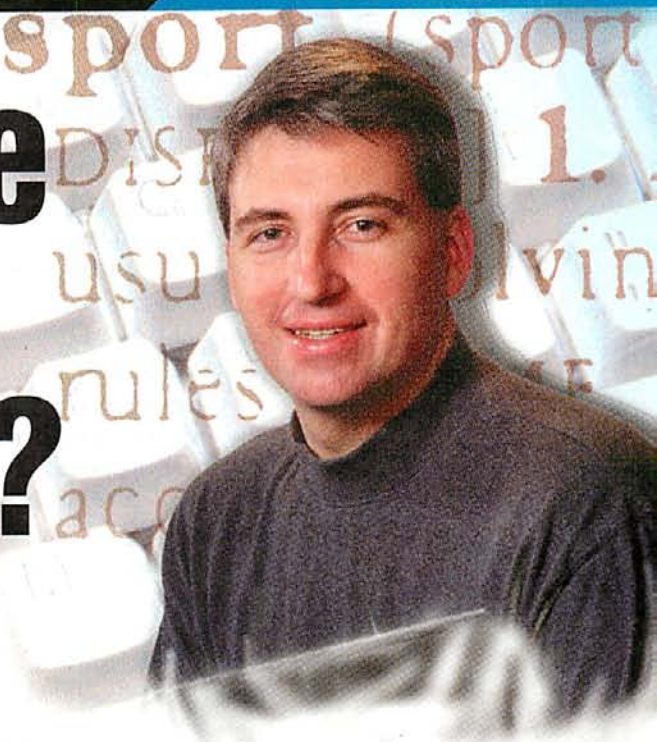
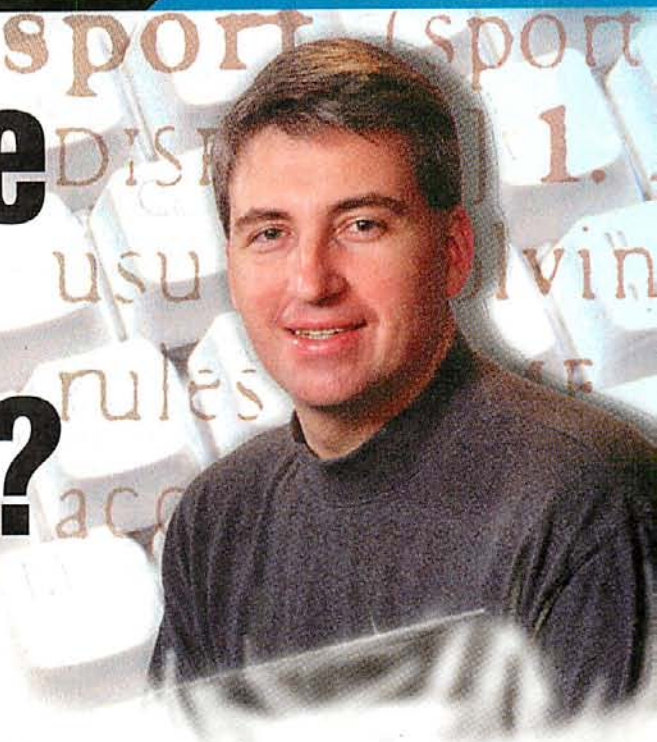
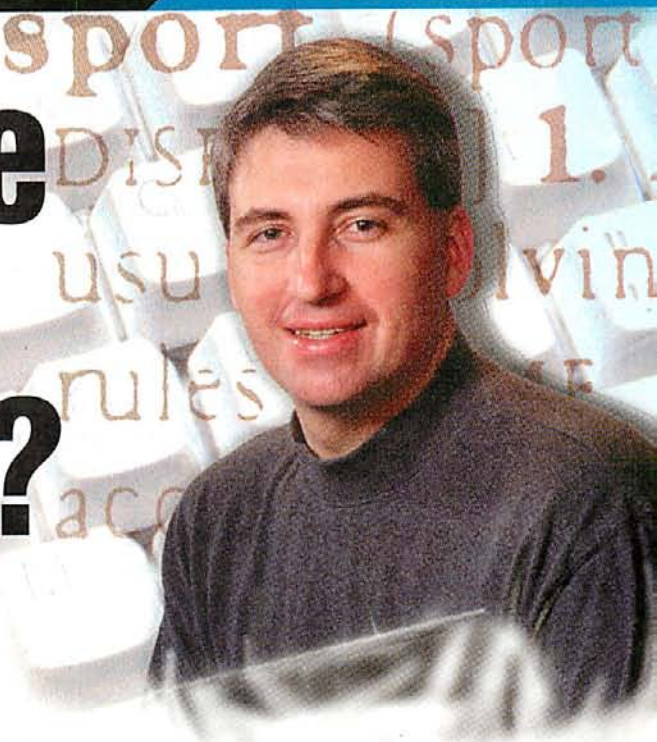
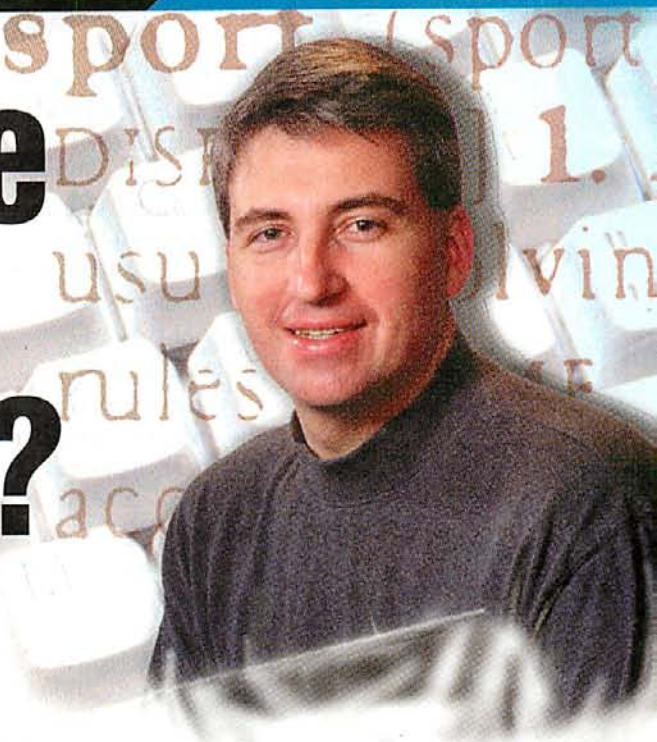
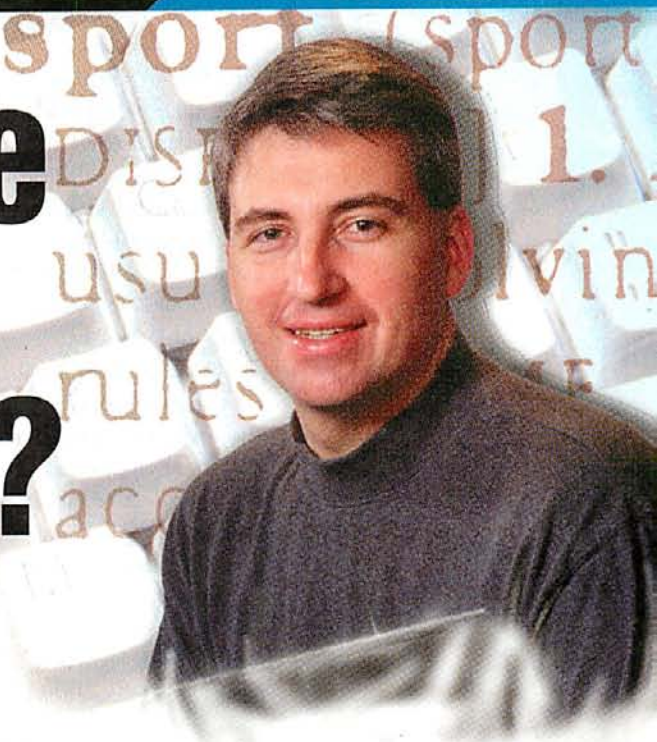
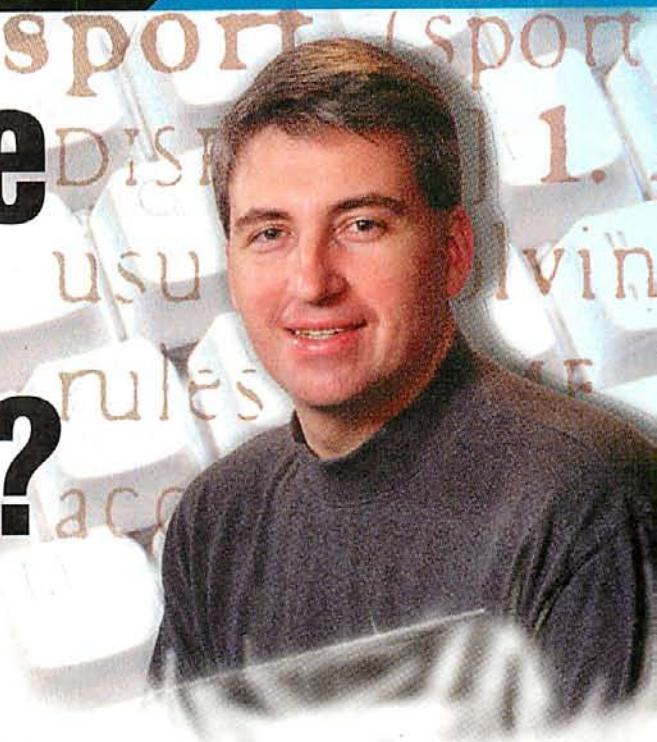
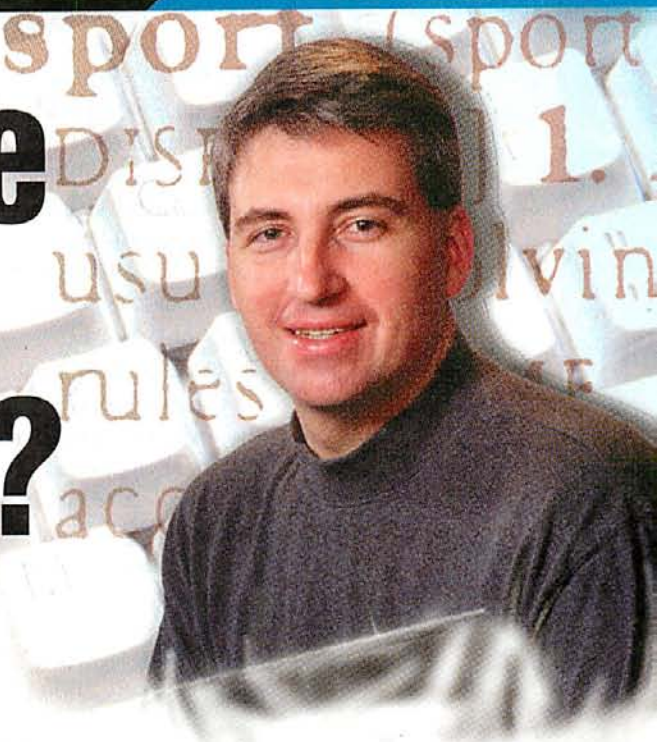
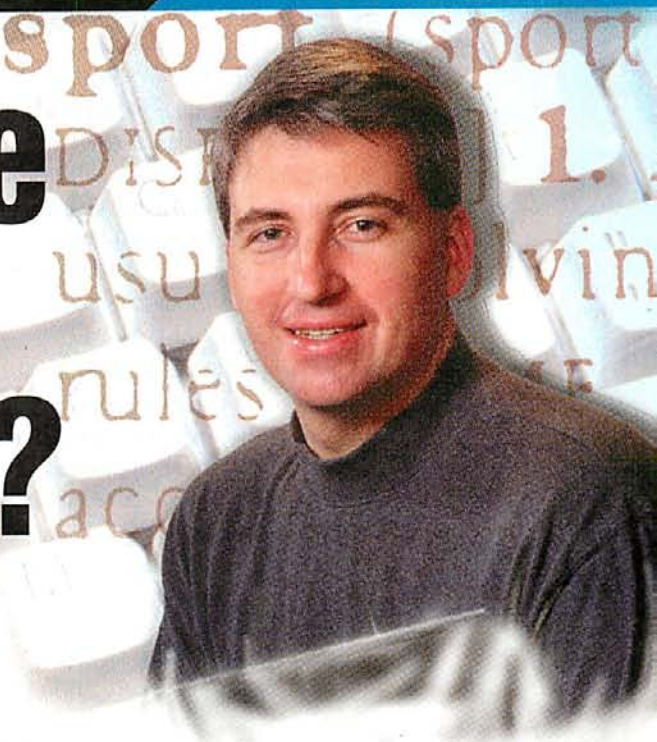
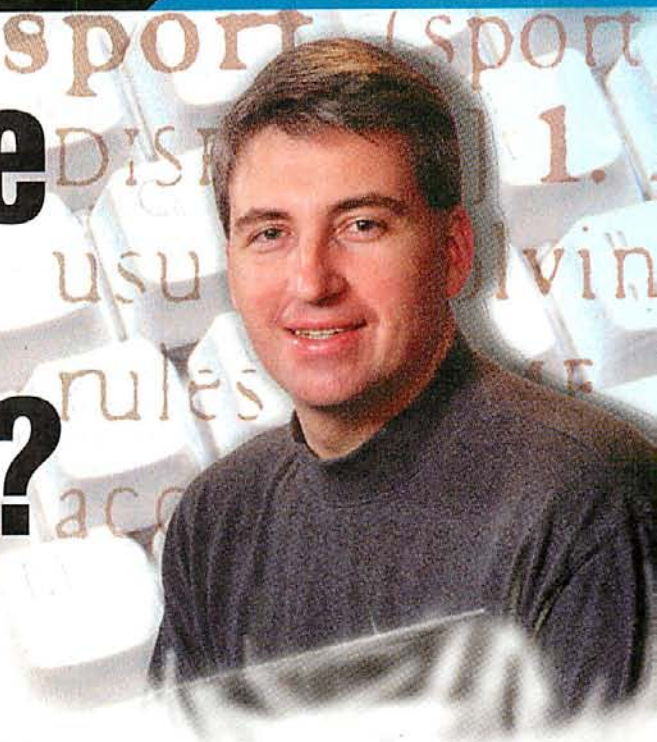
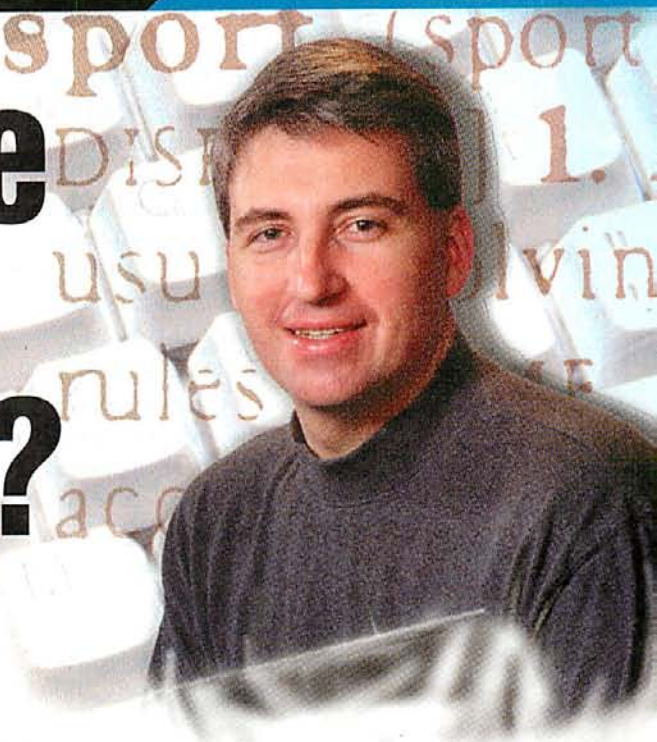
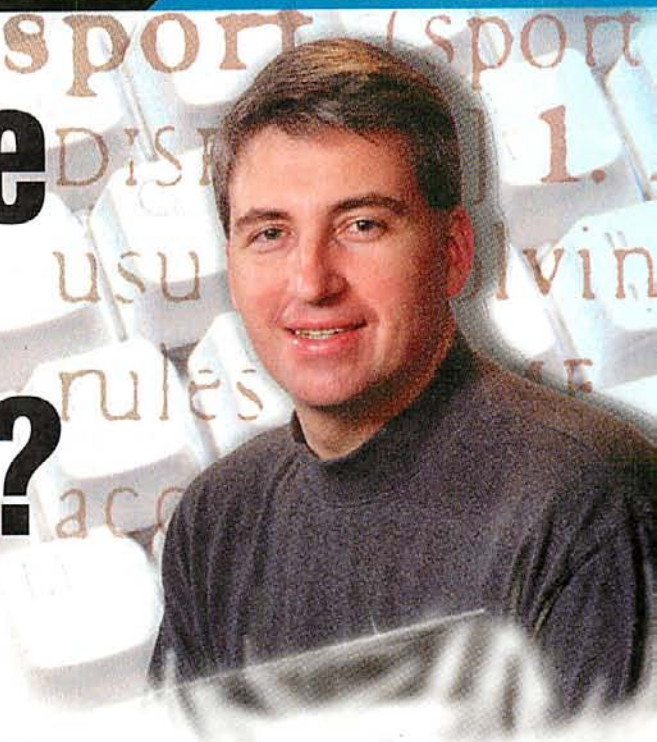
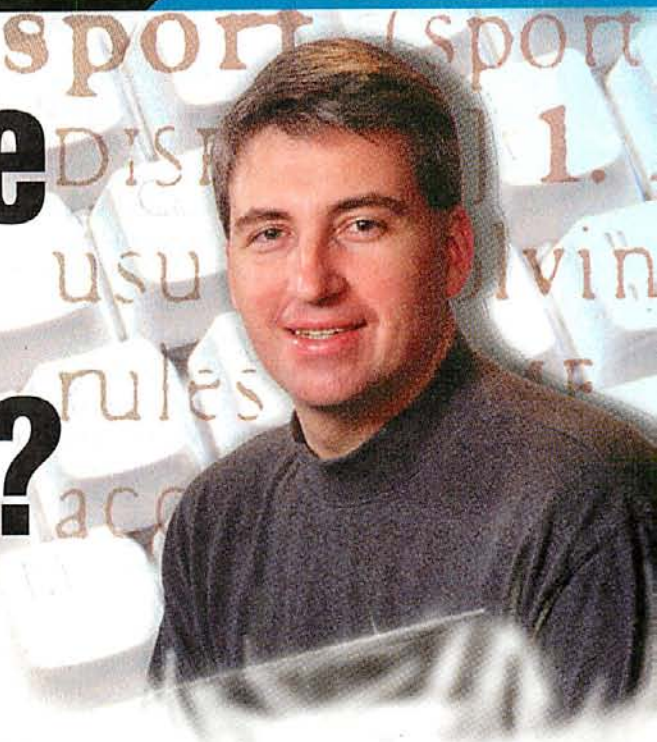
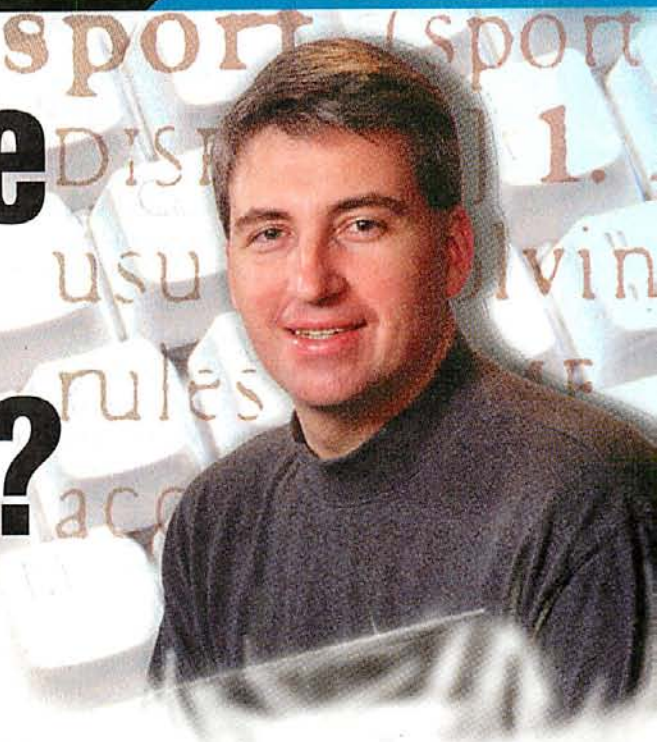
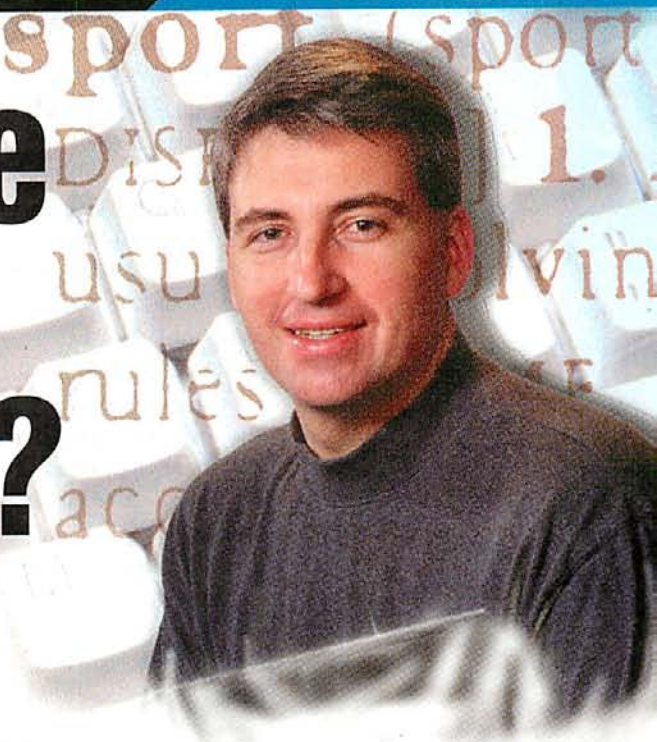
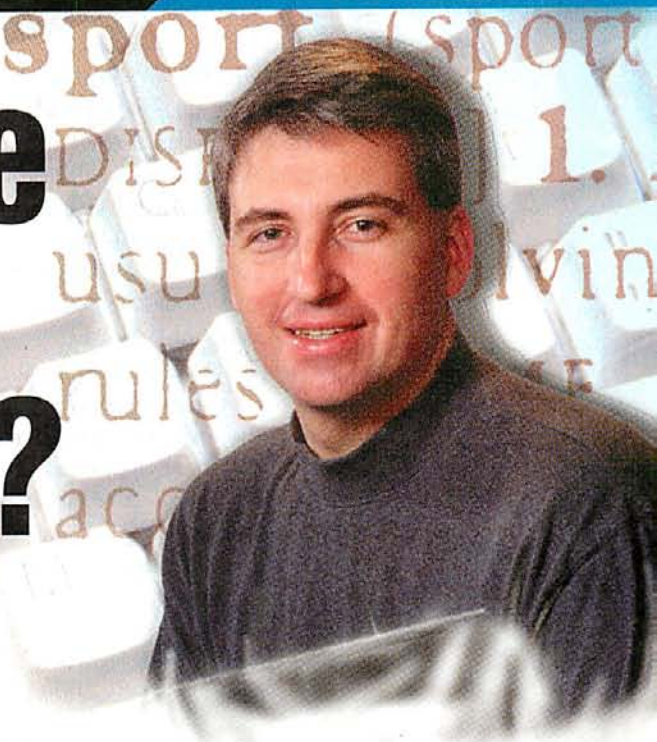
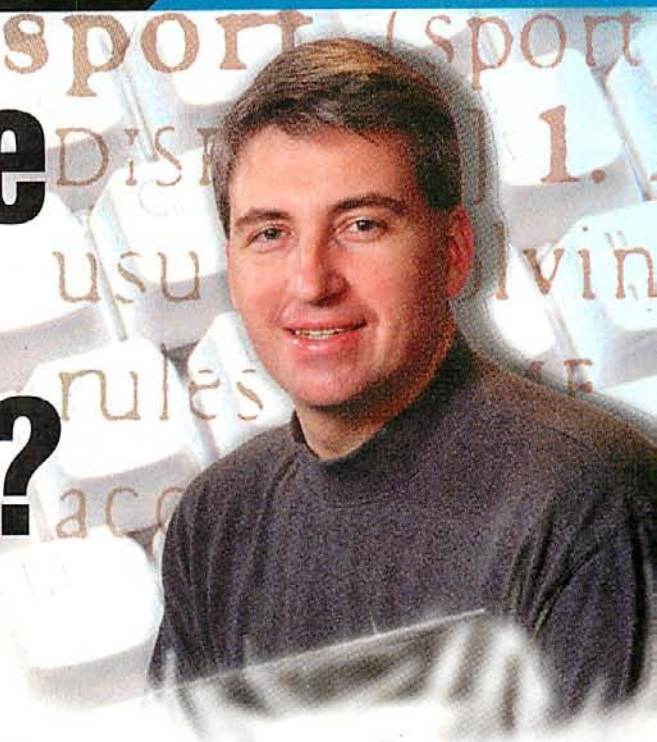
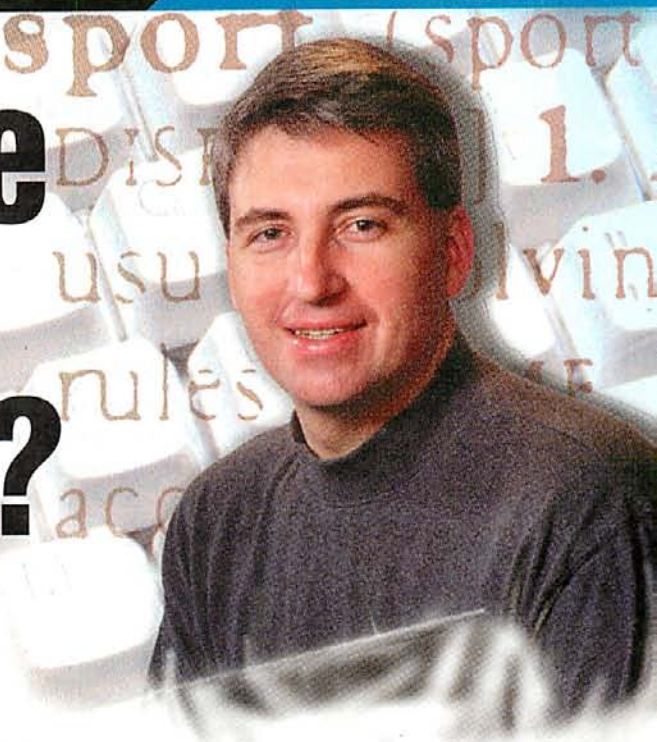
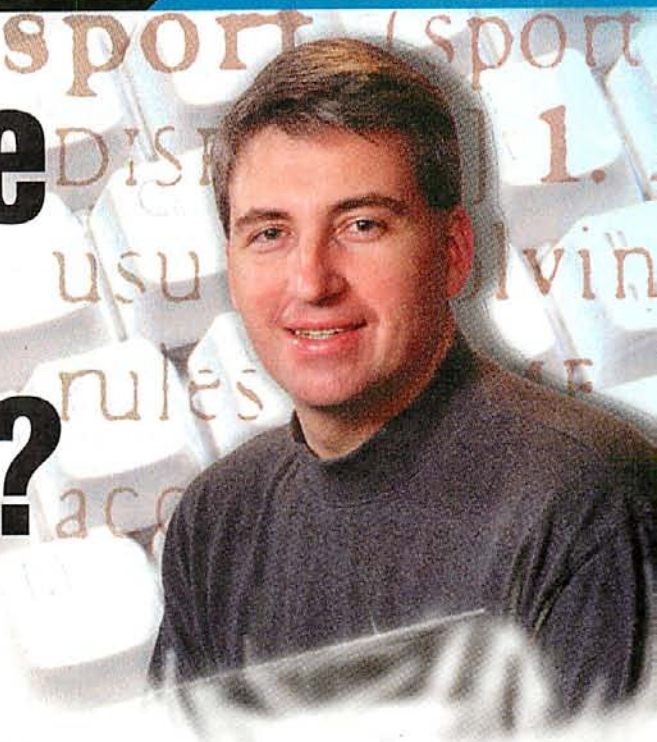
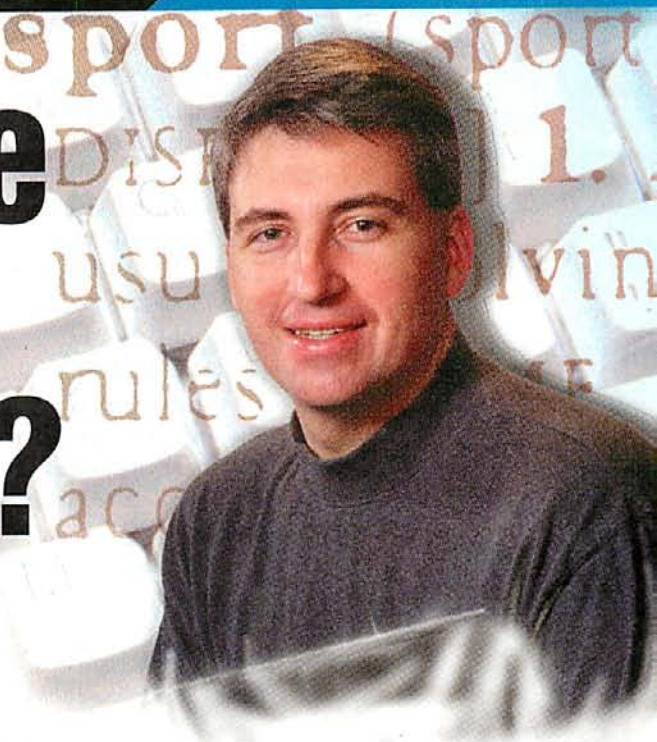
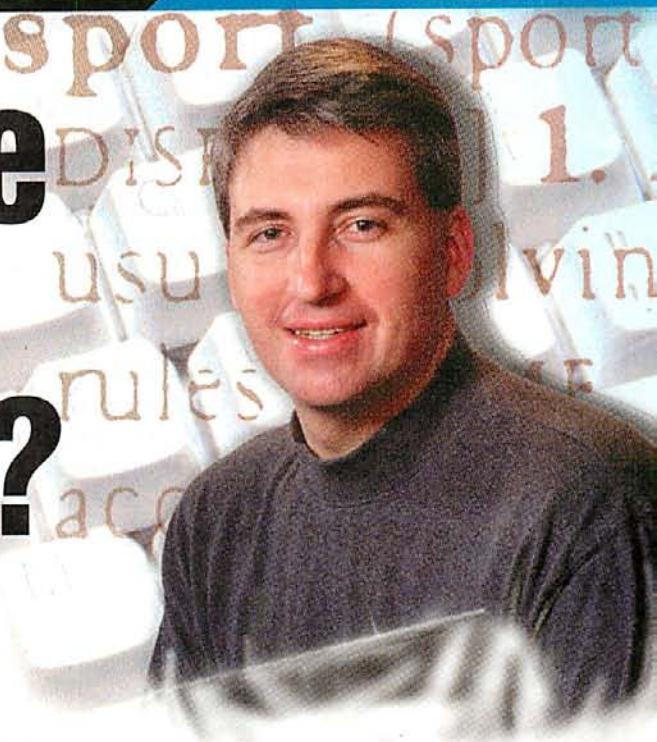
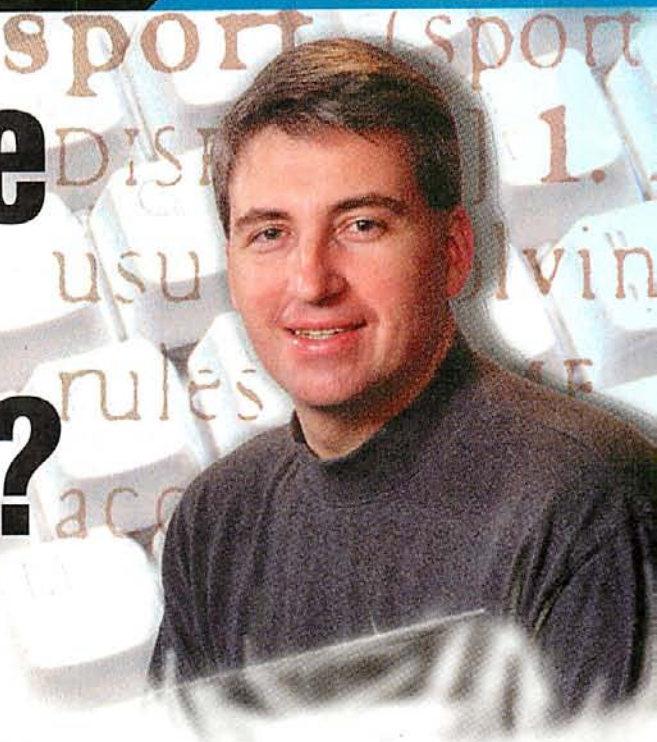
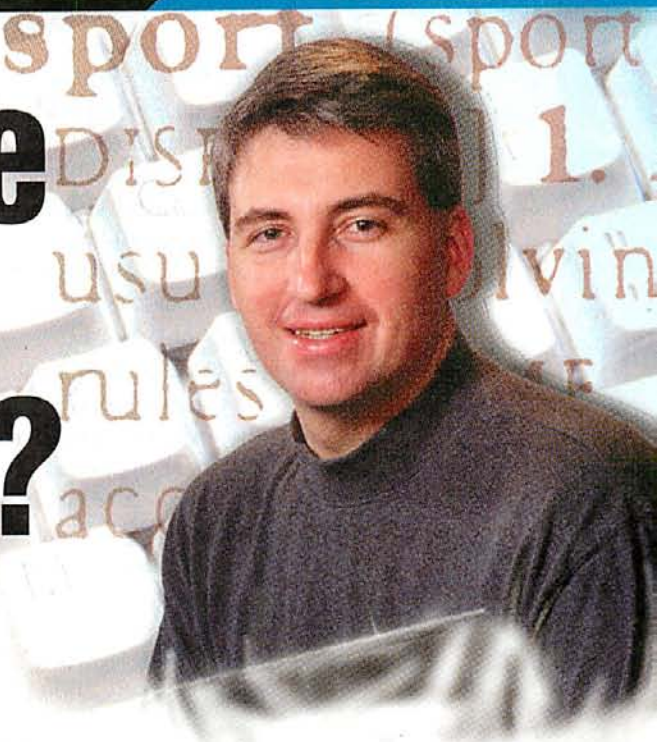
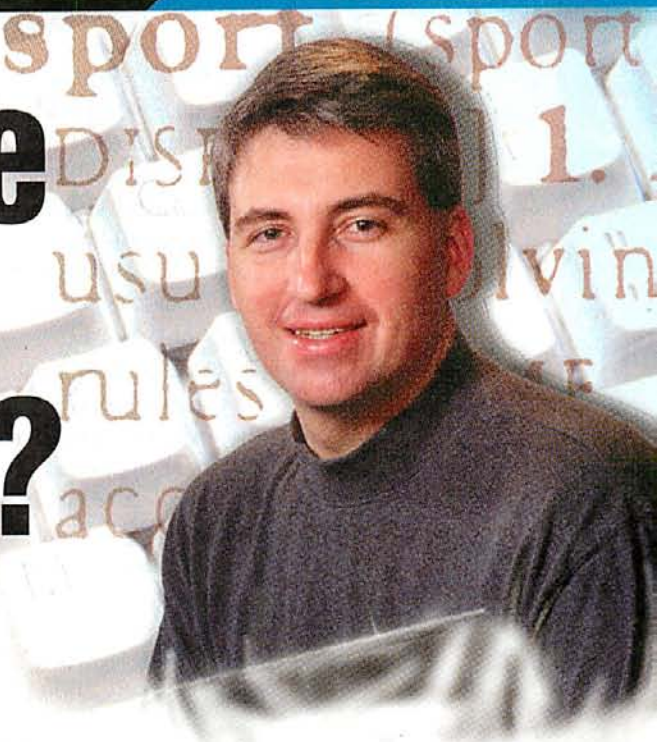
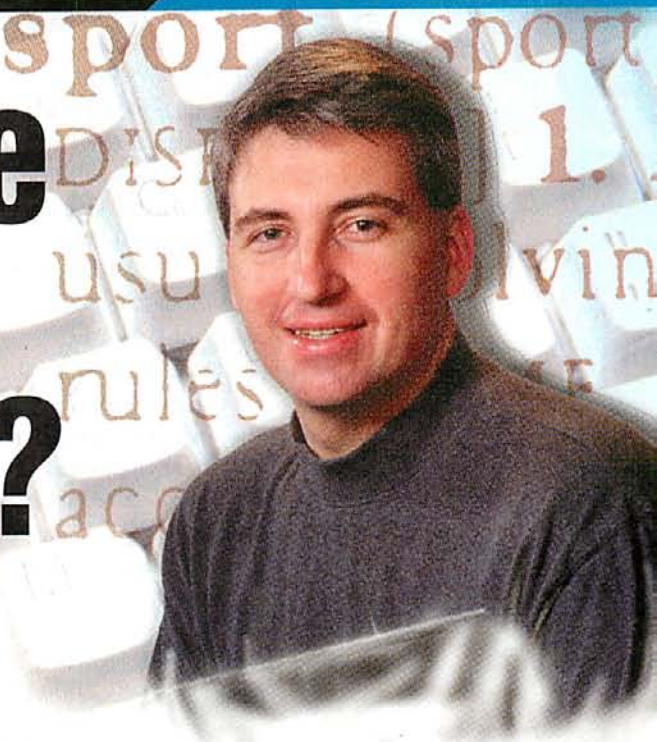
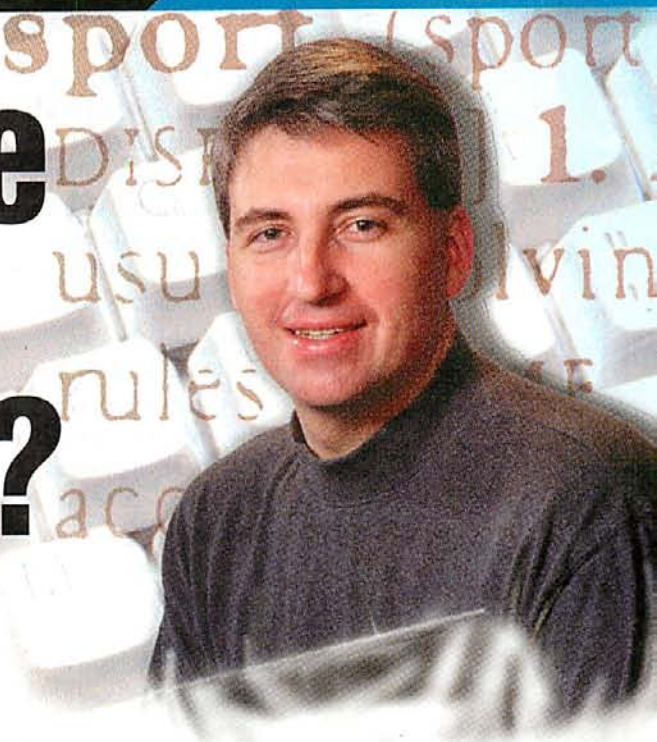
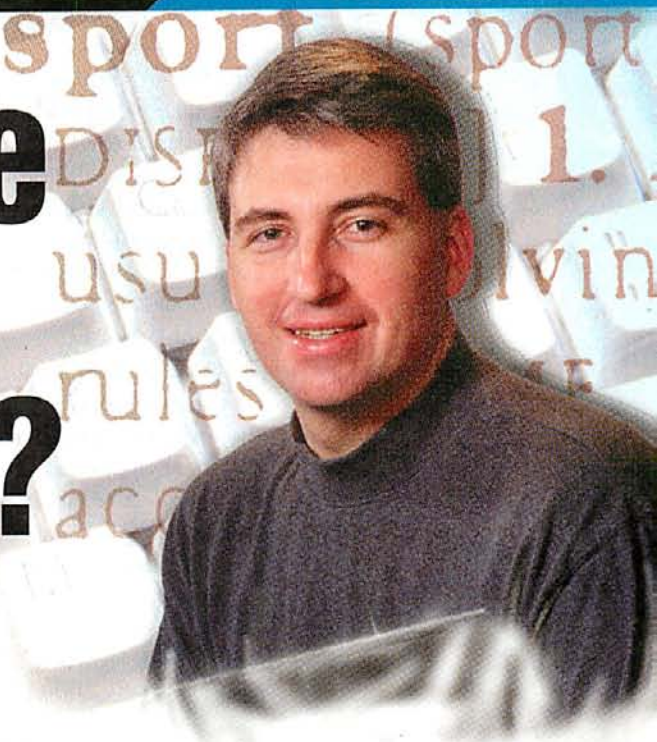
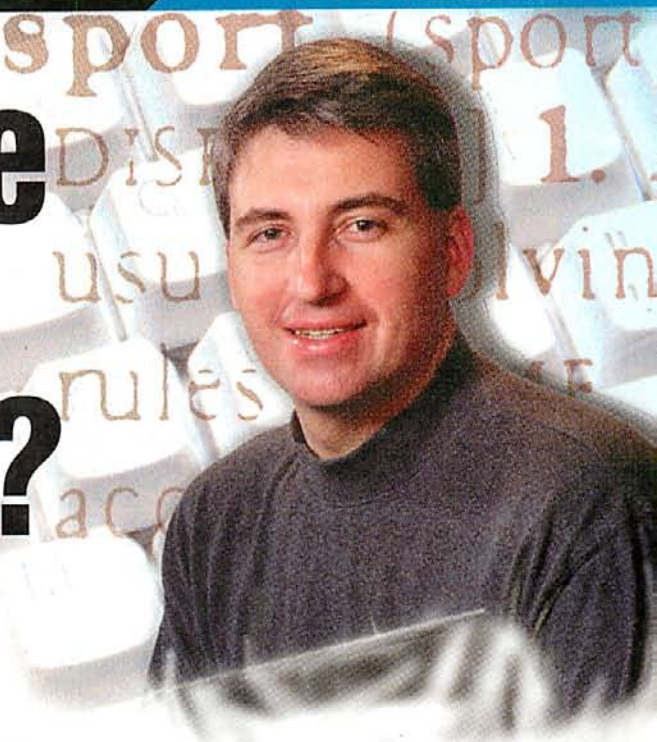
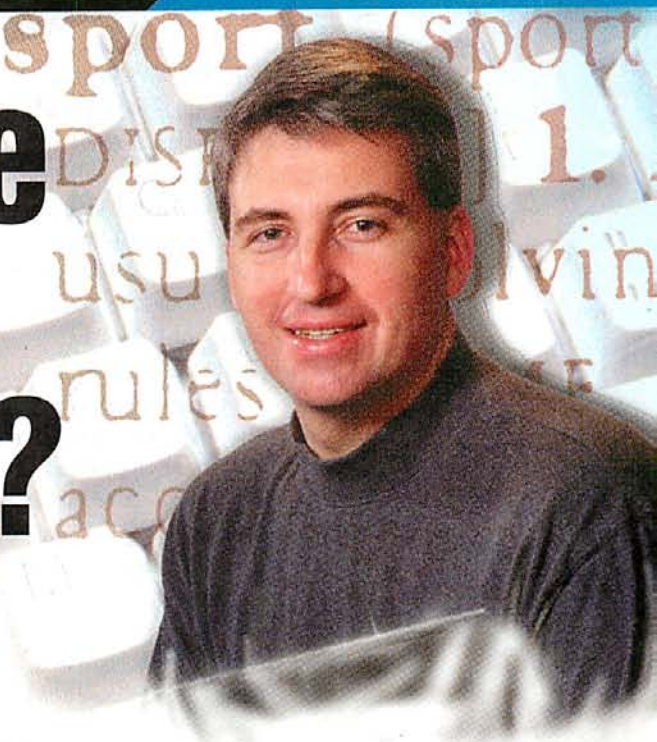
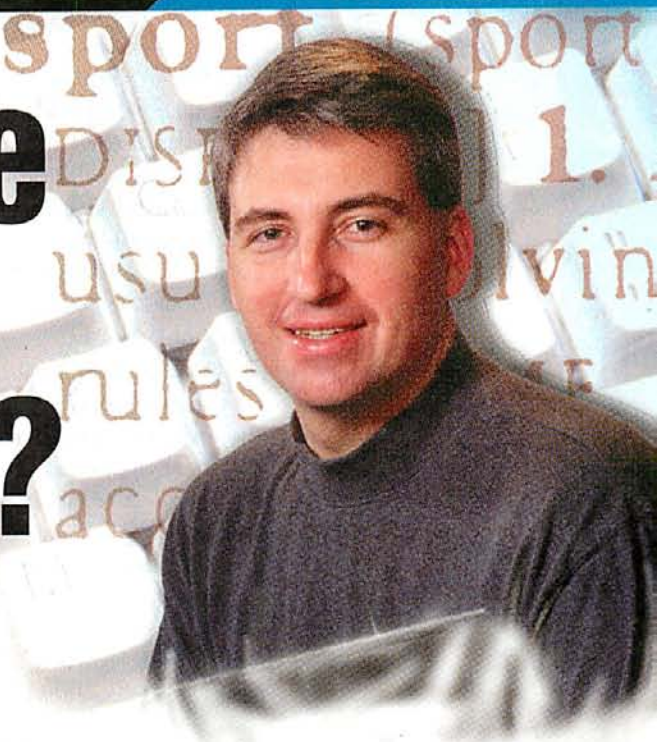
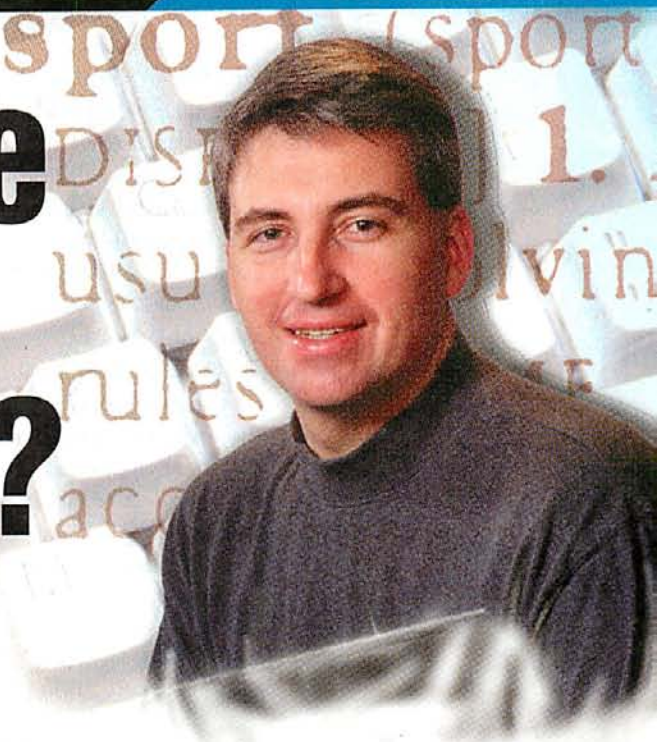
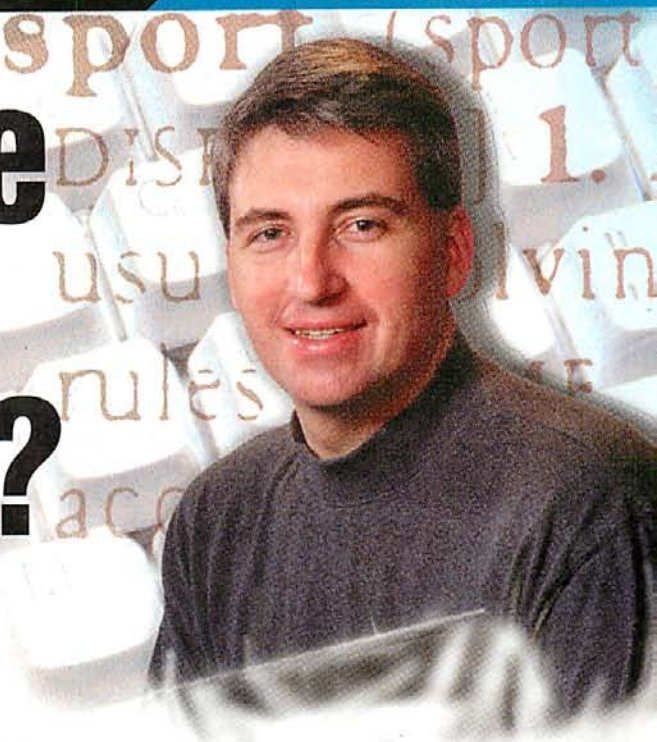
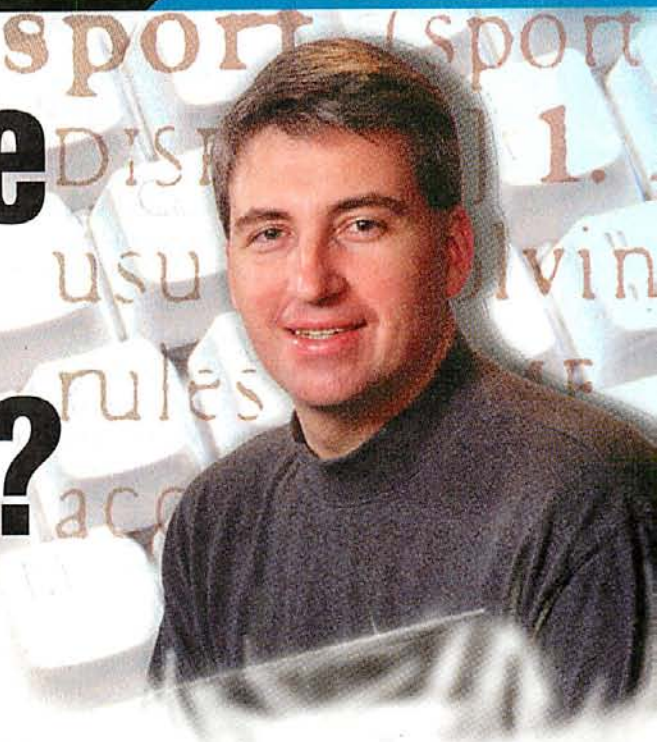
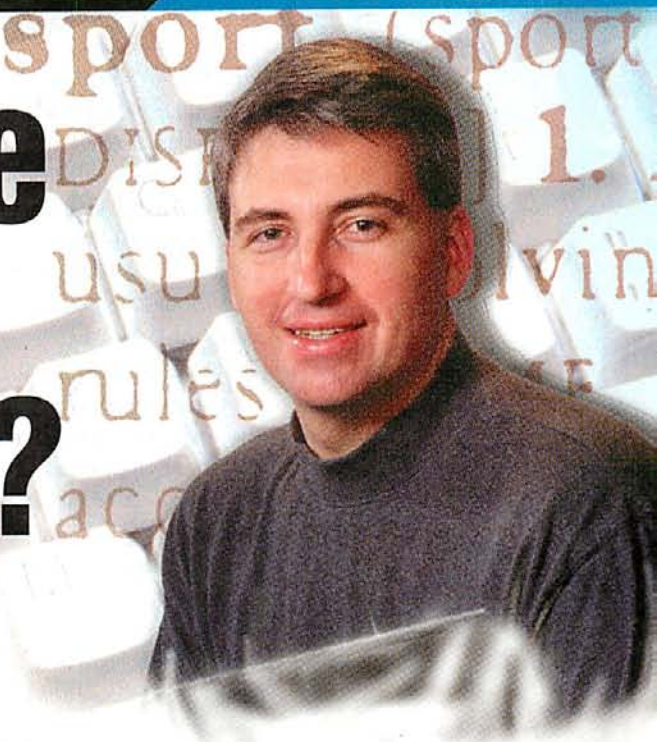
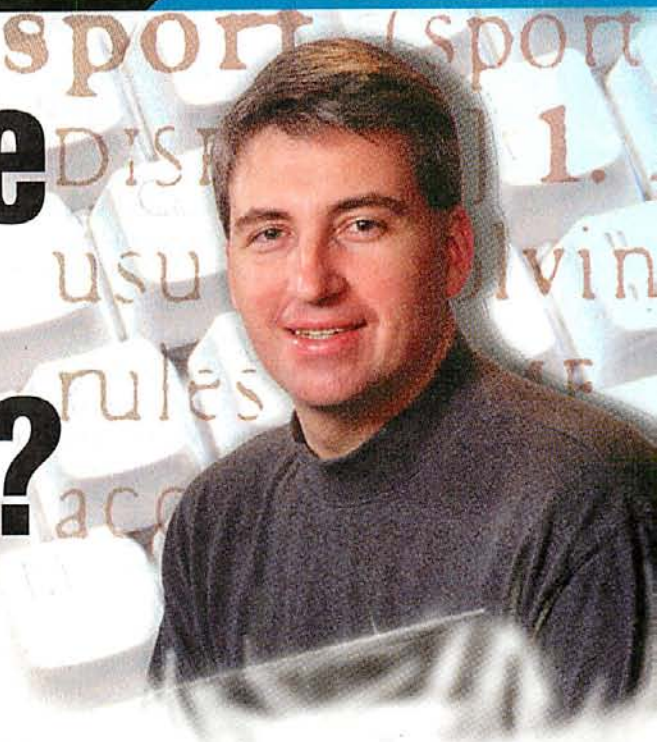
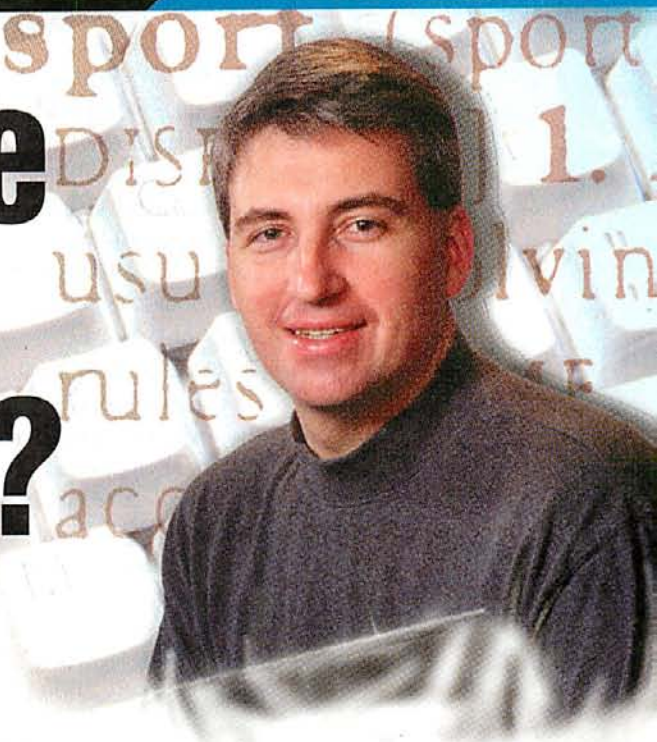
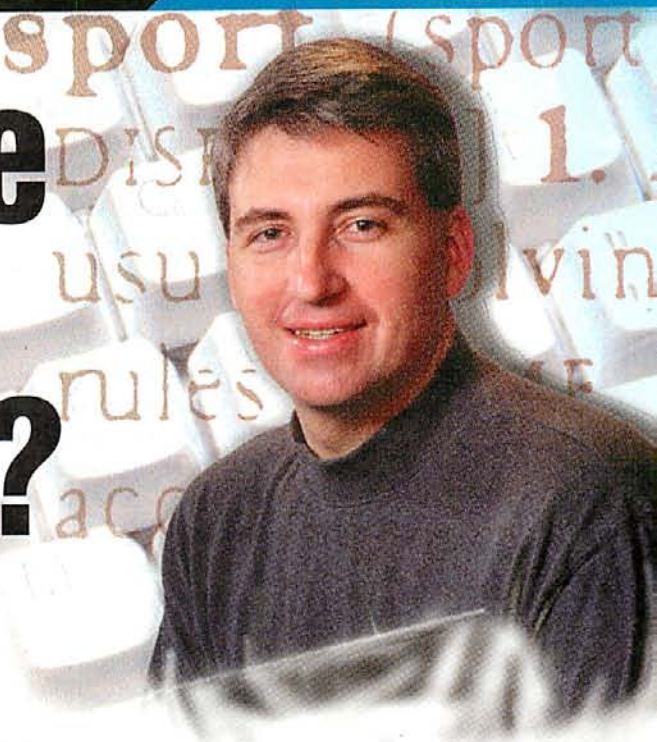
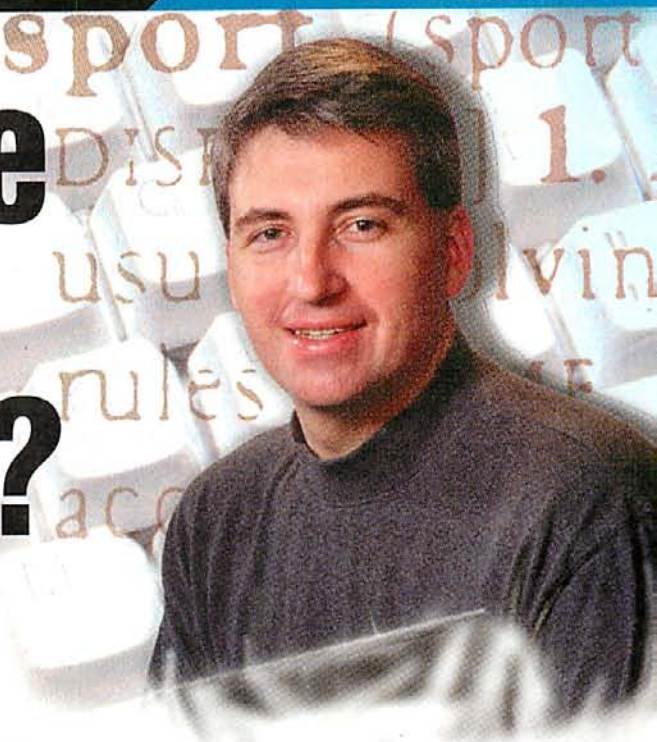
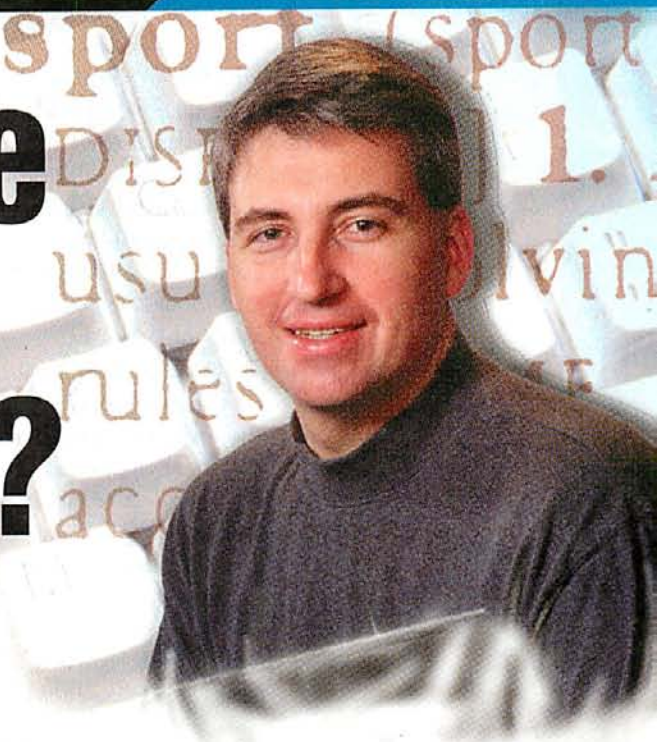
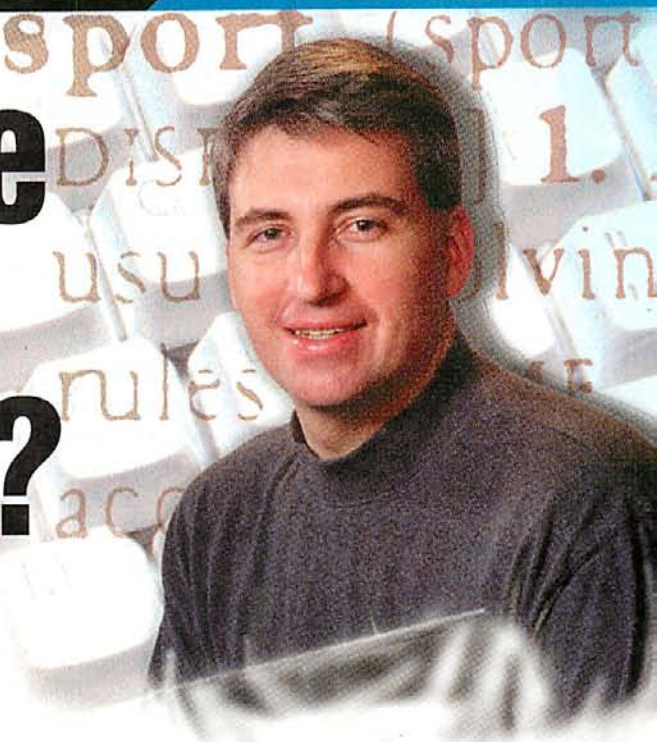
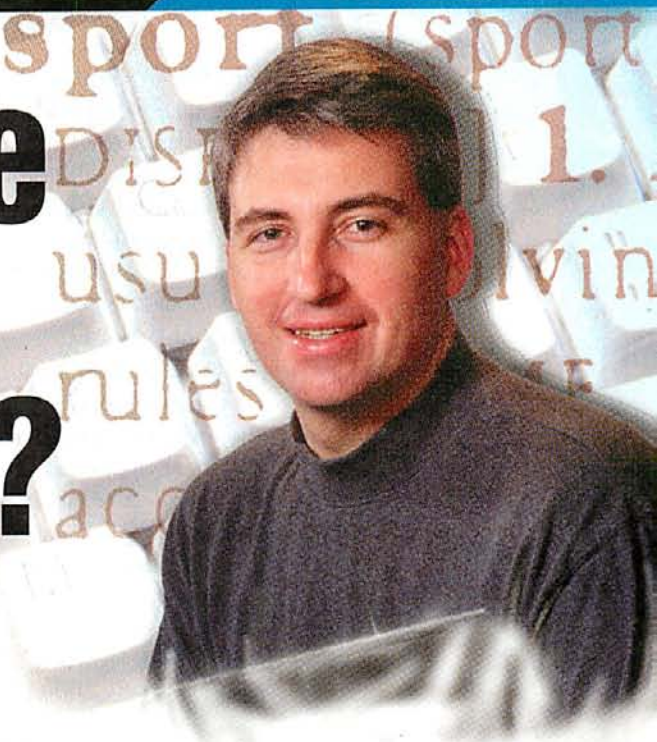
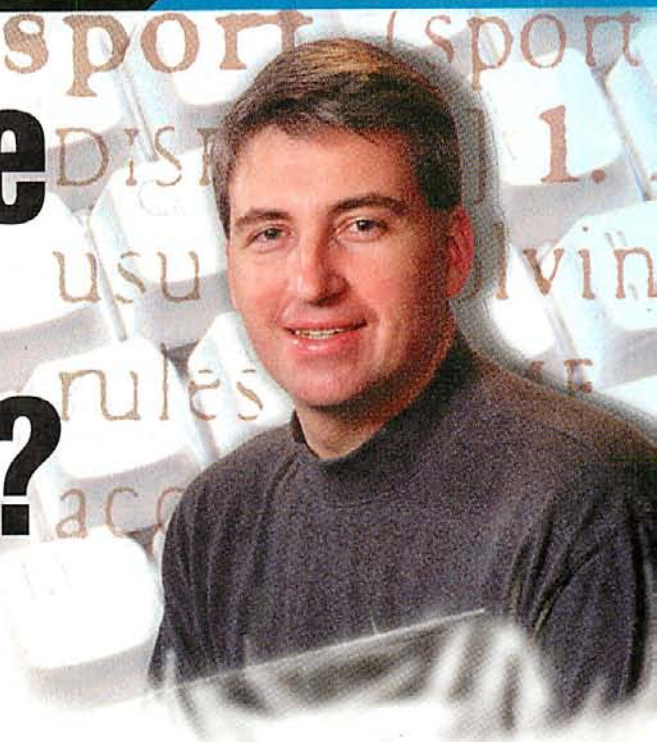
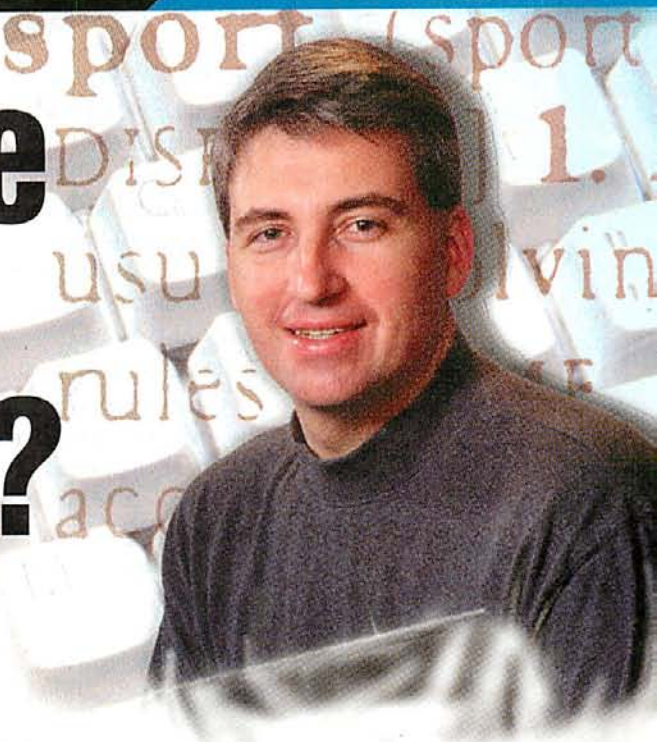
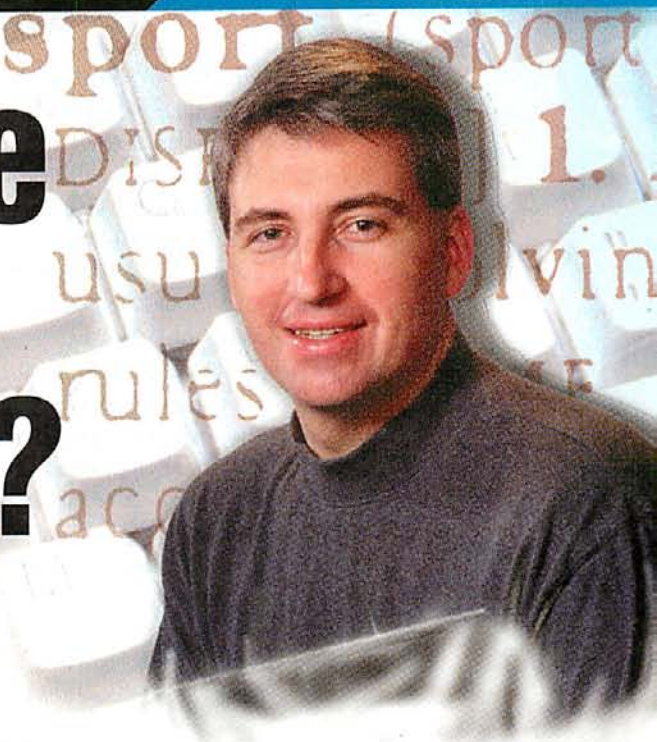
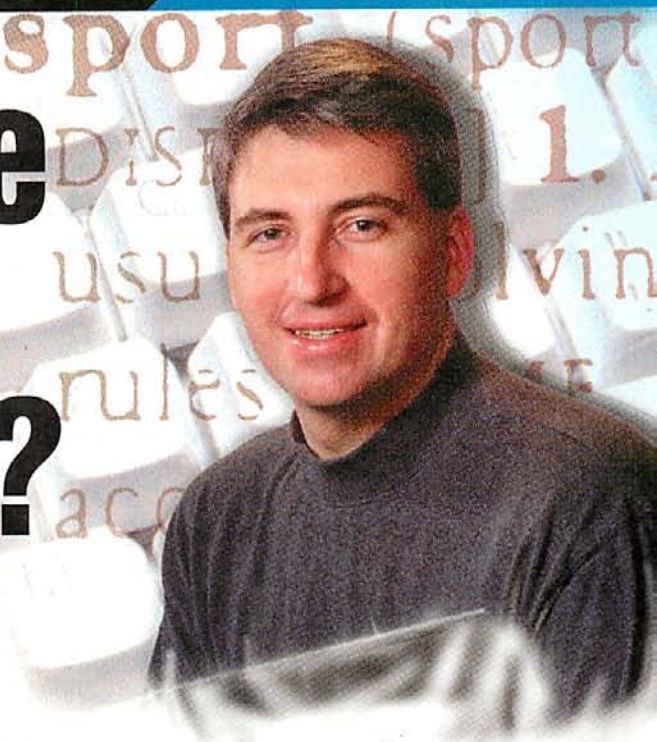
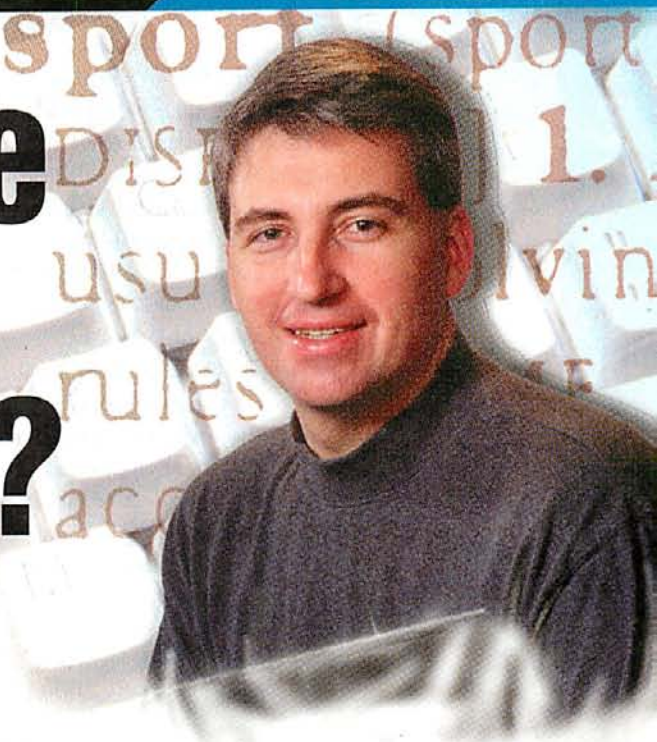
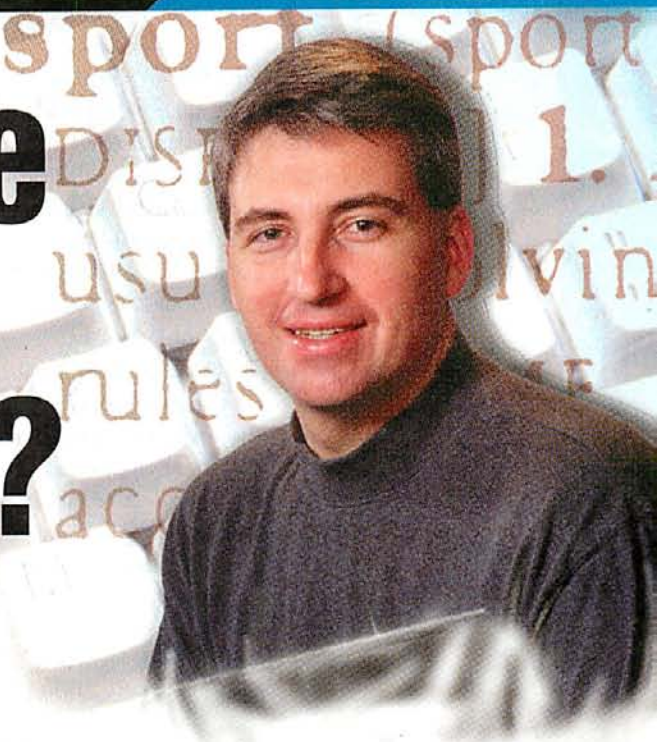
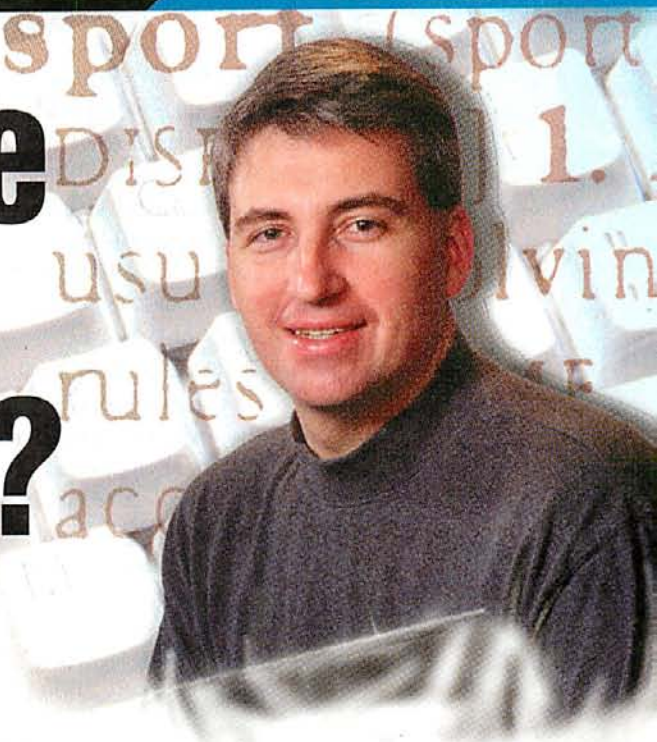
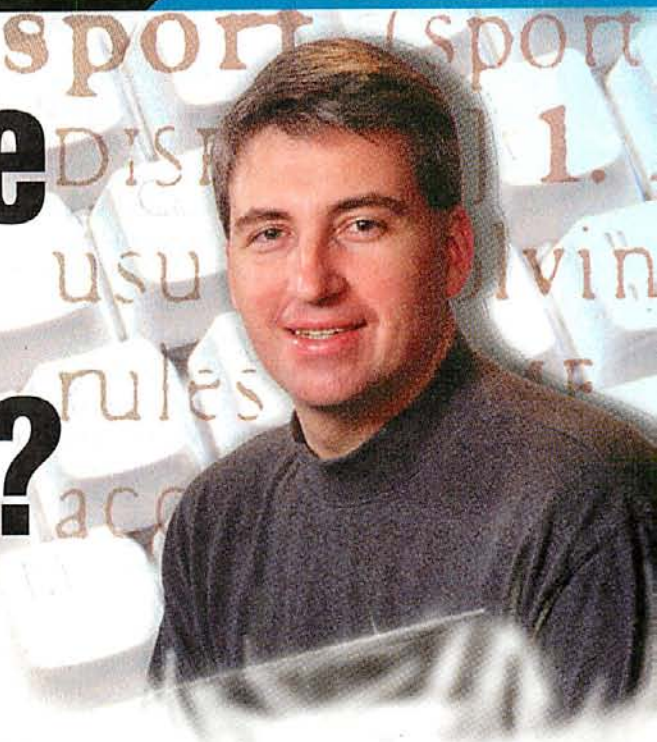
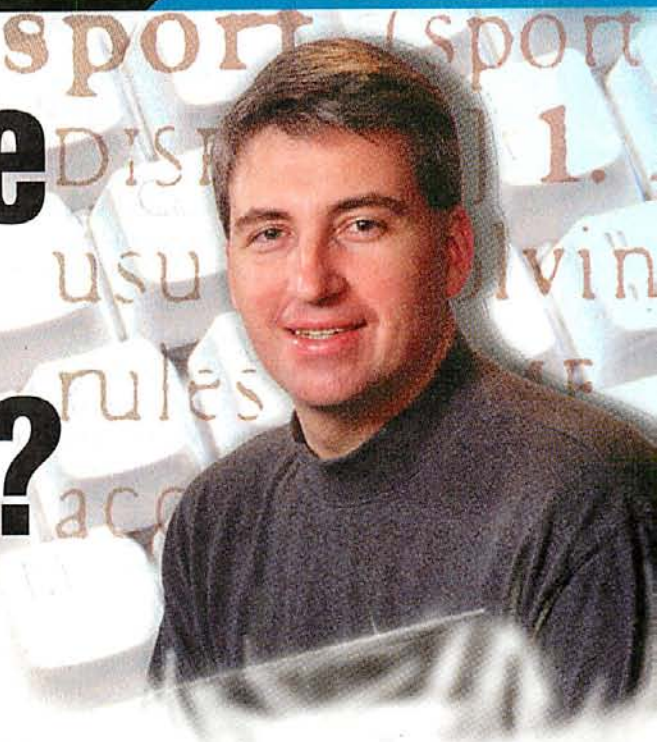
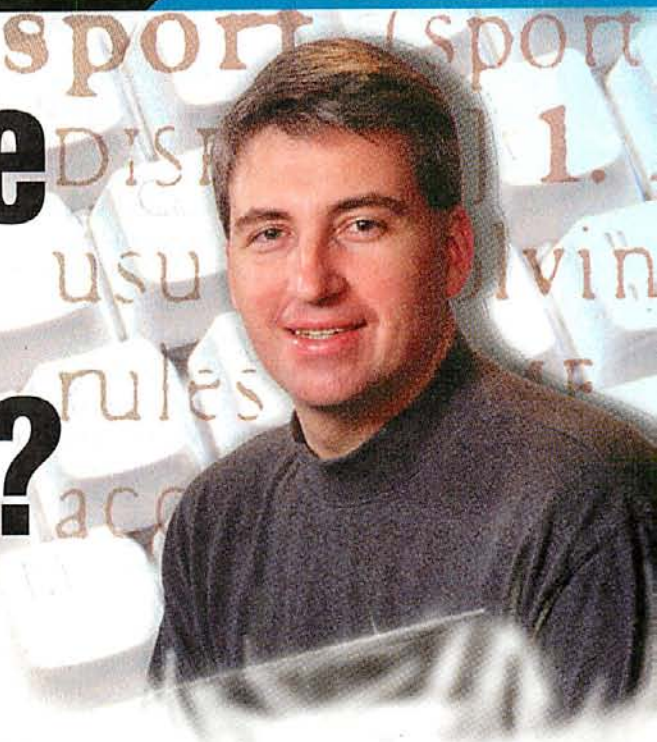
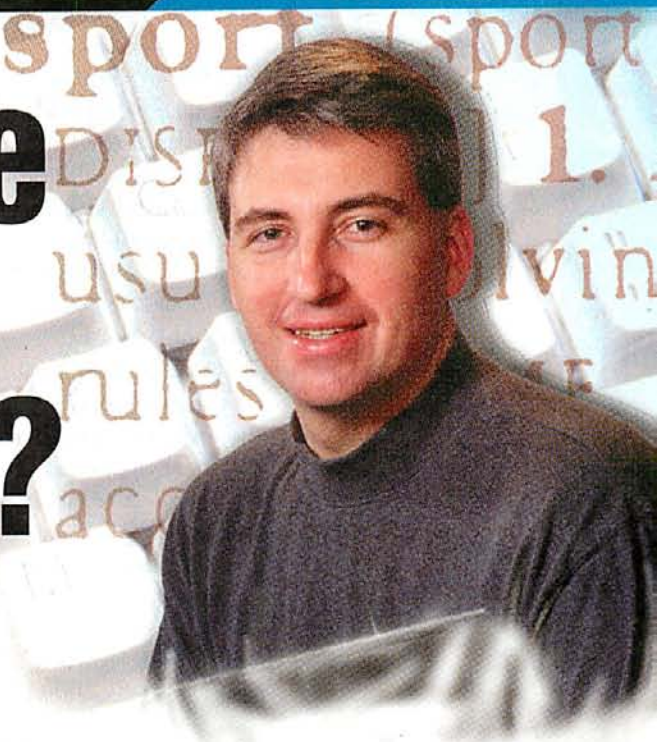
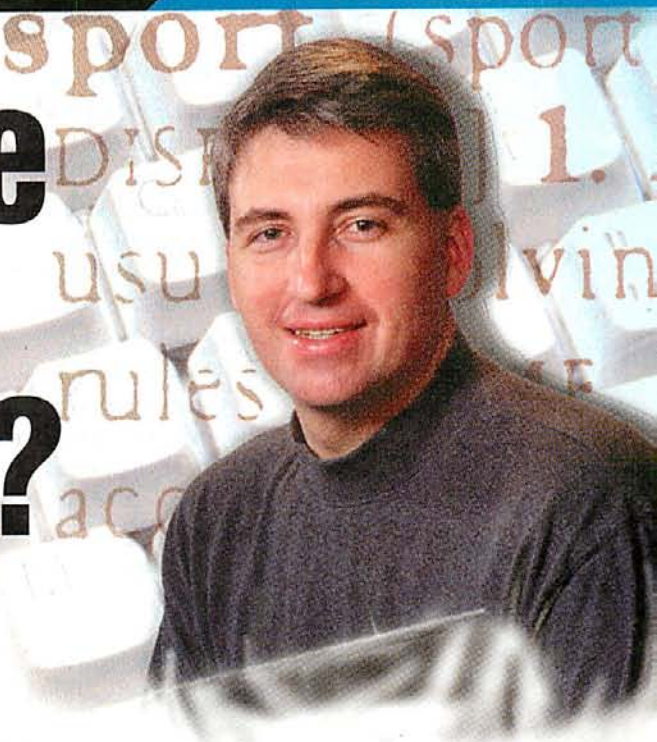
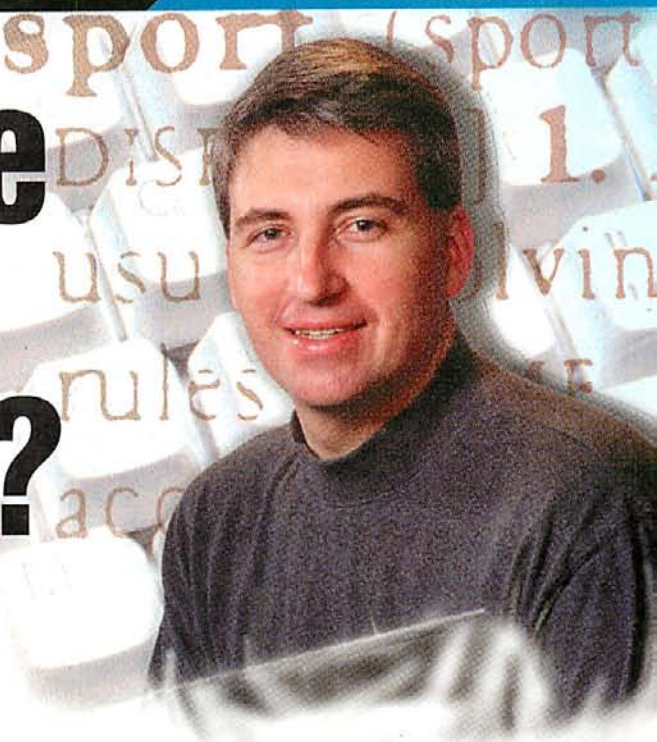
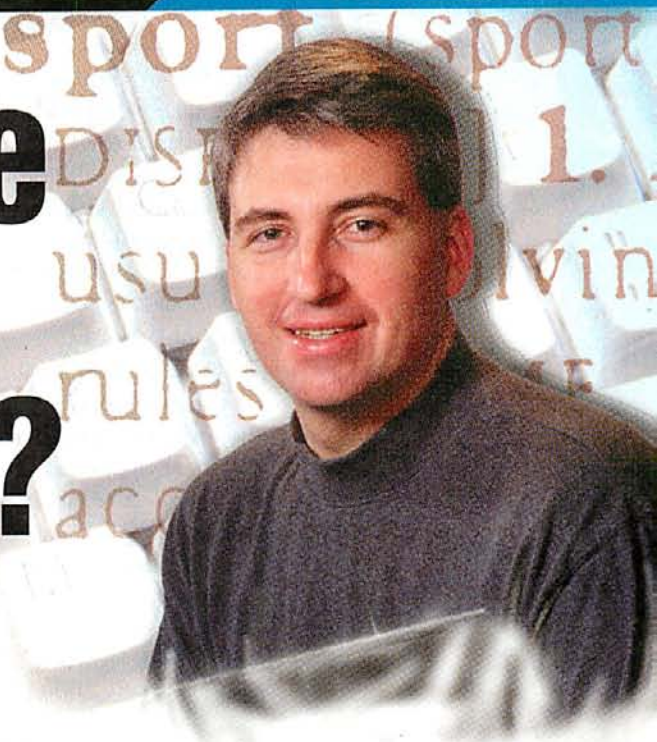
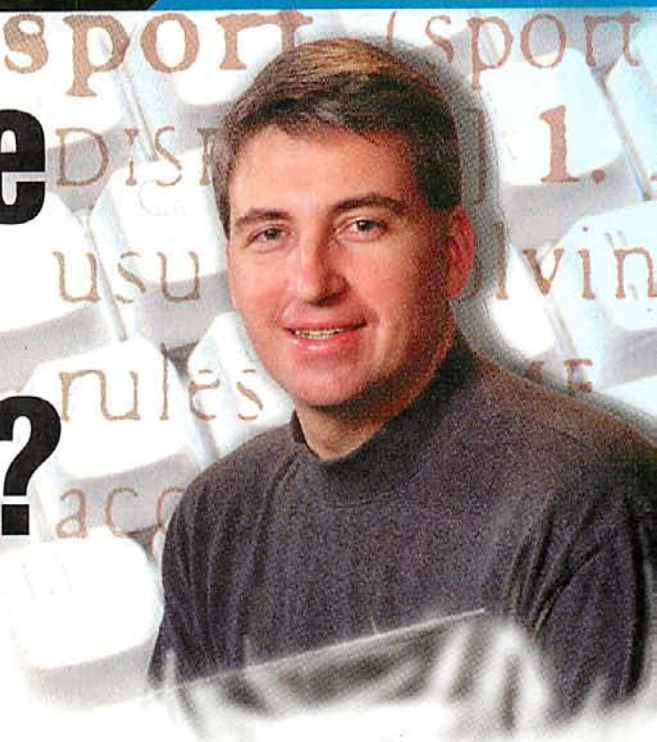
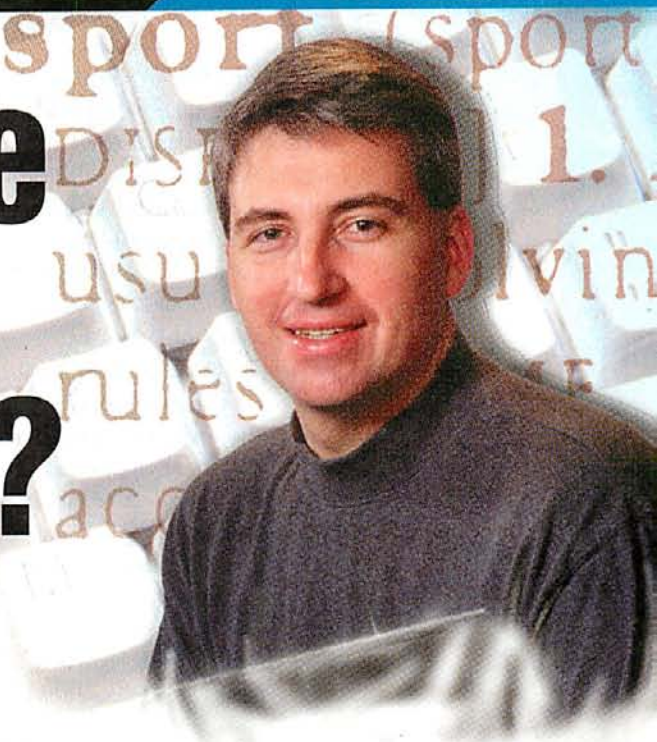
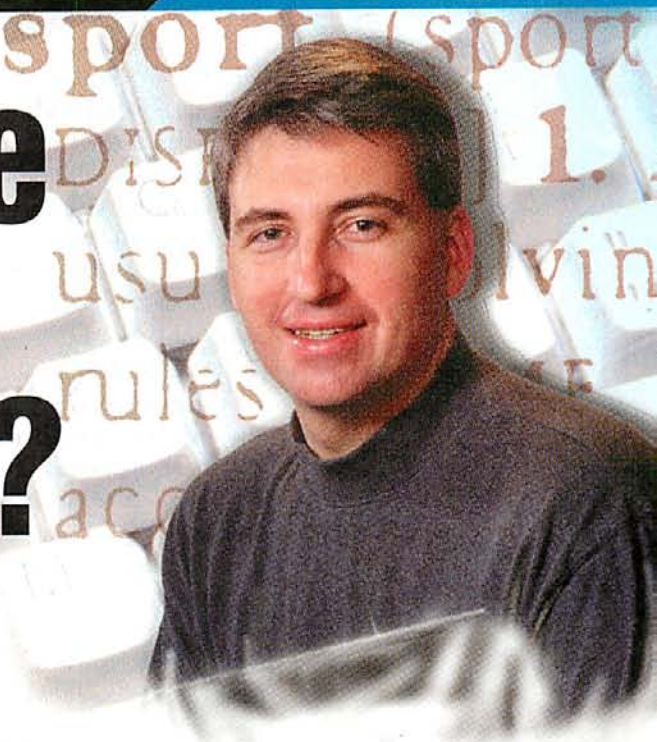
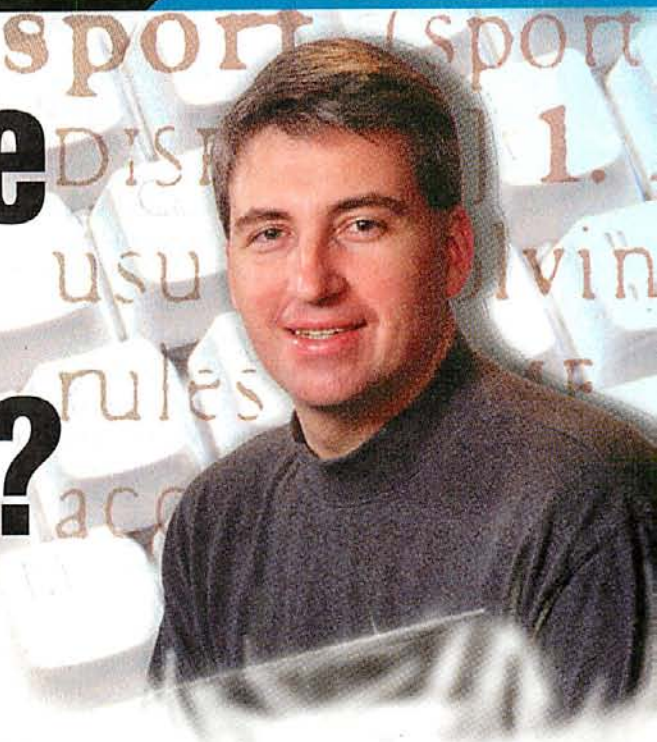
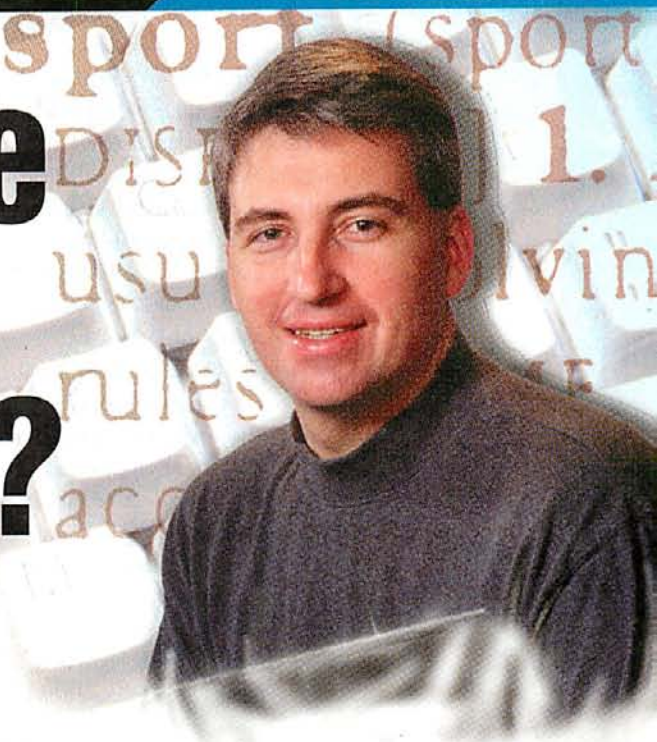
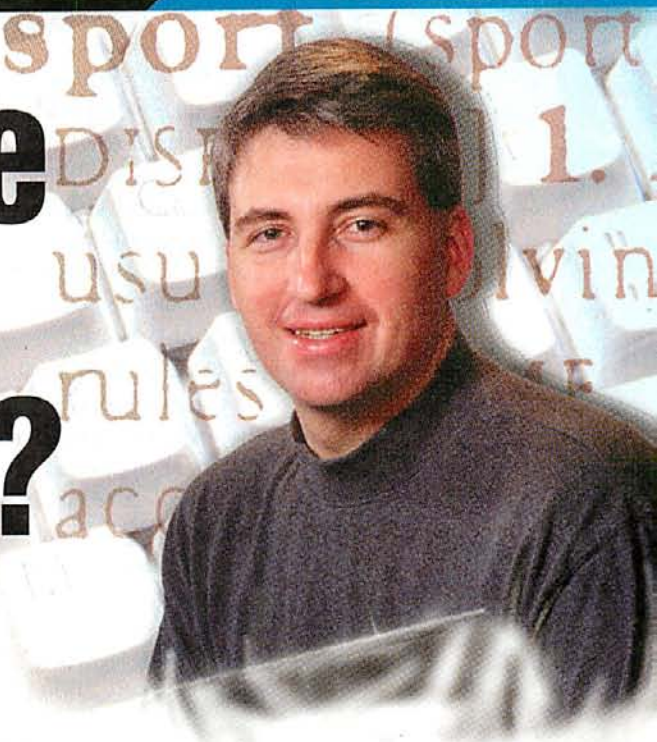
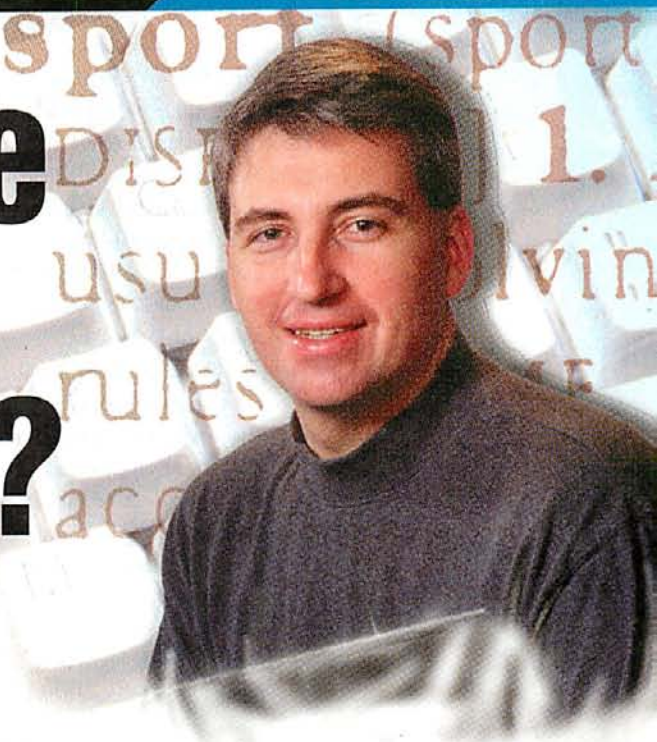
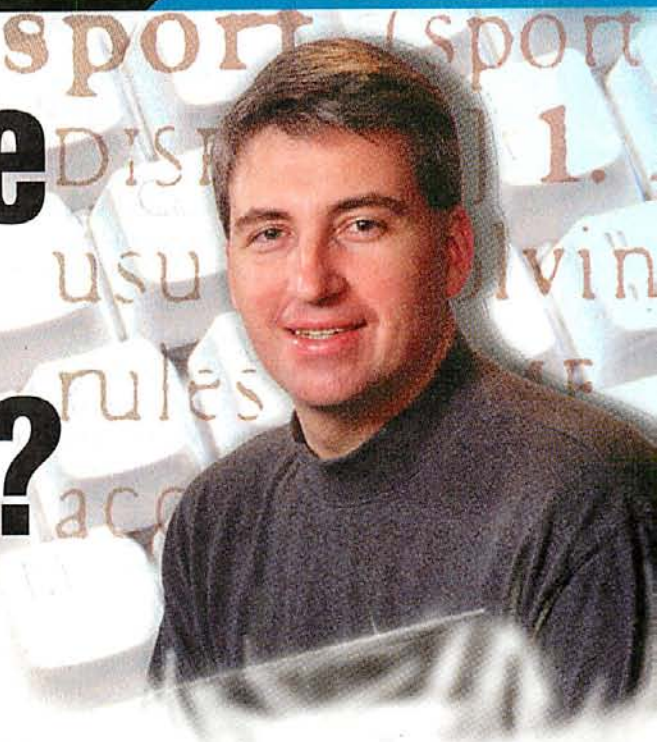
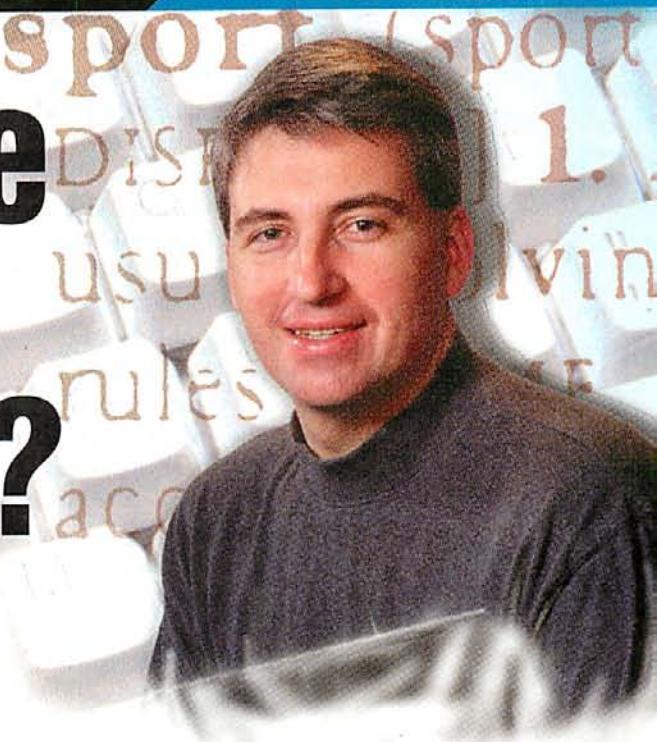
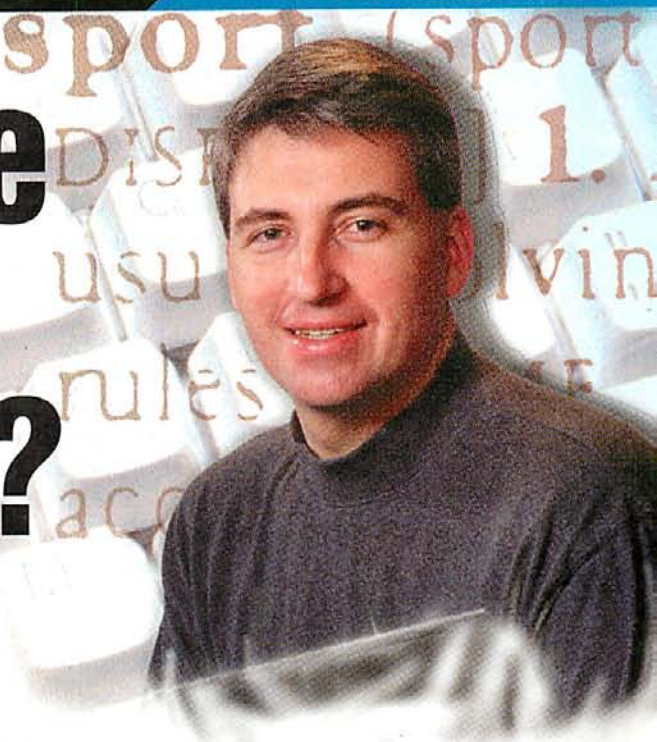
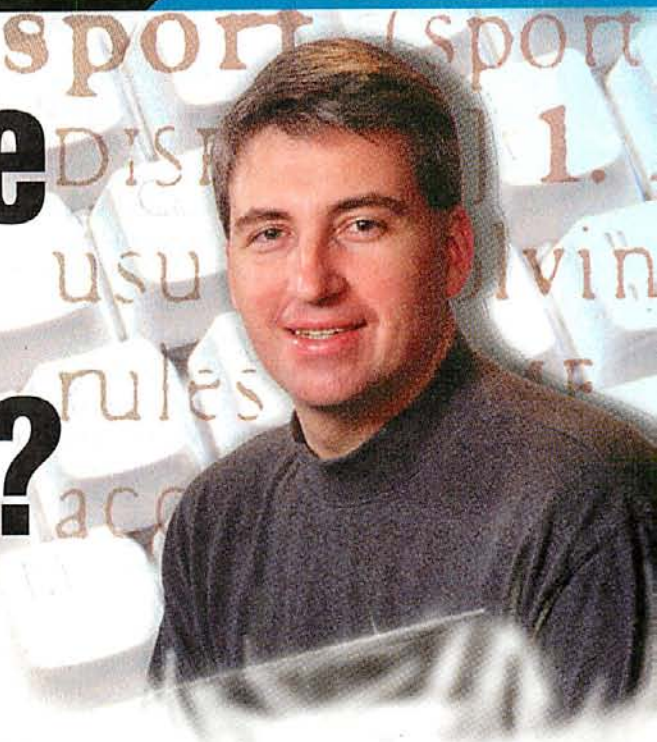
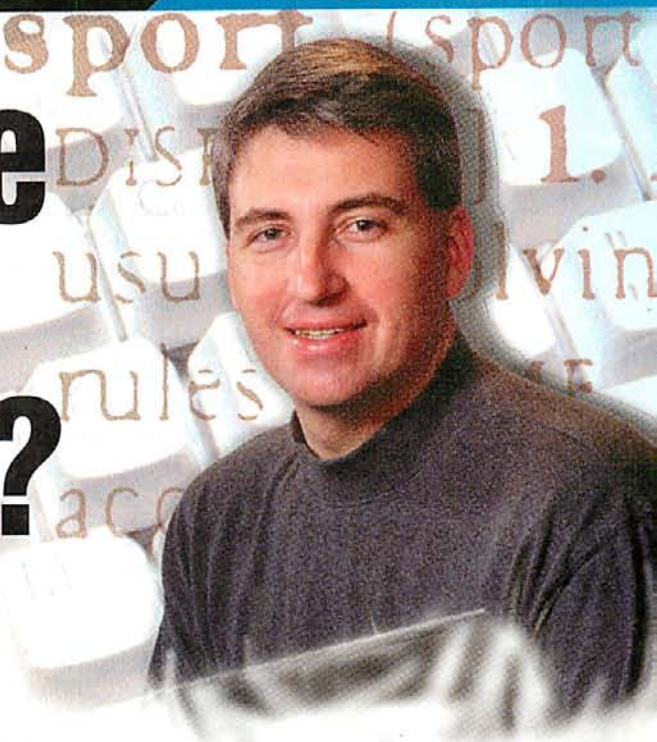
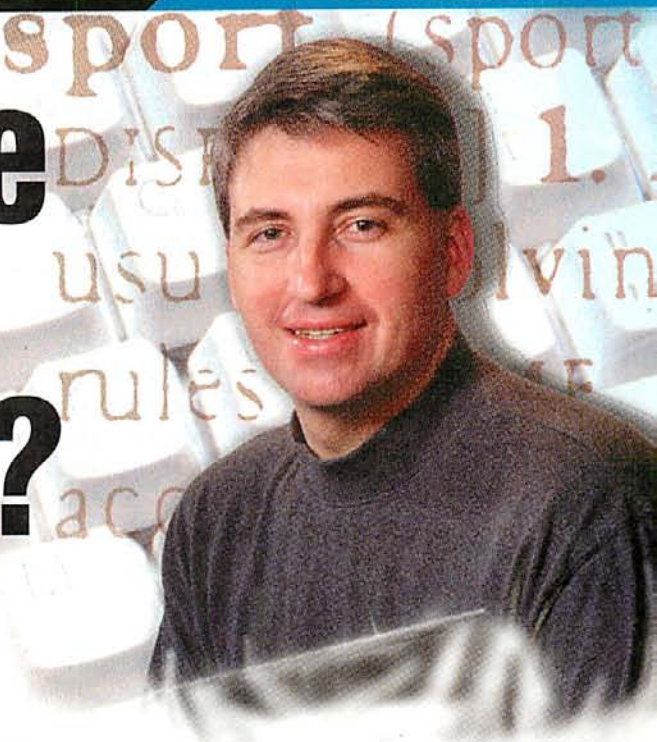
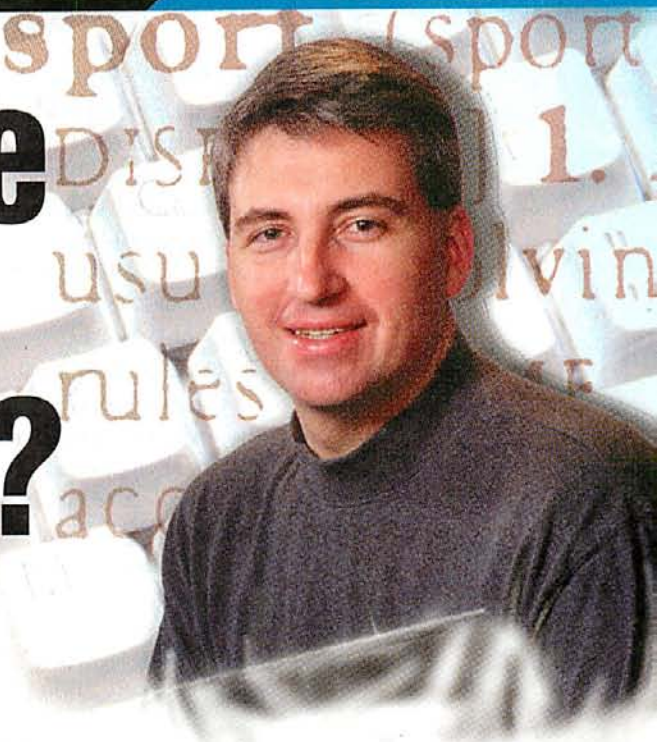
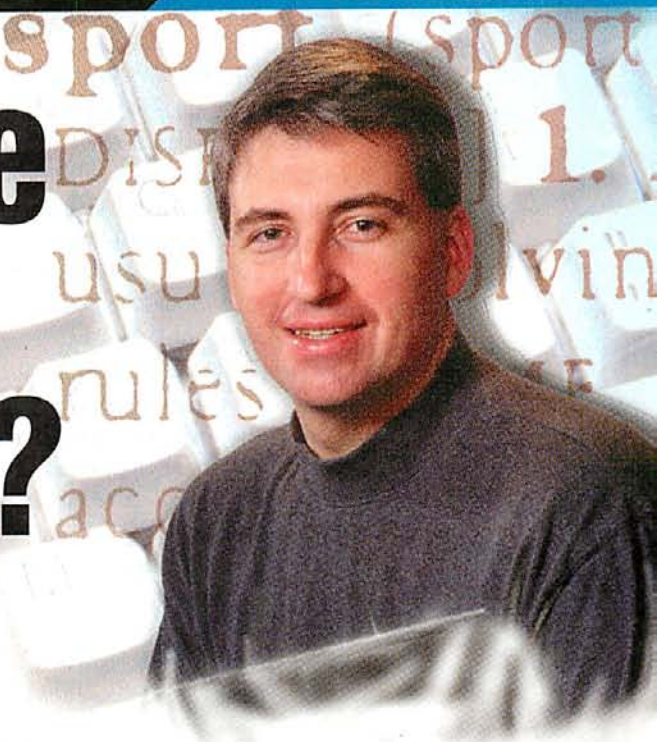
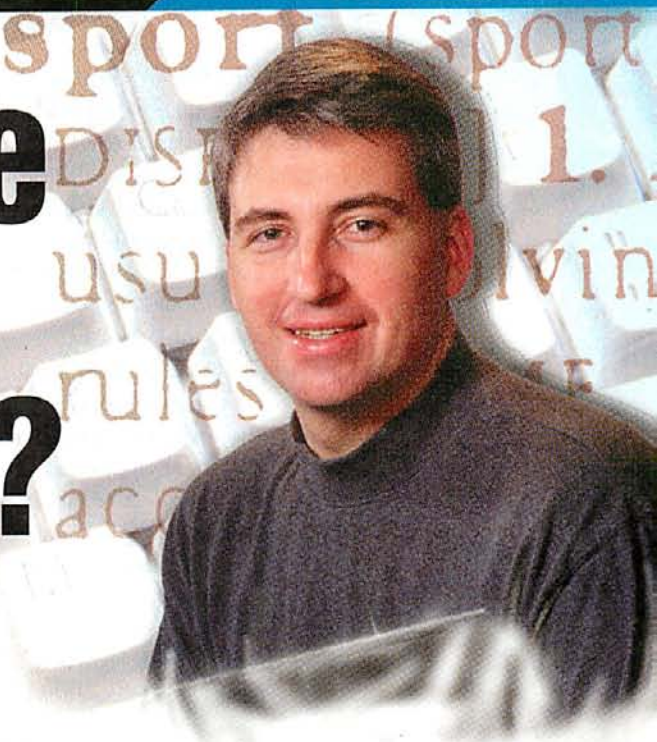
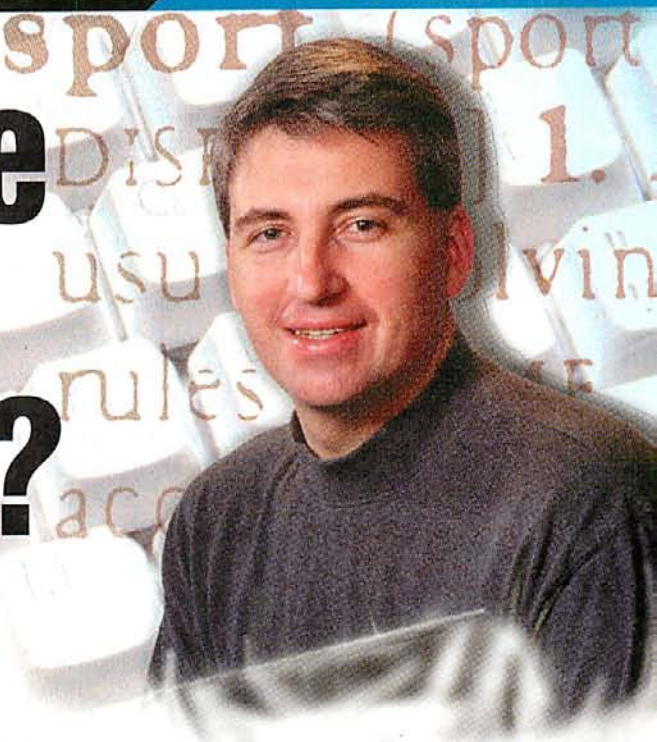
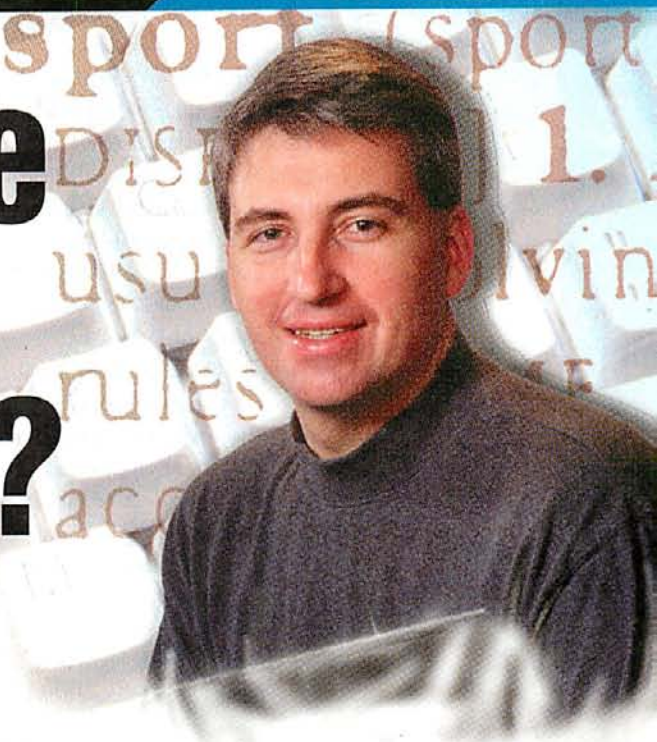
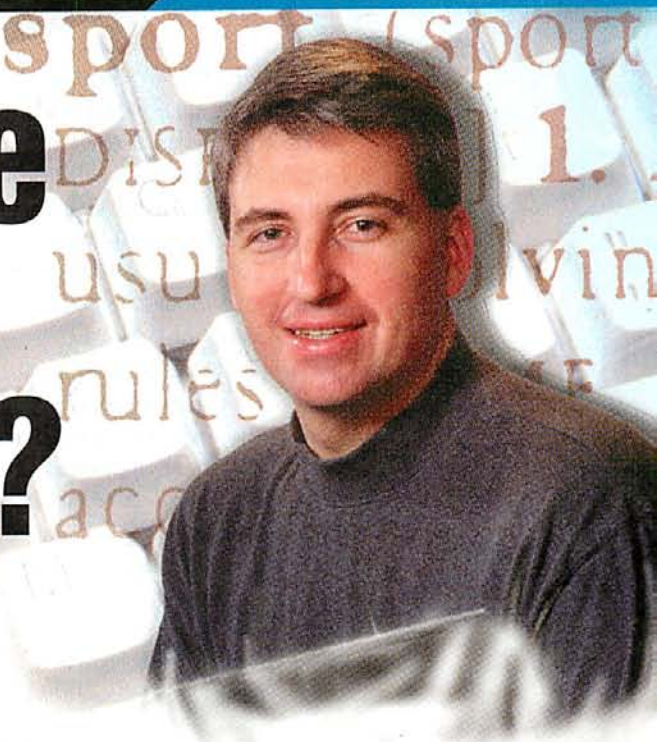
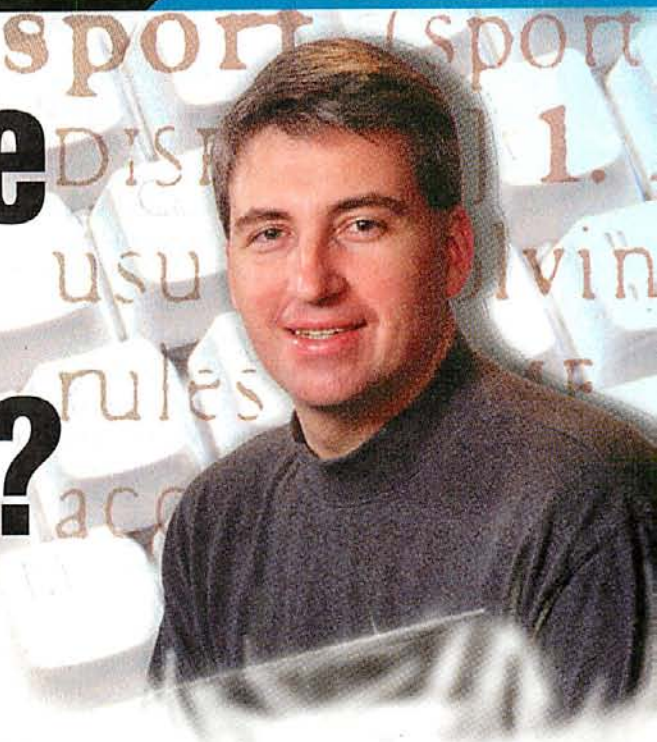
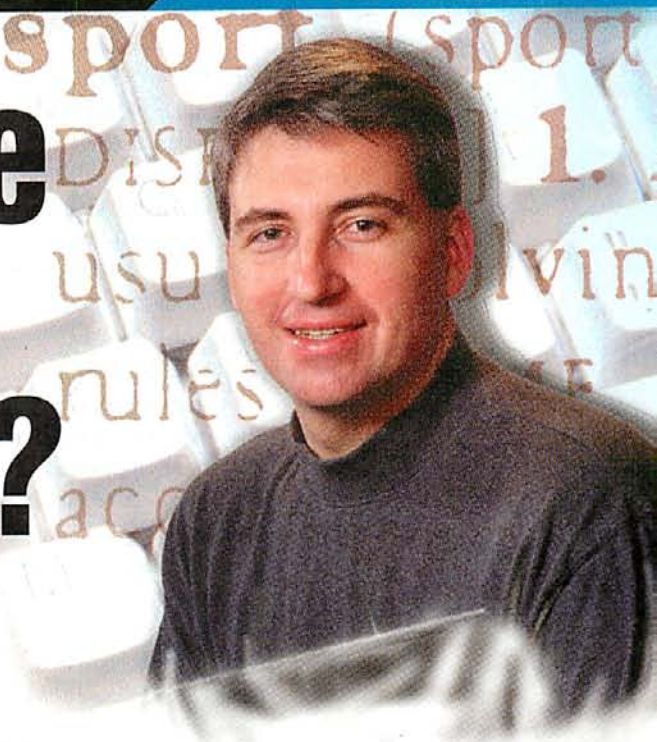
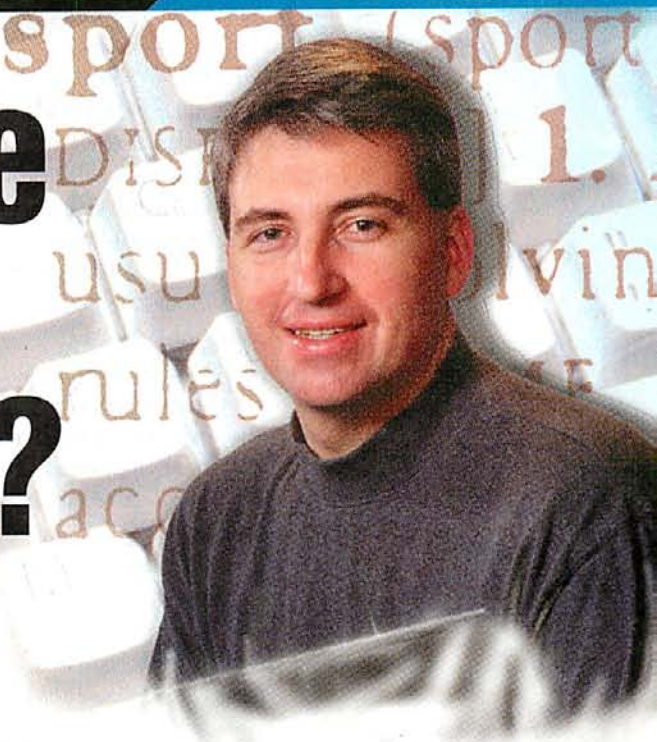
Now, don't get me wrong. Having a

“Announcers should add to the Big Show, not detract from it.”

ON DECK

Our baseball scout has informed us that PRO LEAGUE BASEBALL 96 may not win a computer sports pennant this year. Problems in the corporate bullpen have left manager Dave Holt at odds with IBM management, to the point where the game has been "severely delayed," and may not see action this year at all. While there's no "official" word from Sierra, don't expect Front Page Sports Basketball for at

least another year—probably even later. The decision to revamp both FRONT PAGE SPORTS BASEBALL PRO (see the Baseball coverage in this month's big sports feature) and to re-design OUTPOST from the ground up (see Terry Coleman's strategy/war column last issue) left no programmers for three-pointers—hardly the backdoor play hoops fans were hoping for.



play-by-play man doesn't necessarily make for a bad game. **BASEBALL FOR WINDOWS** is really quite decent. I'd recommend it to anyone who enjoys stat-based sims (provided you get the latest version with the bug fixes). **TONY LARUSSA BASEBALL 3.0: 1996 EDITION** is a quality product that offers not one, but three announcers, Mel Allen, Lon Simmons, and Hank Greenwald, from which to choose. But these products stand on their own merits; I'd extol them without the play-by-play men. In fact, I usually turn the announcers off, and I'd wager that many gamers do likewise after the first few test drives. If the game is a loser, as was **UNNECESSARY ROUGHNESS 95**, with its Al Michaels play-by-play, I turn everything off. The bottom line is that a good announcer can't save a bad game.

ANNOUNCER ALTERNATIVES

Perhaps the game companies could learn a lesson from television. Back in 1980, NBC tried a bold experiment in sports programming—the announcer-less game. It was a late season contest between the Jets and the Dolphins that had no bearing on the playoff hunt. A silent camera followed the action, picking up the crowd, the referees, and other ambient sounds that went along with a pro football game in New York's Shea Stadium, mainly jet planes and police sirens. TV graphics updated viewers to down-and-distance, the score, and game statistics. There was no play-by-play man, no color man, no announcer at all. A strange concept, to be sure, but guess what? The ratings exceeded all expecta-



What do you do when it's the bottom of the ninth, you're a run down with two outs and your worst hitter is standing at the plate? Well, normally, you lose. But in **TONY LARUSSA BASEBALL 3: 1996 EDITION**, you can turn any hitter into a superhuman batting machine. Just hold

BLAST FROM THE PAST Whether it's Babe Ruth getting "some serious wood under this one" or Ozzie Smith stealing second, the stats are brought to life by the immortal voice of Ernie Harwell in **BASEBALL FOR WINDOWS BROADCAST BLAST**.

tions, coming in with a share much higher than usual. There's a message in there somewhere, for both television and game company executives.

What will happen when software designers wake up, smell the toast burning, and realize that they've ridden the announcer horse about as far as it will go? What's even sillier is pandering to the sound gods in the audio wing of the multimedia temple. How about *Virtual Sports Talk Radio*? If your team falls behind late in the game you'll be treated to voice-overs of the get-a-life crowd calling for your scalp on *The Fabulous Sports Babe Show*.

Or *Virtual Troubled Player*—can you motivate the big stiff for one more big game, and keep him from flunking his urine test or punching his wife? Pick your approach carefully. Should you come on strong like Vince Lombardi, *laissez-faire*

down the M, E, G, and A keys simultaneously while your team is at bat in the "Play" or "Manage Only" mode of the action/arcade part of the game. Once invoked, the player will retain his "Mega-man" status for the rest of the game, jacking home runs out of the park, and gloving balls all over the field. Talk about *The Natural*!

like John Madden, or charismatic like Pat Riley? Choose correctly and you'll win the game and get a new sneaker contract. Make the wrong call, and you'll end up as the assistant equipment man at Southwest Nowhere State.

Come to think of it, with past seasons and classic stadium add-ons so popular these days, how about a Classic Announcers module for added period flavor? Let's start with a digitally re-mastered version of Howard Cosell's nasal cynicism, grating on gamers' ears even from the great beyond; but telling it like it is, nonetheless. If it sells, we'll add Red Barber, Curt Gowdy, and all the other wonderful voices that once narrated the best days of our youth, but have sadly moved on to that great broadcast booth in the sky.

Finally, and not so far-fetched, expect to be using a headset before too long, coaching your team to victory through sports sims that utilize voice recognition software. Of course, your loved ones are certain to think you're insane as you pace up and down in front of your computer, dragging wires behind you, reading plays from a chart, and shouting things like "23 Zulu Right on 3," into the mike. There's just two things, coach. Don't spit the tobacco juice on the rug, and remember, the play's the thing, not the play-by-play. ☞

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"...breakneck play—amazing graphics."

Cyber Sports, May/June 1996

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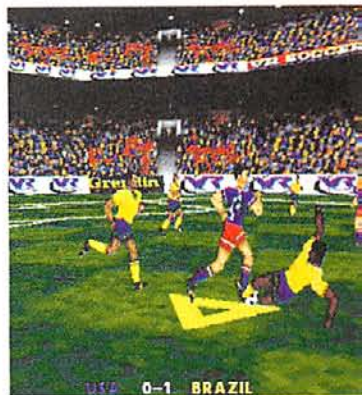
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VR Soccer '96 is being sold under the Actua Soccer brand name in most European markets.

Circle Reader Service #58



Triple Threat

Designing And Running The Triple Option Play In FPS FOOTBALL 96

by Paul Schuytema and Coach Kelly Kane

Football is a wonderful blend of brute force and chess-like tactical skills. Often, it is the coach who controls the tactical flow of the game and the players who must provide the sweat and muscle to turn an Xs-and-Os drawing into a first down. Option football is slightly different, taking some of the chess moves away from the coach and into the hands of the quarterback, who must make the tactical decisions on the field a split-second after the snap.

An option play is a running play that may evolve in several ways, with different ball carriers. This can be hard to defend against, because the play always begins exactly the same, and the defense has no way of knowing which of the two or three options will occur until the players are already underway.

This is fundamentally different than in pro football, where running plays are set before the snap, and drop-back passing poses the only real guessing game for the defense. With a drop-back passing play, though, it is chiefly the receiver who must catch and run with the ball, making him a slightly easier target. In an option running play, many players are involved in a synchronized blocking attack that scrambles the defense if executed properly.

FROM THE COACH'S CLIPBOARD:

As an NCAA Division III football coach, I've long been a proponent of option football—specifically triple option football. Division III rules do not allow colleges to offer athletic scholarships, so the type of player that matriculates from year to year is constantly changing. Option football best

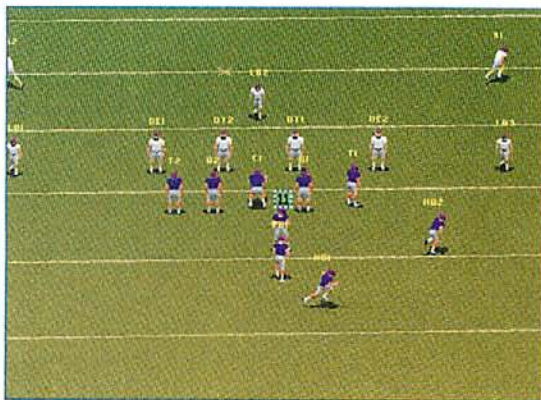
accommodates the myriad of Division III players, letting a team be competitive even when the talent isn't quite as good as the opposition. When the talent level between teams is equal, the option team generally dominates the non-option team.

Triple option football's advantages over other standard football plays include:

1. The ability to attack three areas of the field as determined by the defense's reaction.
2. Greater involvement of players—the QB, FB or HB can carry the ball on any given play.
3. An offensive play that doesn't have to be called in response to an expected defense because, by design, the triple option can take advantage of any defense.
4. Players with great ability can totally dominate a game, while players with less ability can do well because the play



THE ULTIMATE OPTION QB Barry Sanders, as quarterback, uses the triple option to cut upfield for an easy first down. That's Emmitt Smith about to throw a block to give Sanders even more breathing room.



GIMME THE BALL If the QB isn't going to run in the triple option play, he can choose to pitch the ball to the number one halfback, who's in motion before the snap. The QB's stance here shows he's in passing mode.

depends on disciplined execution and the defense's reaction.

5. The play action passing game is outstanding, because the defense has to defend the triple option with eight players, leaving just three to defend the pass (no double coverage).

FRONT PAGE SPORT FOOTBALL PRO 96 (and its predecessors) handles the nuances of the professional run and drop-back pass plays very well, but coach Kane and I wanted to see if we could get the simulation to handle the most complicated offense in all of football: the triple option package.

We discovered that FPS FOOTBALL PRO 96 (FPS FOOTBALL PRO) isn't really set up to handle "after the snap" decision-making, but with a little kludging, we did put together a workable option offense.

SPLIT-SECOND DECISIONS

To make an option play work, the quarterback must make decisions after the ball is snapped. In a triple option play, the quarterback, fullback or halfback can all run with the ball. Who gets the ball is a decision broken down into two parts.

As soon as the quarterback snaps the ball, he looks at the "read key." This is an



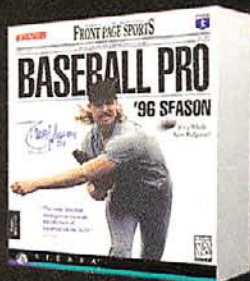
►Check out the CG-ROM for a complete walk-through of the triple option play.

YOU CAN WATCH HIM ON TV.

YOU CAN READ ABOUT
HIM IN THE SPORTS SECTION.

OR YOU CAN SEND HIM IN TO
PITCH RELIEF IN THE BOTTOM OF THE NINTH.

No matter how you slice and dice the lineup, when you play *Front Page Sports: Baseball Pro '96* you'll be playing the Big Unit of baseball sims. It's the only game that relies on more than stats to put the ball in play. It also goes deep to take a look at wind, humidity, ball spin, and bat speed on every single swing. Graphics hit a dinger too, with ultra-realistic motion-captured 3D animation, and camera controls that let you watch from anywhere in all 28 big league ballparks. Then there's the section where you can slip into the body of any active major leaguer and show your stuff at pitching, hitting, and fielding. The coolest thing, though, is that you get to make managerial decisions that are highly questionable. Or, possibly, pure genius.



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Circle Reader Service #154

unblocked defensive player, typically the first player outside of the tackle, often a defensive end. The quarterback watches this player (actually just his shoulders, since the decision must be made almost instantly). If the read key twists to the inside, indicating that he is going to try to cut off the center, the quarterback makes decision one: keep the ball and run to the outside for now. If the read key is coming

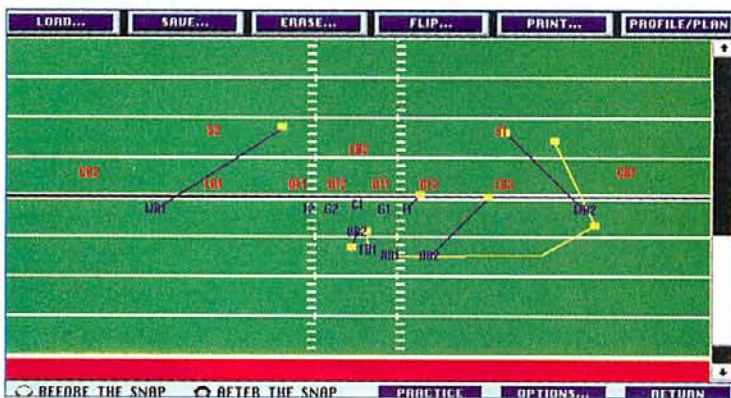
halfback on each side and the fullback behind. In FOOTBALL PRO, we need to make sure that the fullback and QB are not directly in line with each other, or they'll bump heads as soon as the ball is snapped.

Next, we need to set up the before-the-snap movement. You want HBI to go in motion as soon as the play is set, running to the right. I've designed it so that he sets

look at coach Kane's diagram to see what everyone is supposed to do. You will probably find it easier to load a defense into the play editor to set up your blocking. Some trial-and-error experimentation between the play editor and practice field will help you fine-tune your blocking.

Remember that the rules for professional football aren't as "option friendly" as in the college game. In college football, you can have your offensive line scramble down the field without a penalty, but in the pros, an offensive lineman can't go more than three yards downfield on a passing play before the pass is thrown. You'll need to do some tweaking if you notice that you get offensive penalties every time you get the ball to your halfback. If the quarterback runs, even if he's in passing mode, the play is a running play, so that rule doesn't apply.

The key to making all this work is not only making sure your Xs and Os are in the right place, but that your ball carriers have the skills to rack up the yards. If you're running an option offense, 90 percent of your plays will be option plays. In the option offense I set up, I ran about 60 percent triple option (the same play), 30 percent trap option (see below), and the



BEYOND XS AND OS The FPS FOOTBALL play editor offers a clear view of the players on the field. Here, the triple option is set against a basic 4-3 defensive formation.

in straight, then the QB will immediately hand off to the fullback for a run up the middle.

If the quarterback runs to the outside, a halfback is running with him, but slightly ahead. Now the QB looks to the "option key," another defensive player, generally the outermost defensive player. If the option key looks to cut inside, the QB will pitch the ball to the halfback for a sideline run. If the option key is heading for the sidelines, then the QB will keep the ball and cut slightly inside.

It is these after-the-snap decisions that FOOTBALL PRO just isn't capable of handling. The solution: the player assumes the role of QB and makes the decisions him- or herself after the ball is snapped.

MAKING IT WORK IN THE GAME

The two keys to creating an option offense are to craft the option plays and make sure that our option players (the QB, fullback and halfbacks) can meet the challenge at hand.

We start by creating a formation. The triple option formation is symmetrical, with a single wide-out on each side of the offensive line. Behind the QB, we have a

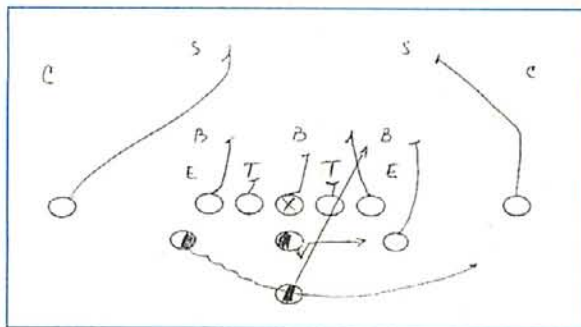
back up in his stance as soon as he gets next to the other HB, but you'll want to snap the ball before he gets there, so it really doesn't matter.

The tricky part comes when you try to craft the after-the-snap movement. Take a look at the play editor screenshot and the logic script to get a feel for what's going on.

It's important to note that we're forcing

FOOTBALL PRO into running this play by thinking that it's a "check receivers" pass play. That means that you need to set your fullback up as receiver one, and HBI (the one who goes in motion) as receiver two. Remember to set each of these players up to look for a pass after they're done with their movement, or the pigskin will just plunk off of their helmet.

As for setting up the blocking, you can



TRIPLE OPTION RIGHT From the coach's clipboard, this diagram shows how the play is set up when he instructs his players on the field. The players with the darkened circles are potential ball-carriers.

rest were short passing plays that I almost always called from an audible.

FROM THE COACH'S CLIPBOARD:

The ideal types of players necessary to employ the triple option attack are the so-called "skill players" (QB, HB, FB and receivers). The QB should be a good athlete with better-than-average speed who is a great decision maker. The ability to throw



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NFL's Best Option QBs

NAME	POSITION	YRS.	SPEED	ACCEL.	AGIL.	STREN.	HANDS	ENDUR.	INTEL.	DISCIP.	MY RATING
BARRY SANDERS	HB	7	90	90	91	80	86	82	76	80	88.25
MARSHALL FAULK	HB	2	86	86	85	74	79	73	51	56	82.5
DAVID MEGGETT	HB	7	84	84	87	60	72	72	69	68	81.75
ERIC METCALF	HB	7	85	89	90	69	63	62	68	68	81.5
STEVE YOUNG	QB	11	77	84	92	82	72	70	90	86	80.75
RONNIE HARMON	HB	10	80	77	84	67	70	75	79	53	79
DEXTER CARTER	HB	6	75	86	86	57	70	65	61	37	78
BRETT FAVRE	QB	5	77	83	82	82	62	62	80	75	76
ERIC BIENIEMY	HB	5	80	83	68	68	64	66	56	59	74.25
JEFF BLAKE	QB	4	82	80	76	80	64	58	74	77	74
STEVE MCNAIR	QB	R	74	77	66	64	65	70	65	63	71.75
JIM HARBAUGH	QB	9	72	74	83	75	61	55	81	78	71
HEATH SHULER	QB	2	68	79	61	80	59	63	60	59	67.75
ELVIS GRBAC	QB	3	70	63	63	79	67	53	62	63	62.25
KORDELL STEWART	QB	R	69	62	56	56	63	51	55	54	59.5

well is a definite plus but not an absolute prerequisite. The fullback must be quick off the ball and able to run through arm tackles. It's even better if he's big or has great speed. The halfbacks should be fast and capable of blocking and catching passes; these are the players that really "stretch" the defense horizontally. The receivers should be fast enough to be a deep threat and capable of blocking in the open field.

I've found that the key to running an option offense in FOOTBALL PRO is to make sure that your quarterback is the fastest, best running back possible. It's no surprise, then, that the tops in that area is Barry Sanders. Look to the chart to check out other top NFL prospects for your option QB position.

While your halfbacks should be fast, your QB should probably be the best player, since acceleration is most important. Remember, your QB is starting from a dead stop while both the halfback and fullback will have a head of steam before they get the ball.

Since an option play is hacked together from a passing play, make sure that your halfback and fullback have the best hands possible, especially since a backwards pass, if dropped, becomes a live ball that the defense can pick up and run in for a touchdown.

HITTING THE TURF

Once your players are ready, the burden is all yours. If you let the computer

control this play, you'll be shocked to see your QB get hammered to the turf every time. If you're ready, though, you can grab your joystick or game pad and get ready to tear up the defense yourself.

Running this play well, as in real life, takes a ton of practice. Plan to log quite a few hours on the practice field before you take the play into the game.

The first tip is that given the micro scale of playing football on the PC, you probably won't be able to make the first decision (to hand to the fullback or not) on the fly until you get really good at the finger dance. At first, just decide before you snap the ball.

When your play is set, let your halfback go in motion, and snap the ball before he gets set. Immediately enter passing mode (tap the B button). If you decide to get the ball to the fullback, don't even try to move your QB—simply tap the A button to get the ball to him. If you time it right, it will look like a handoff. If you wait for a fraction of a second, it will be a short pass, but it should still work. If you wait any longer, then it's a busted play.

If you're going to sweep right, then move as soon as you snap the ball, but be sure to stay inside of your halfback. Tap the B button again to select your halfback as the targeted receiver. As you approach the sidelines, make your decision based on the defensive movement. If there's room inside, then keep the ball and turn your QB upfield. If the sidelines are clear,

tap the A key to pitch the ball to your halfback and let him tear up the sidelines.

With practice, you should be able to pick up a first down on nearly every run to the outside. Running up the middle is tough in FOOTBALL PRO, so don't count on your fullback sprinting for many touchdowns. With proper execution, though, you should be able to average three to four yards per carry up the middle while keeping the defense guessing.

NOT IN THE PROS

While real teams would shudder at the mere idea of running their star QB or running back into so much traffic play after play, that's part of the fun of being able to do it in the sim world. While the defensive players in the pros are a very talented bunch, an effective option offense simply spreads the star defensive players too thin for them to be a factor on every play. When you find the holes, especially against a computer-controlled defense (which can't adjust nearly as well as a flesh-and-blood opponent), hammer at them mercilessly. The scoreboard will be your ultimate vindication. ☞

Kelly Kane has been the head football coach of the NCAA Division III Monmouth (N.J.) Fighting Scots for 12 years. Winner of numerous conference championships, Coach Kane is a fervent supporter of option football.



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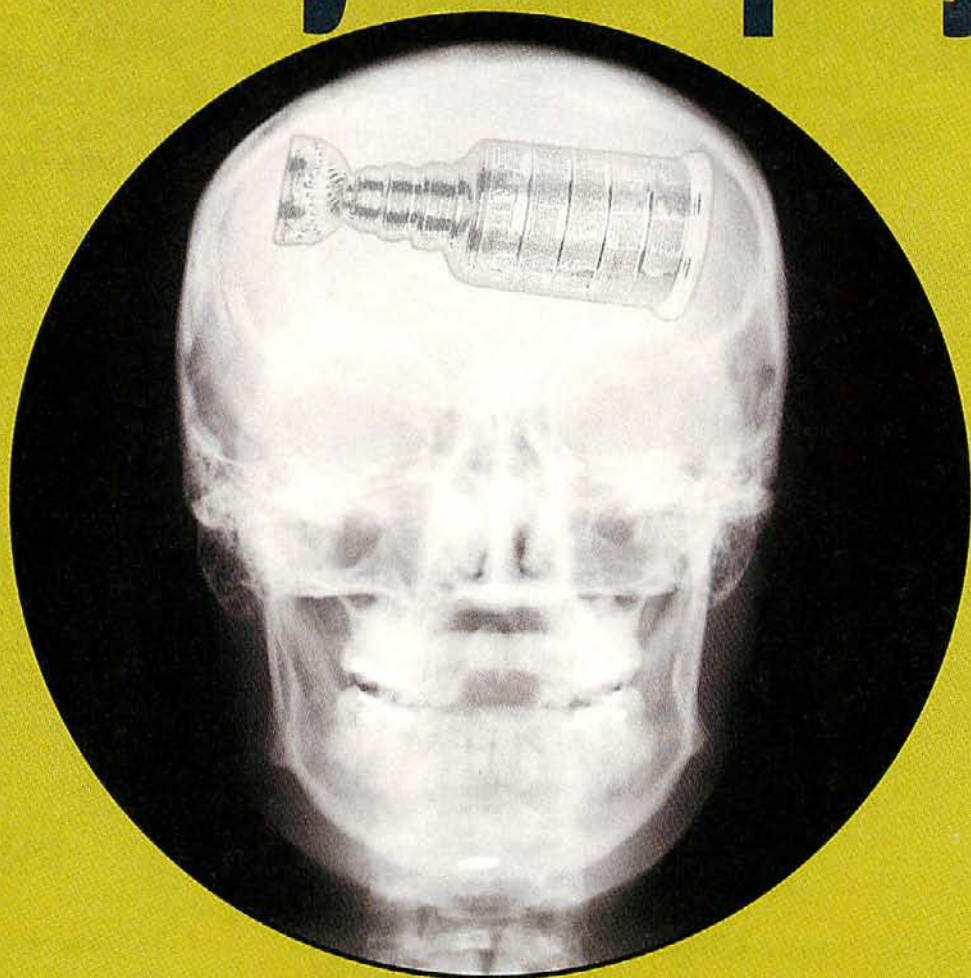


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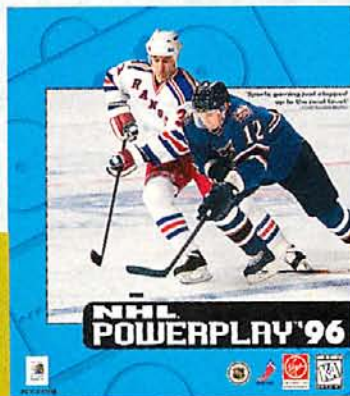
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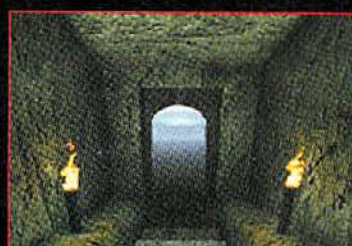
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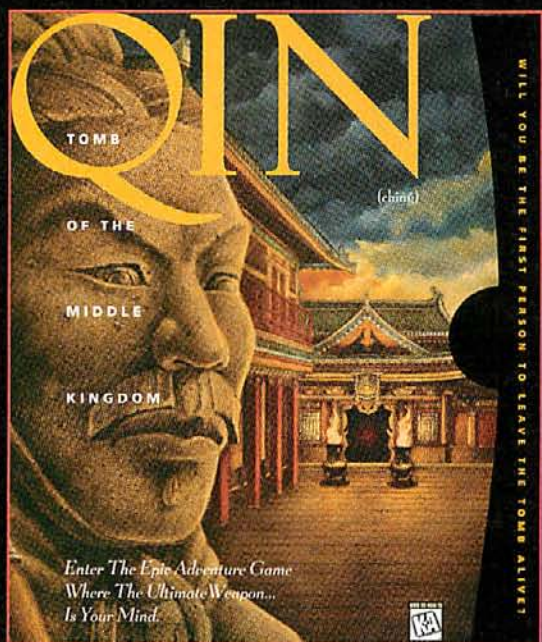
—STEVEN GREENLEE, COMPUTER GAME REVIEW



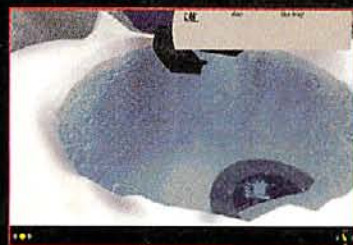
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Net Gains

FIGHTER DUEL Gets More Aces In The Hole

For the past few issues we've been talking about online resources for the flight sim pilot, from patches to Web pages. We'll wrap up the series this time around, with a look at a hot add-on that you'll find exclusively on CGW's Web page, one that turns one of last winter's popular sims into a whole new game.

DUEL PERSONALITY

This pilot finds Philips' FIGHTER DUEL to be one of the most exciting head-to-head flight sims out there. There's just a

thrill in the seat-of-the-pants flying experience you get in World War II planes that can't be duplicated in the fast jets. No radar, no long-range missiles, no engines that can hold you in the skies with no help from the wings. It's pilot vs. pilot combat, and you really have to know the performance strengths—and limits—of your plane to have a hope of success. With a wide variety of aircraft, including Mustangs, Corsairs, Zeros, Spitfires, and FW-190s, FIGHTER DUEL isn't a game you'll master quickly.

The game does have one critical limitation, though, that keeps the combat from being as exciting as it could be: it supports only modem and serial play, limiting you to one-on-one dogfights. Don't get me wrong—those can be very challenging and exciting. But in the long run

they always boil down to trying to get on the other guy's tail. Once you have him in your gunsight, you can concentrate exclusively on keeping him there.

Add a few more planes to the mix and the action and strategies get much more complicated. Planes may sneak onto your

tail as you move in for the kill. And you can fly with a wingman, who can watch your rear and keep you safe from sneak attacks. There are all sorts of other combat tactics that come into play with multiple aircraft in the skies: bracketing opponents, warning your countrymen when enemies move onto their tails, and calling for help when they move onto yours.

Now all those tactics can come into play in FIGHTER DUEL, using the NET DUEL add-on. This expansion module, created by developer SPCS (formerly Jaeger Software), adds network play to the World War II

“Eight human pilots on your tail makes for a whole new game.”



FRIENDS DIE FREE Net Duel retains Fighter Duel's impressive digitized cockpit, and allows up to nine players to ventilate each other over the Internet or LAN—with one CD.

STIPS!

One of the coolest features of *JANE'S ADVANCED TACTICAL FIGHTERS* is the ability to fly any plane in the sim (90 models total) in network mode. This allows for some really interesting match-ups, such as A-10 Warthogs vs. AV-8B Harriers.

Unfortunately, the designers allow you to fly only a few planes in single-player mode. Unless, of course, you know the secret code...

To fly any plane in the Quick Mission mode, hold down the right Ctrl, Alt, and Shift keys as you click the Quick Mission button. Then click Cancel, and repeat the process. The second time you enter

the screen, you'll be able to fly any plane.

The right Ctrl-Alt-Shift combo also works with the Play Single Mission mode, allowing you to select any campaign mission individually. Entering a mission this way also lets you fly the other "primary" aircraft, such as the F-14 and Harrier.

combat sim. Now up to nine players can mix it up in virtual furballs, flying any combination of *FIGHTER DUEL'S* aircraft.

You won't find complex tournament scoring or even team setups here. This is a basic, but extremely functional, free add-on to hold loyal *FIGHTER DUEL* fans while SPCS works on *FIGHTER DUEL 2*. Still, setting up teams is easy: just choose a particular aircraft for each team, such as Spitfires vs. Bf-109s.

The first player to start *NET DUEL* becomes the server, and gets to choose the realism options and starting situation. There are five basic scenarios: Flying Circus, where everyone is spread apart randomly; Back to Back, which distances all the planes tail-to-tail; Allied vs. Axis, which places the aircraft in formations a

good distance from each other; as well as Tournament and Tournament (Same Aircraft), which spreads players out equidistant from the center of the combat arena.

Once you enter combat, you can only exit to change planes if you're shot down, if you crash, or if you land on the carrier or airstrip. This is to prevent pilots from cheating by escaping back to the interface when they're in danger.

As long as there are fewer than nine players in flight, new fliers can join at any time. They'll enter the arena a couple of miles from the other players, at the average altitude of all the combatants. Unlike other network flight sims, you only need one copy of *FIGHTER DUEL* to set up a network game; the computer acting as server must

have the CD-ROM loaded, but none of the other workstations need it.

You're not just limited to playing on the closest Novell network, either. *NET DUEL* will include the shareware version of the Kali software, which lets you set up net games over the Internet. We'll look at flying sims via Kali in an upcoming issue, but for now you can check www.kali.net for information.

VIEW TO A KILL

NET DUEL includes another innovative feature with lots of potential: the Net View module. At its simplest, Net View lets you essentially hop in the cockpit of any *NET DUEL* aircraft as an observer. You can change to any internal or external view of the aircraft and watch the action as a passive observer.

A more exciting, if perhaps a bit overboard, use of this technology is to use it to set up a virtual cockpit environment. Set up four computers around your seat, one in front, one behind, and one on each side. Then use Net View to lock the three extra computers to side and rear views of your aircraft. Now you can check your six and side views the old-fashioned way, without using the keyboard.

NET DUEL may essentially be a stop-gap add-on to keep us busy while *FIGHTER DUEL 2*—with far more sophisticated network play options—is in development, but it truly breathes new life into the sim. *NET DUEL* will appear on an upcoming CG-ROM, but you'll find it first (and exclusively) on CCW's Web page at <http://www.zdnet.com/gaming> as soon as it's ready for prime time—perhaps by the time you read this. ☞

ON THE RADAR

For a while there, it looked like every time you turned around you'd see a new F-16 game. Now get ready for the invasion of the F-22 Lightning II. Mission Studios looks ready to finally release *JetFighter III* in September, but its carrier-based F-22s will soon see competition from the likes of Nova Logic, who will follow *Commanche 3* with an F-22 game. Also rumored to be working on F-22 sims are Interactive Magic and the Andy Hollis Origin Skunk Works team, although the latter is likely quite far off.

The surprise entry in all of this, though, is the DID/Ocean team, who are going to follow the modem-capable Super EF2000 Upgrade with *Lightning Strike*, a game based on the F-22 and—get this—the E-3 AWACS.

This Windows 95 sim promises even better-looking light-sourced, texture-mapped landscapes than

EF2000. The campaign will be set in a desert region, with combat over sand and water. (I'll give DID, an outfit which has valued accuracy in the past, the benefit of the doubt and assume they won't be putting their F-22s on aircraft carriers.) The improved WarGen2 campaign engine will let you plan your own missions, instead of sticking you with fixed waypoints.

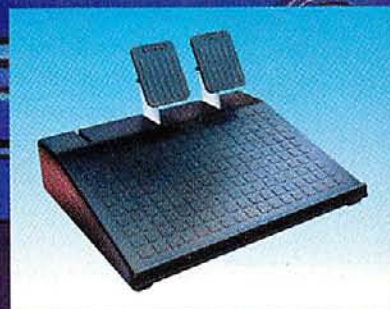
DID is also promising improved enemy AI, individual wingman personalities and skills, and better wingman control. More than eight players can participate in network games, and DID promises serial and modem play will make it into the initial release of this one.

The AWACS mode will drop you into the role of tactical commander, giving you the responsibility to vector aircraft from mission to mission as the battle rages. Could this be Navy Strike done right?

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Chopping Up The Competition

Helicopter Sims Just Got A Lot More Serious

by Denny Atkin

Crising a mere 50 feet above the ground, the Longbow Apaches slow to a stop behind a ridge. They quickly pop up, exposing only the radars mounted atop their rotors. Settling back, they suddenly unleash a fury of Hellfire missiles. As the missiles approach their targets, the choppers pop back over the ridge to lock on radar. In seconds, the CIS tank inventory is reduced by eight vehicles.

With its high-tech weapons systems, the AH-64D Longbow Apache is an appropriate subject for the first sim from the Andy Hollis Origin Skunk Works team. JANE'S AH-64D LONGBOW is as big an advancement over its helicopter sim predecessors as the Longbow itself is over Vietnam-era Hueys.

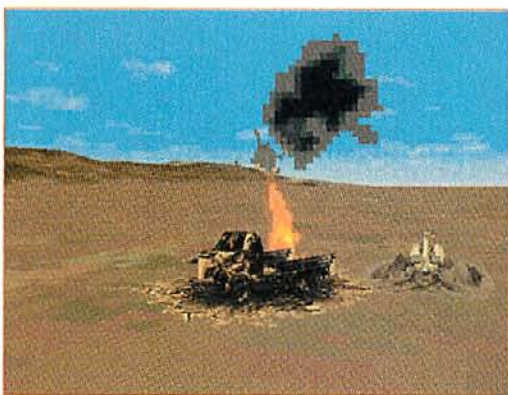
JANE'S WAY

LONGBOW is a better fit for the Jane's label than the fun but fanciful ATF. If you've played that first sim in the Jane's series, you'll be surprised at how different LONGBOW is. LONGBOW simulates just one weapons system, and does so in extreme detail. This is not your father's Origin simulation; if you played STRIKE COMMANDER and PACIFIC STRIKE, it's time to give Origin another chance.

The AH-64D is a two-seat helicopter. LONGBOW drops you into the pilot's seat,



WHERE THERE'S SMOKE All of the targets in Priority Fire Zone 2 have been destroyed, in a scene eerily reminiscent of Desert Storm.



THERE'S FIRE Target views let you view the results of your Longbow's destructive power.

and provides you with an AI copilot/gunner. He'll point out targets and threats along the way, prioritize targets for you, and handle countermeasures. (If you're an ultra-realism nut, you can turn off his assistance, but at that point you're doing more work than a real Apache pilot.) You have final say on which targets to fire on, though, and you're the one who selects the weapons and pulls the trigger.

In your cockpit you'll find two Multi-Function Displays (MFDs). You'll use these and the Integrated Helmet And Display Sight System (IHADDS), essentially a sophisticated heads-up display superimposed on a small eye display mounted on your helmet) for navigation and targeting. Together these instruments provide you with a very complete picture of the battle environment. The most useful MFD display is the Tactical Situation Display (TSD), which displays your waypoints, targets, and even the borders of enemy lines. There's also a radar display (both air-to-air and air-to-ground modes), a TADS display (Target Acquisition and Designation Sight, which displays camera images of your locked target), and the ASE (Aircraft Survivability Equipment, a warning receiver that shows ground threats around your helicopter). The plethora of acronyms alone should indicate the authenticity of this sim.

ARMED AND DANGEROUS

Your Longbow is armed with a nose-mounted chain gun and an assortment of rockets and missiles. Stinger missiles are used against air targets, while Folding Fin Aerial Rockets (FFARs) and the gun can be used against lightly armored, nearby targets.

The primary punch, though, comes from the Longbow's Hellfire missiles.



Price: \$59.95

System Requirements: IBM compatible 486 DX2-66 or higher (Pentium recommended), 8 MB RAM (16 MB recommended), MS-DOS 5.0 or higher, 36 MB hard disk space, SVGA graphics, 2x CD-ROM; supports Pro Audio Spectrum, Ensoniq SoundScape, and Sound Blaster-compatible sound cards.

Protection: None (CD must be in drive)

Designer: Andy Hollis and Origin Skunk Works

Publisher: Jane's Combat Simulations

Austin, TX

(800) 245-4525

Reader Service #: 329

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Computer Gaming World
February 1996

WINNER
Winner, 1996 Best Simulation

WINNER
Winner, 1996 Best Sports Software

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KIDS TO ADULTS
AGES 6+

These versatile missiles have two firing modes (brace yourself, more acronyms ahead): Lock On Before Launch (LOBL) and Lock On After Launch (LOAL). LOBL works as you'd expect: use your TADS display to select an enemy, fire, and keep the target painted until it's toast.

It's the LOAL mode, combined with the Longbow radar, that makes this a truly deadly weapons system. Approach your targets from behind cover, then carefully pop up just high enough to do a radar scan. Once they appear on your MFD, drop back down and choose your targets. You can lock a single target, or draw a box around a group of targets on your TSD to create a Priority Fire Zone (PFZ). Fire your missiles and watch the countdown timer. As it approaches zero, bob back up to re-lock the radar on the targets. The Hellfires will acquire their targets and home in. If the first target in a PFZ is destroyed, the next missile locks on to the

Longbow promotional films included with LONGBOW, it's apparent how accurate the targeting and firing sequences are. A few features are omitted—such as the ability to set no-fire zones along with PFZs to avoid friendly fire kills—but for the most part the avionics and fire-control systems are modeled dead-on.

COLLECTIVE SOUL

Along with targeting information, the helmet-mounted IHADDS display also features a number of navigational aids. Various modes give you the information you need for Hover, Transition (moving from hover to forward flight), Cruise, and Bob-Up modes. You can switch from the cockpit view to a full-screen IHADDS display that lets you pan your helmet (and the TADS sensors and gun with it); there's no virtual cockpit, though.

It's good that navigation is made easy with the waypoint displays on the TADS and IHADDS, because you'll have your

hands full just flying the helicopter. LONGBOW has the most sophisticated flight model yet for a helicopter game, and even experienced virtual chopper pilots will find skimming the earth with the flight model realism on full to be a real challenge. As you near the ground the helicopter has a certain buoyancy that I've not seen in other sims; but this isn't enough to keep you from slamming into the ground if you're flying at high speed.

For optimal control, you'll want at minimum a joystick with a throttle wheel; a separate throttle and a set of rudder pedals is even better. The joystick acts as the helicopter's cyclic control, which alters your direction of movement. The throttle represents the collective, which alters the angle of the Longbow's rotor blades and thus the amount of lift and thrust produced by them. Rudder pedals control the tail rotor, controlling yaw when you're moving, and allowing you to change direction in a hover.

Flying the Longbow in combat with full flight model realism active can be quite a challenge. Cruising along at 1000 feet at 140 knots is as easy as flying your favorite fixed-wing sim. But that's not this vehicle's element. To maintain stealth, most of your missions will be flying contour profiles (about 40 feet above the surface, at 80 knots), or, for maximum safety, NOE (Nap-Of-the-Earth) flight (around 20 feet above the surface, at 50 knots). You'll have to carefully coordinate your cyclic and collective controls to maintain your speed and altitude; climbing too high can be nearly as deadly as slamming into the ground in these SAM-laden skies.

The toughest maneuver to pull off is coming to a stop before a bob-up attack. When you pull the Longbow's nose up to slow down, the helicopter climbs rapidly; try to flare too quickly and you'll climb up to 500 feet, essentially screaming, "Look at me! I'm a bulls-eye!"

BOOT CAMP

All these acronym-powered weapons systems and new flight controls may seem intimidating, but there's no reason to despair. LONGBOW offers an abundance of adjustable realism settings. The flight model can be micromanaged, with toggles for collective motion, ground effect, weight effect, translational life, aerobatics, dynamics, altitude effects, wind, and turbulence. The most useful setting for beginners is to turn off crashes, at least until NOE flying gets easier. Weapons damage, jammer realism, and TADS targeting restrictions are also adjustable.

Although you can turn off most of the realism and play LONGBOW like a sophisticated arcade game, the honorable alternative is to go through the sim's training sequences. In six training missions, you'll progress from learning the instruments to basic flight and navigation, advancing to defensive countermeasures, sensors and weapons systems, and finally strategy and tactics. An instructor walks you through each of these lessons in a convincingly impatient, career Army voice. This interactive instruction is by far the best tutorial in any combat sim; it rivals the excellent flight instruction in FLIGHT UNLIMITED.



GREEN ACRES The VCR controls allow you to review missions, including the classic "sneaking up behind the hills at night using the Pilot's Night Vision System" routine.

next target, with the process repeating until all the missiles have hit or all the targets in the PFZ have been destroyed.

Historical missions are flown using the older AH-64A Apache, which isn't equipped with the Longbow radar. It does have LOAL capability, but for only one target at a time, using laser-guided Hellfires. It also has only one MFD display, with fewer operating modes. Fly it if you're looking for an extra challenge.

Watching the McDonnell-Douglas

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Unlike other helicopter flight sims, Hind incorporates troop deployment, troop drops and pick-ups. There’s even a multiplayer feature that allows for the ultimate mission: head-to-head combat with the Apache.

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GROUNDS FOR ACTION

LONGBOW's action takes place in three types of terrain: jungle (Panama), desert (Kuwait and Iraq), and forest (the Polish/Ukrainian border). Obviously, each of these requires different strategies. The rolling terrain, based on actual USCS terrain elevation maps, looks superb—even



RAISING HAVOC Although your primary targets are on the ground, keep an eye out for air threats.

better than the terrain in EF2000 at the same altitudes, and with far more color variety. There are plenty of hills, hangars, farmhouses, and other structures to use for attack cover. Unfortunately, there's no foliage in sight. But convincing stereo sound effects help add realism to the top-notch graphics.

Vehicles look superb as well, with detailed texture mapping and no hint of their polygon construction. You'll encounter a wide selection of air and ground vehicles, including the Mi-24 Hind, Mi-28 Havoc, and Ka-50 Hokum helicopters; tanks, trucks, and armored personnel carriers; and seemingly every anti-aircraft vehicle in modern service. As you'd expect, a reference screen offers full details on each vehicle from the various *Jane's* publications.

ORDERS, SIR

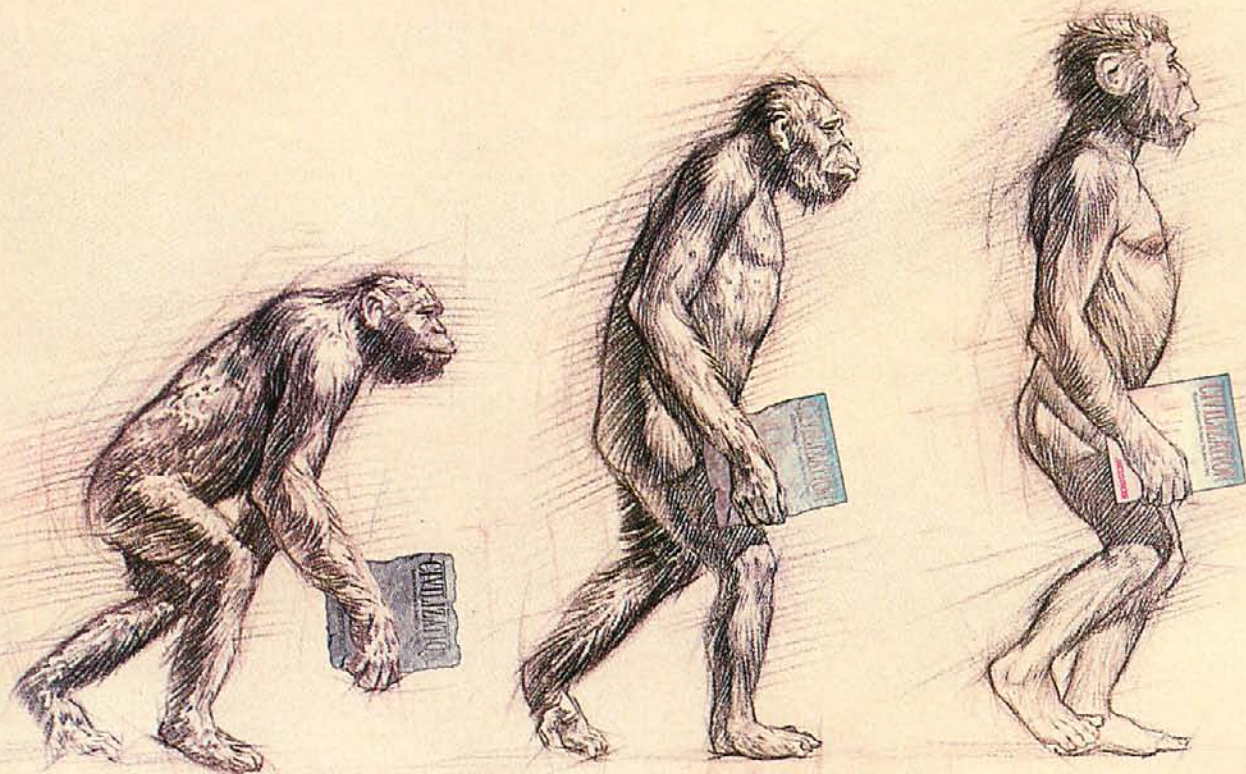
Missions are generally of three types: search and destroy, deep strike and escort. You may be tasked with taking out air defenses around an airfield before troop-carrying C-130s land in one mission, or escorting Blackhawks on a rescue mission to pick up a stranded SEAL team.

LONGBOW offers an instant action mode, single missions, and a campaign. There are also 12 historical missions, based on actual AH-64A operations in *Operation Just Cause* in Panama and *Operation Desert Storm*.

The single mission generator lets you define characteristics, such as weather, time of day, and terrain, and then it randomly picks an appropriate mission. There are hundreds of possible mission scenarios, and even if you do get a repeated mission, the enemy doesn't always react the same way each time. Redundancy shouldn't be a problem here.

The campaign features branching missions, so you have a feeling that your

THE EVOLUTION OF CIVILIZATION



actions do affect what's going on around you. Video interludes add to the reality, providing news reports of the action, as well as more personal clips such as your CO bestowing promotions.

ONE KITCHEN SINK, MILSPEC

As Don Pardo is fond of saying, that's not all. *Longbow* features a flight recorder, a welcome feature that's been missing from too many recent sims. You won't find fancy editing features here, but you can play back your missions at normal or high speed, and jump in and take over at any point. This is great for watching your targets being destroyed, and for jumping back in the cockpit just before a major screw-up to try to complete the mission. The second chance is good to have, since *Longbow* keeps track of your pilot's progress, promotions and medals.

Fully configurable controls are another nice touch. You can remap keyboard functions and save your custom keymaps; *Longbow* even includes keymaps that

match the command layouts of *GUNSHIP 2000* and *APACHE*. Nearly anything else you might want to adjust in the game — flight model, graphic detail, weather, enemy intelligence — is configurable.

There's very little to complain about here. Multiplayer support is currently AWOL, but Hollis and team plan an add-on later this year that will provide network and modem play. Some might want to fly the CP/G position, but that's really akin to being back-seater in an F-14; the multiplayer add-on will likely add that position. And of course, the total lack of treelines takes away attack opportunities.

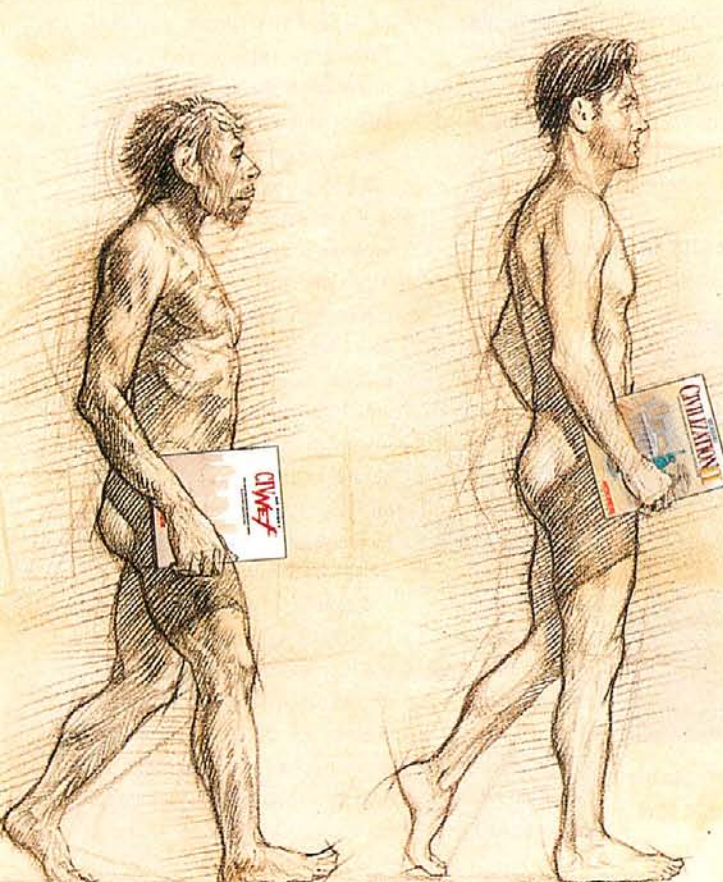
As with all sims, the hardware demands are rigorous, and the 97 MB needed to play with full terrain detail might be prohibitive for some. Luckily, 68 MB and 36 MB installs are available as well, and you can back down to one of the smaller footprints temporarily if you need hard disk space without having to reinstall the game. The game has a low-res mode, but you'll really need a local bus DX4 system to get a smooth frame rate.

Longbow truly is the *FALCON* of helicopter sims, setting new standards for realism and accuracy. Despite its authenticity, the adjustable realism options and superb training mode make it one of the most accessible authentic sims yet. Hollis and team have made this a game beginners can enjoy, without insulting their intelligence. Hopefully other developers — helicopter and fixed-wing sim alike — will use this as a model for future simulations. ☞

APPEAL: Flight sim fans of all experience levels, as well as first-time sim pilots looking for a good starter.

PROS: Accurate, accessible, attractive, and action-packed. The benchmark by which future helicopter sims will be compared.

CONS: Multiplayer fans will have to wait for an add-on; huge hard-drive footprint; yet another helicopter sim with no foliage.



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Robots Redux

Graphic Facelift Aside, This Is Your Father's EARTHSIEGE

by Martin Cirulis

One of the little pleasures that I used to get from computer games was unwrapping the box, hunkering down on the couch with the documentation, and figuring out what was what—all before booting the game. Even in this age of skimpy trimmings on software, you can usually depend on a simulation to provide you with a tome of some kind—especially science fiction sims, which need to set the scene in order for the player to hoist their disbelief and get into things. Imagine my surprise when I opened EARTHSIEGE 2 (ES2), only to discover that some bright boy from Sierra had decided to do away with paper documentation. It's all on the CD, with all the adventure and fascination of a Windows help file.



FIRE FIGHT No shattered polygons here—your Cybrid foes literally blow their tops when destroyed.

I won't lie: this little display of profit optimization put me into a less than impartial mood, and I went into this game knowing it would have to be pretty bloody good to get me to like it.

Surprisingly enough, it was. Barely.

DARK SIDE OF THE MOON

As is the case with most sequels, the bad guys you thought you put away last time are back, badder than ever. In the original EARTHSIEGE, you were fighting for the last gasp of humanity on a devastated Earth, against the seemingly unstoppable Cybrids. These giant killer robots were led by an evil AI, Prometheus, who was obviously built in the "Naah, we'll

never need a reset button" School of Engineering, but in the end you were finally able to shut it all down with the help of your own giant Mechs (oops, I mean giant "HERCs").

Or so you thought.

It seems Prometheus had a little vacuum-front property up on the far side of the Moon, and that's where he and his tin-can cohorts have been lurking, building up their Cybrid numbers until they are ready to come back down and kick our monkey butts back into the trees. Lucky for us, Prometheus seems to know nothing about physics: he could have saved a bundle on HERCs and just pelted us with 100-meter moon rocks until we were nothing but smears at the bottom of craters.

Regardless of the macho illogic of the Cybrids, the long and the short of it is that you have another fight on your hands, so it's back into the bunker for more video briefings from good Ol' General Geirling, who still comes across more like your dotty uncle Mitch than an inspiring military genius. Fortunately for us all, your



NICE LEGS Texture-mapped HERCs and rolling terrain make this game's play sequences look nearly as good as the video intro.



Price: \$59.95
System Requirements:
 IBM compatible 486
 DX2-66 or higher
 (Pentium recommended), 8 MB RAM (16 MB recommended),
 Windows 95, 16 MB
 hard disk space, SVGA,
 2x CD-ROM (4x recommended), mouse or joystick,
 Windows 95-compatible sound cards.
Protection: None (CD must be in drive)
Designer: Dynamix
Publisher: Sierra On-Line
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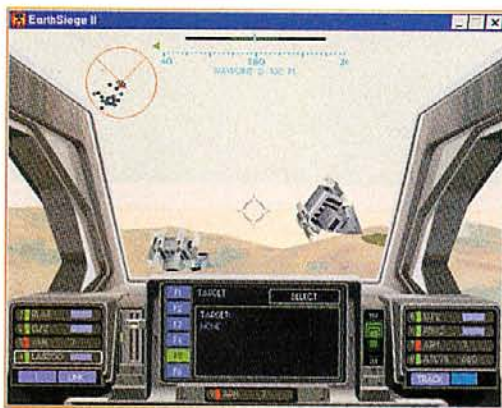
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reflexes and wits count more than your CO, and you'll have more than 50 missions to prove it.

BLOOD N' RIVETS

ES2's gameplay is essentially unchanged from the original. You have the standard mission types—Assault, Recon, and so on—and a squad to follow you through them. There have been some welcome improvements to the control system. While still tricky to get the hang of, users of multi-button joysticks will find this EARTHSIEGE a bit easier to handle. You have the responsibility for repairing and building new HERCs and weapons systems (including a simply modeled aircraft) from the scraps which are scavenged from Cybrid wreckage. This logistic aspect is by far the most distinguishing feature of the game, adding a welcome strategic facet to this fast-action sim.

Most of ES2's changes have been in the graphics engine. This game is as close as I have seen to the promise of playing a sim with the same level of graphic detail



HERC, YOU LEAN Damaged HERCs teeter on one leg before gratifyingly crashing on their sides.

as the opening animations. Close up, with detail cranked to maximum, the HERCs look truly incredible, and the destruction sequences are amazing. Gone is the usual explosion of polygons we are used to seeing in giant robot games. Instead we're treated to machines decapitated by horrific flaming blasts, teetering on one leg before crashing forward or onto their sides. It's a real treat to see these cinematic effects embedded smoothly into a sim, and there's enough variety of them that it takes a long time for one to become blasé about them.

The terrain is also improved with a rolling hill look, reminiscent of MAGIC CARPET technology. While it isn't as radical or striking as that found in TERRA NOVA and it lacks trees (I guess Cybrids really hated dogs), it's a vast improvement over the old version's tabletop-with-polygons-strewn-about effect, and it is varied enough that players can use the terrain to their advantage, at least to a limited degree.

LOOKS GREAT. . . LESS FILLING

The real problem with ES2 is the same one that political pundits often jabber about: character. Try as it might, this game never quite loses its clone veneer. There is very little "feel" to this game, and many will note that for all the great images, there is nothing that will leave a lasting impression or hunger for EarthSiege 3. This lack of character is exacerbated by the lack of a printed manual, which leaves you feeling like you've bought a console game. Other small errors, like videos that

sometimes don't agree with the actual mission brief, do nothing to raise one's morale.

The missions also have a console game feel to them, in that they seem almost too eager to please. Most missions are over in less than ten minutes, and most of the battles take place within a kilometer of your base. While I'm not a big fan of endless treks through the desert, there must have been a way to arrange these battles that wouldn't feel so claustrophobic and arcadish.

Given these seeming attempts to cater to the Nintendo generation, this is still an enjoyable, great-looking SF sim. Of course the visuals are not without a price, and I wouldn't really recommend this game to any but the Pentium-blessed.

Science fiction fans may find things a little empty for their tastes, but anybody who loves good-looking action games, or who just can't get enough giant-robot combat, should definitely consider picking up a copy of EARTHSIEGE 2. Regardless of the drawbacks, it will help to tide you over until MECHWARRIOR 3. But before you go off for a few hours of kicking the can, try and do one thing for the good of computer gaming: write an angry note to Sierra and let them know that online manuals are not a trend we want to see continue. We can only hope they'll blame this idea on the Cybrids and go back to giving us our money's worth. And if they're concerned about trees, they should just wrap the diamond case and manual in plastic, and do away with the big, useless, double-walled box. ☹

Keeping Those Cans Kicked

Most survival tricks of EARTHSIEGE 2 are self-evident, but it never hurts to reinforce tactics when the fate of the Earth is at stake.

In combat you should always stay with your squad—they're reasonably smart, and they fight hard. Always command them to fire at will, and if you get into trouble, try and back up and let them take the heat off you. Most fights become turning duels if the Cybrids survive their initial charge, so be sure to reduce your speed to half under these conditions; it will keep you moving while allowing you, usually, to turn inside your more frantic opposition. Finally, HERC legs are very big targets, and it almost always pays to aim low. It's the fastest way to take down a Cybrid, and it yields the most salvage.

Speaking of salvage, always aim to build heavier HERCs as soon as possible. Most missions don't require fast units, regardless of what the briefing says, and soon you will have your hands on the Turbo pod that turns even the heaviest HERC into a twinkletoes.

Lasers and Autocannons seem to have been improved somewhat, so arm up with 5GW lasers and 100 MM Autocannons as soon as possible—they make the perfect accessory for the HERC who has everything. Most HERCs are worth building and, though I have some doubts about the Raptor II, the important thing is to get your squaddies out of those OutLaws as soon as possible.

APPEAL: MECHWARRIOR fans looking for new experiences, and who are less concerned about clans than blowing up tin cans.

PROS: Best-looking giant robot game on the market, and the logistical aspect is a welcome addition to the genre.

CONS: Nothing much to distinguish the gameplay, and without a manual you might as well be buying a console game.



ROBERT E. LEE:

CIVIL WAR

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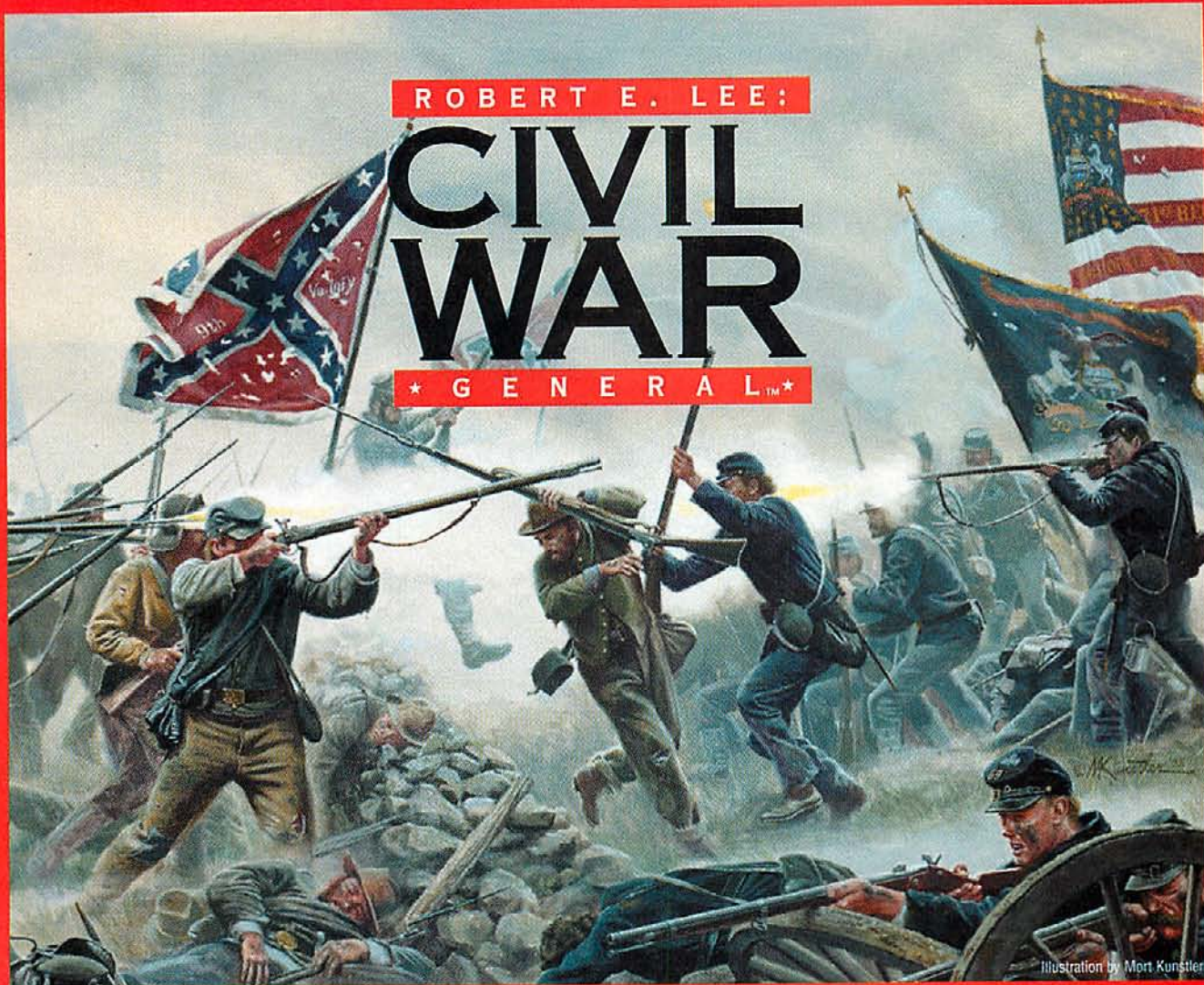


Illustration by Mort Kunstler

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Circle Reader Service #111

MicroProse Malaise

Does The End Of The Spectrum HoloByte Brand Signal The End Of MicroProse?

After a recent cost-cutting move in which the entire marketing staff, several other administrators and some support staff were laid off at MicroProse's Hunt Valley, MD facility, record numbers of MicroProse personnel started looking for other jobs. Even after visits by top Spectrum HoloByte execs Gilman Louie and Steve Race, the atmosphere at Hunt Valley remained unsettled. Employees with lengthy tenure jockeyed for position to leave, sounding the refrain, "I don't want to be the last one out who has to turn out the lights."

WAS IT A CONSPIRACY?

Spectrum Chairman Gilman Louie insists that he has no intention of unplugging his most experienced division of developers. Then, the co-founder of the company went on to explain that he had

made a mistake when Spectrum HoloByte acquired MicroProse. "We should never have treated the units as separate brands. It made the wrong statement." To counteract this feeling of separateness and discrimination, the company announced at press time that all products will now be shipped under the MicroProse brand. Since three of the company's four business units (Maryland, Texas, and the U.K.) now ship under the MicroProse label, it only makes sense to unify all products under the strongest brand. Spectrum's execs hope it will also send a message to the three units doing business as MicroProse that the plan is to keep them around.

WHAT OF RUMORS OF MARKETING FAVORITISM?

There may have been some in the past, but Spectrum's marketing department claims that CIV II's relative unavailability vis-a-vis TOP GUN was not due to extra effort on behalf of the latter. Rather, they claim that a sinister marketing dynamic shaped the disparity. Retail stores now use a mechanism called the

"Reserve List" to estimate their initial ordering needs. CIV II's reserve list was one-fifth the size of TOP GUN's and one-tenth the size of MASTER OF ORION 2. Spectrum cites efforts at promotion and can point to specific references in financial analysts reports noting that CIV II was expected to be their #1 hit, but the stores didn't order. Even when CIV II began to sell extremely well (one chain sold over 1500 copies in a single day), the reorders were relatively slow (due to reasons cited in Johnny Wilson's editorial in the June issue). Given that the original CIV sold over 850,000 units (not counting bundling), it's hard to understand why CIV II couldn't get better sell-in.

WEREN'T THERE MORE STAFF CUTS AT MICROPROSE THAN ELSEWHERE IN SPECTRUM?

It's true that the only playtesters that were laid off in the largely administrative cuts were laid off from the MicroProse Hunt Valley facility, adding fuel to the conspiracy theorists' fire. One staffer complained, "We would have understood if they had fired all the playtesters after MASTER OF MAGIC, but CIV II was a quality product delivered in spite of a ridiculous schedule." Top management insists that the Hunt Valley managers set the schedule. Regardless, an examination

“ Why would I try to unplug an asset that I bet my entire company to buy? If MicroProse goes down, I go with it. ”

—Gilman Louie

BRIEFINGS

▶ Red Alert, a COMMAND AND CONQUER-style "what-if" game where Stalin takes on the Allies after WWII (wouldn't Patton love this!), was originally slated as a three-player game: two Allied and one Soviet. Now, however, it appears that the second Allied role may only be available through an add-on disk, if at all.

▶ In case you're wondering where all those ex-MicroProse simulations designers ended up: several of them have migrated to the new east-coast branch of Origin's "Skunk Works" in Maryland, where renowned flight sim designer Andy Hollis & Co. plan on developing state-of-the-art sims.

of the budget as adjusted for the layoff shows that the Maryland facility still has significantly more playtesters than any other unit in the company and reports from the testing director indicate that there is open testing time on the current schedule (counter to another rumor which suggests that other products will be delayed due to testing capacity).

CG TIPS!

Since its debut in November of 1994, *PANZER*

GENERAL has remained one of the most challenging computer wargames of all time. If you're still having trouble blitzing through North Africa or crossing the Volga during a Russian winter, the armored cavalry is on the way!

Peter Donnelly and Stuart Gillespie of Skookum Software have released a series of editors for not only *PANZER GENERAL*, but also its sequels *ALLIED GENERAL* and *FANTASY GENERAL*. Unlike the



often clunky editors for many popular DOS games, these require neither proficiency with C++ nor any particular facility with hex editors. And while these utilities aren't "officially" sanctioned by SSI, they are really nice, professional editing tools.

PG View is an unofficial, unauthorized saved-game viewer and editor for *PANZER GENERAL*. Although it was designed to work with the very first version of *PG*, I've tried it with each of the patches installed, and I've experienced no problems.

The more robust editor, *Brass Polish*, oddly enough, works equally well with both the DOS-based *PANZER GENERAL* and *ALLIED GENERAL*, even though the latter is Windows 95. *Brass Polish* has a lot of nice "cheats," the most obvious of which is the ability to pump up your prestige (talk about bribing the general

BUT WHAT ABOUT THE LACK OF MULTIPLAYER SUPPORT IN CIV II?

Spectrum Holobyte invented the Electronic Battlefield Series, and made an early commitment to multiplayer play. So, the lack of expected multiplayer support in *Civ II* seems indicative of Spectrum executives' indifference to the MicroProse brand. If we believe Gilman Louie, this issue is indicative of how poor the com-

staff!) and lower that of your opponent. And—for those of you with a sadistic sense of humor—the designers were determined *not* to let you monkey around with your opponent's e-mail turns, sorry.

If you are getting bogged down in France, just change the year to 1945, and see how those pesky RAF and French fighters stand up to jet fighters! You can: edit supply; add transport whenever and wherever you like; change unit types at will; see how the Americans fare at Anzio if *you* have the edge in artillery.

Gem Polish is much the same as *Brass Polish*, but is constructed to let you take advantage of *Armies of Aer*, in SSI's *FANTASY GENERAL*. As yet, I haven't figured out how to supply Mordra the Sorceress with Tiger tanks, but that's about the only thing these wonderful editors lack. Check out the CG-ROM this issue, where the designers have provided the shareware versions of *PG View*, *Brass Polish* and *Gem Polish*. As with all shareware, you are strongly encouraged to upgrade to the registered version.

To contact the designers:

If you have a CompuServe account, GO SWREG and search for registration ID 7839. If you don't, send a check on a U.S. bank for \$12, or an equivalent postal money order or bank draft in U.S. funds, to Skookum Software, 1301 Ryan Street, Victoria BC, Canada V8T 4Y8. Canadian customers may pay by check for \$16 in Canadian funds.

Or contact the authors at their website: <http://ourworld.compuServe.com/homepages/skookum>

munication was between Hunt Valley and Spectrum HQ.

Examining the facts may well indicate why a conspiracy theory is so prevalent among MicroProse employees and online fans of MicroProse products:

- The hooks are in place to insert multiplayer play in *Civ II*.
- Parts of *Civ II* work under the CIVNET code.

- CCW was told by the design team that multiplayer play could have been implemented in four weeks.

- Spectrum executives were told by the management team in Hunt Valley that it would take six months and approximately a quarter of a million dollars more to implement multiplayer play.

- Gilman Louie expressed his willingness to ante up \$100,000 in extra development funds if the *Civ II* design team could give him multiplayer play in eight weeks and suggested to CCW that he would then make it available free for download on the Internet. Our best guess? Certain design team members are underestimating the task at the same time that Hunt Valley managers are covering their assets by padding estimates.

AREN'T SID MEIER AND BRIAN REYNOLDS LEAVING MICROPROSE TO FORM THEIR OWN COMPANY?

For now, Sid isn't talking. Why are we not surprised? Sid never even admitted selling all of his MicroProse stock prior to Bill Stealey's near-fatal plunge into the coin-op world. Still, we have confirmed that Brian (designer of *Civ II*) has indeed flown the nest (draw your own conclusions).

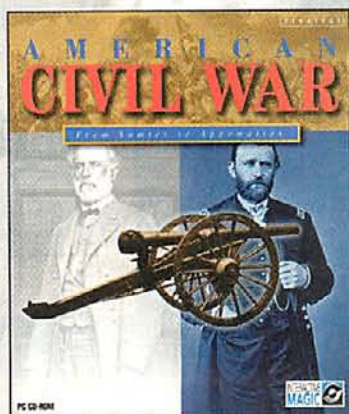
Will Spectrum's changing of the brand name to MicroProse convince both employees and consumers that the MicroProse facility and culture is here to stay? It is hard to tell. It is, at least, one correct move, as are recent attempts to have both execs and marketing personnel on site at Hunt Valley on a more regular basis and concerted efforts to do more code-sharing between all of the development facilities. Here's hoping it's enough. We'd hate to see a primary source of strategy games dry up. ☹

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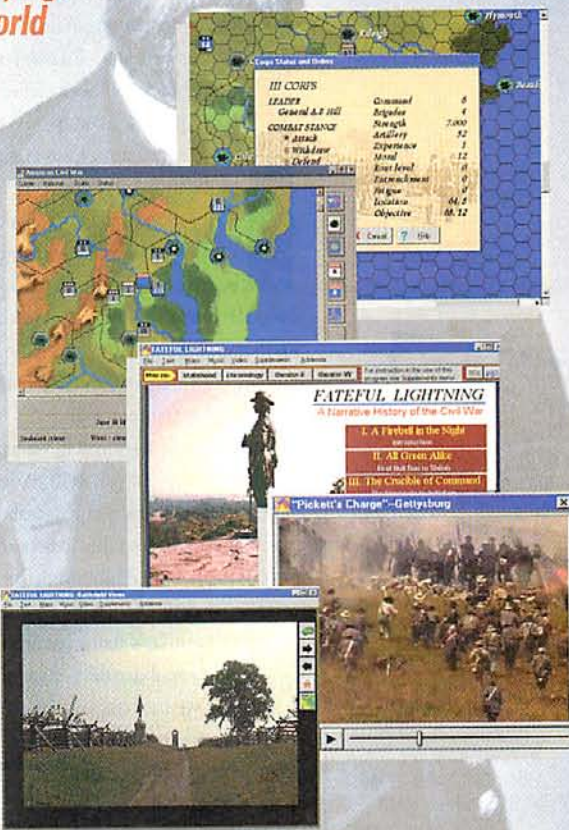
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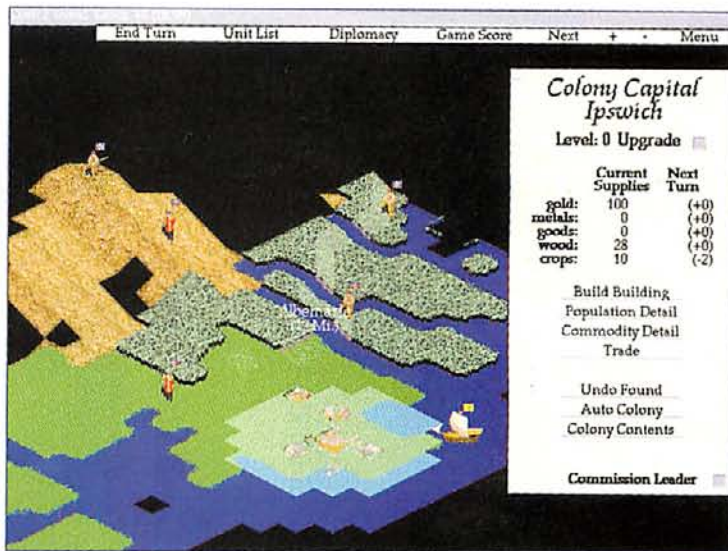
by Arinn Dembo

Tell you what I love about the computer gaming industry: three bad games can't kill a good one, even if they come out earlier. CONQUEST OF THE NEW WORLD is one such game. I was tantalized by the beta I played last fall, waited for months to get my hands on the finished version, and now I've been playing it for two weeks

straight. Even six months ago, it was obvious that CONQUEST was going to be the ultimate Four X experience: eXploration, eXploitation, eXpansion and eXtermination. Unfortunately, while I was eagerly awaiting CONQUEST, three lesser games detailing the Age of Exploration appeared, ranging from the tedious to the dubious to the shamefully awful. But Interplay wisely took their time releasing CONQUEST, and now that it has arrived, it's risen serenely above the competition, by nailing down the basics, fleshing out the details and serving up a heap of frills on the side. In short, by taking the time to do it right.

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COLONIAL POWER CONQUEST has numerous strengths as a game, including its robust colony building, exploration, diplomacy and trading aspects.

later, a second ship arrives, carrying a Settler, another army and an Explorer. The two ships, three Explorers, two armies and one settler are all you will ever get from your Mother Country...that is, besides requests for taxes, trouble, and marked-up merchandise. You are vulnerable at first, since there's no going home. And if your first Settler unit is destroyed before you can create your first Colony,

your dreams of empire in the New World are finished.

Gameplay is divided between five basic priorities: exploring the world; establishing and defending colonies; destroying enemies and raiding weaker settlements; maintaining diplomatic relations with other players, the mother country and the natives; and opening up trade routes. This is pretty much old hat for strategy gamers, but what makes CONQUEST different is the way Interplay re-invented the exploration aspect.

GNW makes exploration more interesting, fun and relevant by creating a variety of geographical features on every map and attaching victory points to their discovery. So, if you're the first player to climb to the top of a mountain, you get to give it a name and collect points for being the first one there. Ditto if you trace a river from delta to headwaters, with special bonuses for charting larger regions or entire mountain ranges. You can rack up a surprising lead over your opponents just



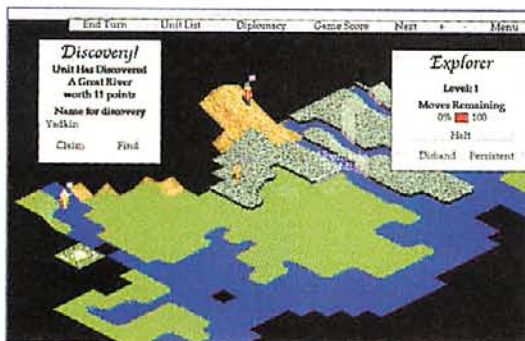
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by being a good cartographer.

And speaking of the map, it starts out black and becomes a stunning display of topography. The graphics for this game are beautiful, and you can zoom in to view the details of the landscape or colonies. CNW is certainly one of the best-looking strategy games I've ever seen, and wins a hands-down victory in the Coolest Terrain category.

GUNS AND BUTTER

Of course, once you're done looking around, it's time to get down to work. No matter how you go about winning the game—and believe me, there are a million ways to do it—you have to build and develop colonies. As you hunt through all that lovely terrain, what you're really look-

ing for is a nice flat plain at the foot of a mountain, preferably with a river running down to the sea and some good thick woods close by. For a prosperous colony, you'll need timber, metals, gold, crops, and plenty of level land for buildings.

level as quickly as possible, and gives bonuses to military units when he builds a Fort and War College. The Tavern is where you go to recruit new Explorers, so the better the pub, the better the explorers. Another essential is the Commerce building because it allows your colony to make their own finished goods out of the raw materials they've harvested, a very vital capability, if you ever want to declare independence from the Motherland.

Building a network of settlements is fairly simple. What's actually more difficult is defending those colonies once you've built them. The computer is ruthless and always eager to take out your colonies. Once you suffer your first brutal attack, you'll find you can lose an awful lot in a single raid.

To me, the combat system in CONQUEST is the weakest part of the game. All land attacks are resolved on a 3x4, two-dimensional battlefield. There are only three types of military units—infantry, cavalry, and artillery—and they can only move and attack horizontally or vertically, never diagonally. Factors that affect combat are: the military leaders you recruit and train, the number of units they can command; the number of attacks they get per round; the charisma they use on their own men; and the fear they instill in their enemies. There are also additional factors in the combat equation: the tactics you can learn at War Colleges; the level of the Forts the troops come from; and how experienced your units are. There are even bonuses for flanking, charging, and combined-arms when your men fire on the enemy (i.e. when infantry, cavalry and artillery units all attack one square in tandem).

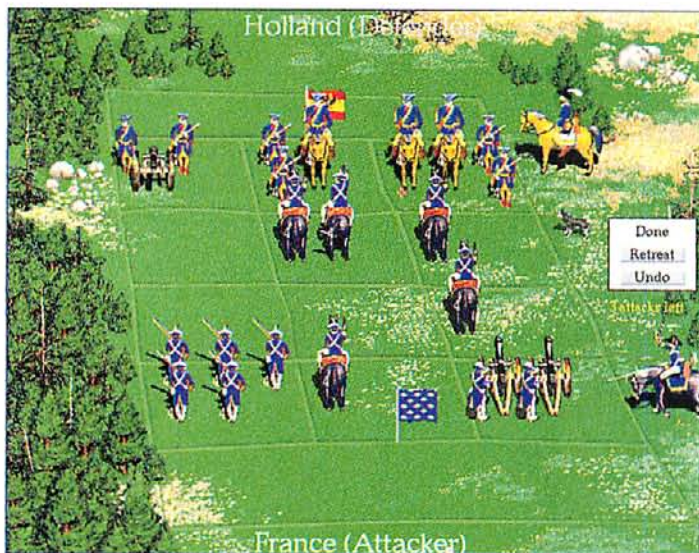
Ultimately, though, the extremely limited nature of the battlefield is a severe disadvantage to human players. All these attempts to enrich the combat system are reduced to mere number-crunching by the tie-tac-toe arena of battle. I mean, how exciting can battle be when you only

have a 3x4 grid to maneuver in? The graphics and sound are awfully cool, of course, so it isn't completely unbearable; but if you have a lot of fighting to do against the computer (especially if you're the High Native player), you should definitely attack and defend with overwhelmingly massive forces.

THE SUM OF THE PARTS

Despite the weaknesses in the combat system, CONQUEST has a great deal to recommend it. It supports up to six players and encourages social gaming with excellent hooks for networking, modem play and serial port connections. It's a great game to play against other people, and the more the merrier! Not only does it handle the turn-based play extremely well, but the game actually awards points based on how quickly the players complete their turns; if some slowpoke in the network is dragging down the game, they'll be docked points, whereas people who move quickly are awarded a few extra victory points for ending their turns early.

Players have control over their victory conditions and can choose to be one of five European powers or a High Native civilization. Given the networking, the mix-and-match victory conditions, and the random map generation, the replay value on this title is very high. I've logged over 60 hours on the game, 20 of those on network play, and haven't gotten tired of it yet. CNW gets high marks for style, versatility, and technical performance—not a single lock-up or crash in all the hours I played it. I recommend it to all Four X fans, and anyone with world enough and time to appreciate a well-made game. ☺



PAWNS ON A CHESSBOARD If there is one complaint, it's the limited battlefield, which is little more than a 3x4 grid. There isn't much room to maneuver here.

There are a dozen different types of structures to be built in any given colony. Even the simplest, lowest-level colony needs to have a Colony Center, farms, timber mills, housing, metal mines, a gold mine, a dock/trading post, and a church. A wise governor will make sure that he builds the Colony Center to its maximum

ing for is a nice flat plain at the foot of a mountain, preferably with a river running down to the sea and some good thick woods close by. For a prosperous colony, you'll need timber, metals, gold, crops, and plenty of level land for buildings.

APPEAL Strategy fans looking for a deep and enjoyable Age of Exploration game will be in seventh heaven here.

PROS Gorgeous graphics, supports six players on network or modem, extremely cool exploration system, beautiful graphics, high replay value.

CONS Combat system seems over-simplified.



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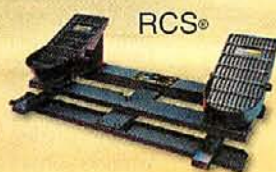
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Repeating History

Building Empires Isn't As Fun In This World

by Martin E. Cirulis

realize that with so many new software titles being produced every month, by an ever increasing number of gaming companies, there are bound to be a few titles that — how

shall we say — overlap, in terms of their subject matter and execution. While this isn't too rare in a genre like sims, it is somewhat more unusual when you enter the realm of strategy games, where concept is almost everything. I am always surprised when a game like *THIS MEANS WAR!* is released during the height of *COMMAND & CONQUER*'s popularity. Did somebody actually think that people were so hungry for point-n-click, real-time wargames that they'd shell out for another game that did the same thing as the last one, except without the fun part? Well, now, riding the skirts of *CIVILIZATION 2* comes Sierra's entry into the ancient empire-building category: *RISE AND RULE OF ANCIENT EMPIRES*. And, while it is not a terrible game by any standard, it still fails to reinvent the genre, and the word "redundant" keeps coming to mind.

computer *CIV* and the old Avalon Hill classic *ADVANCED CIVILIZATION*. In a situation like this, where circumstances drive you to be different to avoid being accused of cloning, a lot of design calls get made that may not be the best thing. *R&R* has settled on the beginnings of the classic historical empires (Greece, Egypt, Mesopotamia and China, plus the highly theoretical inclusion of the Celts), centered on a map that includes all of Europe, North Africa, and the Middle East. While the computer is more than capable of generating a non-Earth chunk of terrain, it does give you an idea of scale when the computer plunks you and three other empires down in roughly opposite corners.

DIFFERENT FOR DIFFERENCE SAKE

I don't envy the designers of *R&R* at all. From the start, they had to know it was going to be a tough road, because designing an empire builder of this kind, even if they didn't plan on going past the birth of Rome, never mind Alpha Centauri, would invite endless comparisons to *CIVILIZATION*. In trying to find a road to success all their own, Sierra has charted a gameplay course somewhere between



FAMILIAR TERRITORY Sierra's answer to *CIVILIZATION* is a watered-down version of the great original, with multiplayer options and a more limited timeframe.

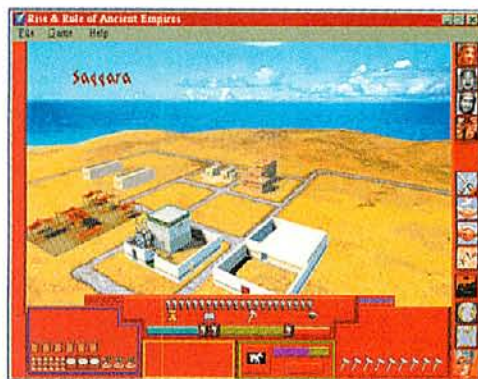
is a much different game than *CIV*. The basic plan seems bent towards the abstraction of the more time-consuming details of *CIV* in order to create a faster-

moving game that allows you to concentrate on grand empires instead of worrying about budgeting issues. In fact, there's no money at all in *R&R*.

Your entire empire is run on a city-by-city basis, with the management system based on four slider bars that represent the percentages of the population who are

the first city of your grand, ahem, civilization! Now, on the surface it looks like much the same game. Build a city, build some military units to explore, do some research, build some infrastructure. We've seen this one before, but to be fair, the difference is in the details, and at an operational level, *R&R*

is a much different game than *CIV*. The basic plan seems bent towards the abstraction of the more time-consuming details of *CIV* in order to create a faster-



BAYSIDE PROPERTY City management in *RISE AND RULE* is very simple, with a visual representation of your city and sliders to convey all pertinent information.



Price: \$54.95

System Requirements: IBM compatible 486-33 or better, 8 MB RAM, SVGA graphics, 2x CD-ROM drive, 20 MB hard drive space, Windows 3.1 or Win 95; supports most major sound cards.

of Players: 1-6

Protection: None (CD must be in drive)

Designer: Gregor Koomey

Publisher: Sierra On-Line

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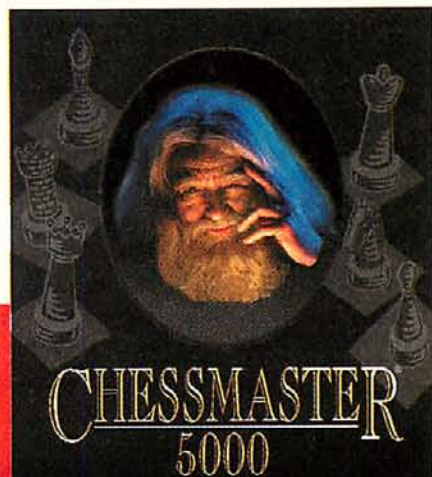
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involved in harvesting food, researching new knowledge, building new units or structures, and gathering resources for empire building. In a way, this is very reminiscent of *SPACEWARD HO!* You maintain your empire by balancing these bars to yield optimal growth and construction potential, while still allowing your city to gain knowledge that will lead to new structures and units. Those of you waiting for a whole new world of discovery and invention branches are going to be disappointed, though. Like the economy, the whole area of science and discovery is dealt with in an abstract way, with slider bars. You just click on the academy building on the city display, and adjust what

HELLO, NEIGHBOR One thing going for *RISE AND RULE* is multiplayer options. The game is also abstract enough to be played quickly with friends.

either fight to extermination or ravage each other without any clear winner, destroying many of the component units on one or both sides. A nice touch here is that armies are expected to forage for food when they are not in town consuming your stockpiles, and armies from cities built in a certain terrain type will forage better in those areas.

All in all, *R&R* does seem to be dedicated to a concept of quicker, more abstract empire building—in fact, the box claims you can play an entire game in one sitting.

Unfortunately, the designers, apparently caught up in the urge to be different for the sake of being different, have clouded this simplicity with details which, while they are generally interesting, tend to clash with and destroy much of the flow of the game. The designers abstracted new discoveries into slider bars and better buildings, but went ahead and forced

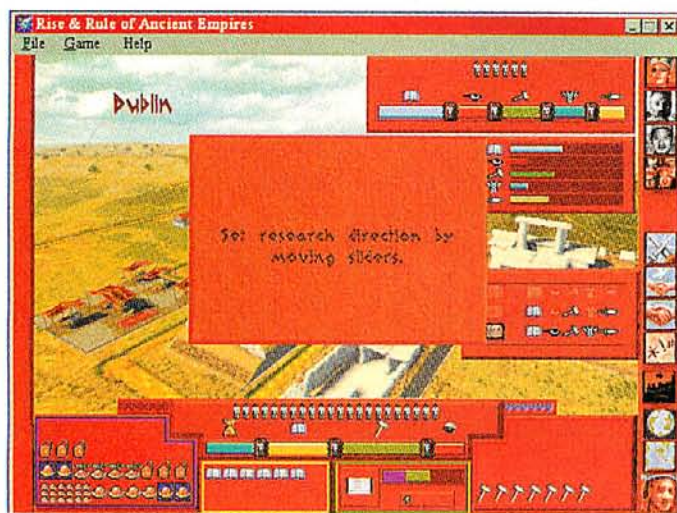
players to create a finely tuned network of Philosophers to carry knowledge back and forth from city to city, instead of having one general pool of knowledge. For that matter, why make infrastructure-building more complex by making philosophers and military units build roads instead of settlers?

In trying to simplify the game, but then going back on their intentions and adding superfluous detail, the designers have managed to create a product with none of the fascinating details of *CIVILIZATION*, but which retains almost half of the tedium. The simplifying of gameplay isn't enough to justify the draining of character from this title.

CIV-LITE

RISE AND RULE tries to be a quick and enjoyable game of empire-building and conquest, and succeeds on half of that score. It's fairly ideal for those who are more interested in crafting an empire without having to worry about what fields to plow and how much the upkeep on a new aqueduct is. The multi-player mode is quite effective and the entire game is very stable, making it perfect for net-play. Unfortunately, there is no spawning-technology here (like with *WARCRAFT II*) to entice players to participate in a group game first before buying their own copy to play at home. This one-CD-per-player philosophy may have been an error, in a game without a lot of excitement to recommend it to social gamers.

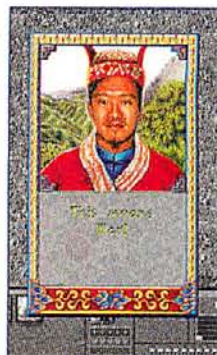
Once you leave your gleaming cities in *RISE AND RULE*, the game starts to break down and becomes both too simple and too tedious to hold the attention of the average gamer. There are plenty of nice touches, but early on somebody should have made the decision whether this game was meant to challenge *CIV* at its own level of detail, or go the quick-and-dirty route, like a historical *SPACEWARD HO!* Sadly, in trying to do both, *RISE AND RULE* achieves neither, and becomes yet another strategy near-miss from Sierra. In a universe with *CIVNET* or *CIVILIZATION II*, what is the point? ☹



WHERE'S THE TECH? One area where *R&R* falls flat is science and research, which is too abstract and doesn't yield enough advances aside from building facelifts.

percentage of your research is going into the five disciplines of Sage, Engineering, Medical, Martial and General Knowledge. The only real reward for pushing your knowledge to the limit is an ability to create a single racial Wonder of the World to proclaim your genius. Once again, efficient—but more than a little dry.

Combat is relatively straightforward. There are only a handful of units to choose from: infantry of three weight classes, archers, light and heavy cavalry, and catapults. The only difference from the old days of tile-versus-tile *CIV* fighting is that you can stack units together and thus create armies. Opposing armies can



APPEAL Those who would like to try a quicker, more abstract alternative to *CIVILIZATION*.

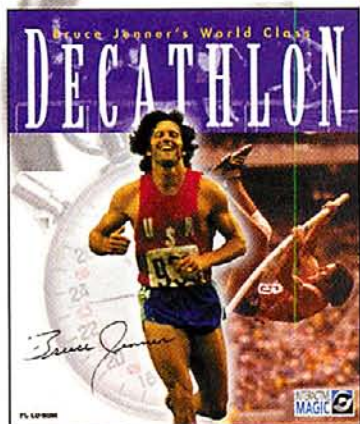
PROS A simpler, bug-free version of *CivNET* with great animations and sounds along with a few interesting twists on the theme.

CONS *RISE & RULE* abstracts all the fun parts of empire-building and adds too many superfluous and tedious details.



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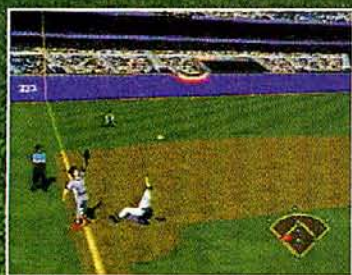
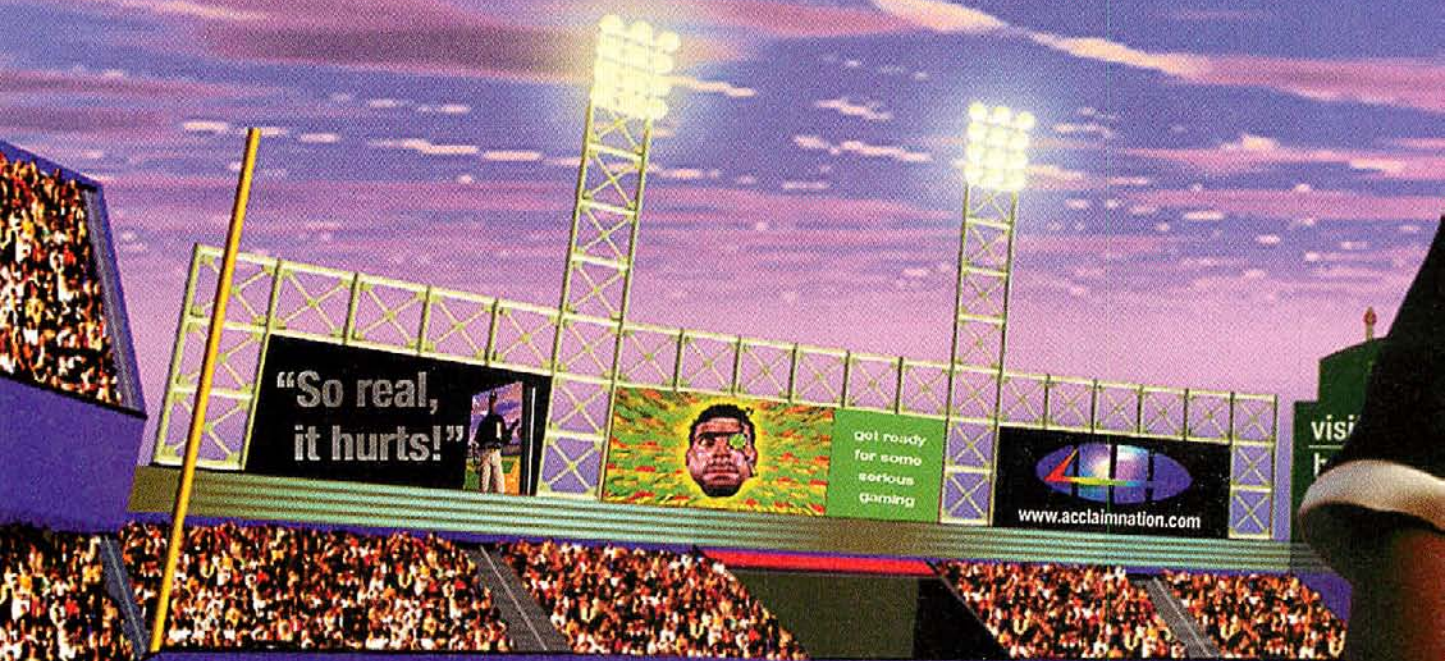
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Norse Play

VIKINGS Revisits RPGs Of Yore, With Disastrous Results

by Tim Carter

I have always been suspicious of games with nonsensical titles. *VIKINGS: THE STRATEGY OF ULTIMATE CONQUEST* confirmed my long-held suspicion that game names *can* reflect the quality of the final product. Despite having the words "strategy," "ultimate," and "conquest," and one of history's most successful military cultures, the title itself doesn't quite make sense. Sadly, the same can be said for the game, as well.

To begin with, *VIKINGS*, from GT Interactive, has the worst documentation I've ever seen. The 20 page booklet in the CD case provides only the barest description of game mechanics and interface. There is no real explanation of the combat system, the way trading works, or even how to outfit expeditions. Even the read.me file is inadequate, containing only two paragraphs, both about installation, a no-brainer anyway, since this is a Windows and Mac game.

Fortunately, much of the game can be worked out through trial and error, but this doesn't compensate for the complete lack of guidance. It's all well and good to talk about world conquest in the introduction, but players are never given a coherent explanation of what they must do to win. As it is, one is left to wander the world pillaging and plundering with little sense of direction.

A SUNKEN SHIP

So what about the game itself? To be fair, I like the concept. Raising an army and sailing off to plunder a largely unexplored world could be a lot of fun. The designers have tried to add depth by creating a system which leans quite a bit on role-playing and adventure features—such as progressive skills for key leaders and sideline quests for powerful objects. Games like *X-COM* have shown how suc-



PUPPETEER PUGILISM Combat usually means land invasions of towns, resolved in real-time battles that boil down to a lot of pointing and clicking.

cessful this formula can be, and I have nothing against mixing genres if the outcome is an enjoyable and challenging product.

Yet, for all of its conceptual potential, *VIKINGS* fails to deliver. Many of the concepts borrowed from role-playing games do not add to the gaming experience, and some are downright annoying. The game often seems to have abducted the worst aspects of RPGs from four or five years ago and forced them into the confines of a strategy game.

All of the cities look more or less alike (there are four or five basic cityscapes), and each offers virtually the same options. This might have been okay if the options themselves weren't so mindlessly tedious. For instance, the tavern stocked with a flirtatious barmaid, a bartender that gives the news, and a besotted storyteller who can provide tips about various magical weapons is so irritatingly cliché I found myself dreading every new visit. Moreover, the dialogue itself

is pretty bad. The barmaid talks in adolescent innuendo, while the stories are—to use a technical writer's term—pure dreck. To make matters worse, the fast-forward button that sits just below the story text doesn't even work.

To a degree, the problems with the towns are symptomatic of the way the entire game has been designed. Not unlike many bad RPGs, *VIKINGS* contains a lot of make-work chores intended to keep the gamer busy. You end up pillaging



FAMILIAR FACES Remember the barmaid from *PIRATES*? Well, *VIKINGS* has the same juvenile dialogue, canned character interaction and some boring role-playing elements.



Price: \$39.99

System Requirements:

PC: IBM compatible 486-33 or better, 8 MB RAM, SVGA graphics, 2x CD-ROM drive, 15 MB hard drive space, Windows 3.1 or 95, mouse; supports Sound Blaster compatible sound cards; Macintosh: Mac OS 7.1 or better, 68040 or PowerMac, 8 MB RAM, 12 MB hard drive space.

of Players: 1

Protection: None (CD must be in drive)

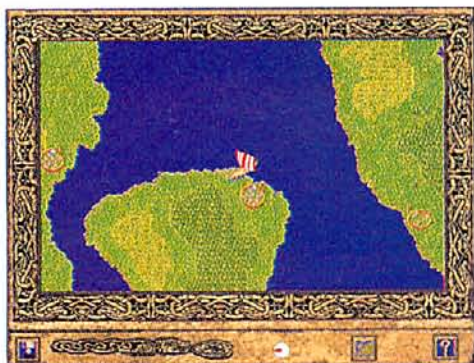
Designer: Random Games

Publisher: GT Interactive

New York, NY

(800) 610-GTIS

Reader Service #: 334



MY, WHAT A NICE SAIL BOAT For much of *VIKINGS*, you'll sail around Europe in a very simple boat that represents your fleet; it, like the game, is simple and dull.

for the sake of pillaging as much as to further a larger set of goals.

THEY SURE DON'T FIGHT LIKE VIKINGS

This would not be a problem if the act of pillaging was a little more exciting. Unfortunately, the battles are too simple to lend themselves to tactical planning or challenge. Essentially, winning is a ques-

tion of building a sufficiently well-equipped and well-led army and then pointing it in the right direction. There are only three types of combatants, and your army may only comprise five groups of 99 soldiers each.

Furthermore, each group may only contain one type of soldier.

The hand-to-hand combat is even worse. An inadequate and obsolete arcade sequence is not explained very well in the manual, and I was never able to swing my character's weapon effectively. The instructions given for doing so are incorrect. So, I just avoided hand-to-hand combat whenever I could.

VIKINGS' bad gameplay is unfortunate when you consider the inherent potential of this game. A military and economic simulator that offered you the choice

between plundering for profit or expanding your empire might have been both fun and challenging. Sadly, *VIKINGS* turns out to be neither. It plays like a 1987 role-playing game with a larger party and oversimplified strategy elements.

Undoubtedly, this game would have looked good 10 years ago. But, today, this type of boring gameplay just looks old, canned and cliché. ☹

APPEAL Gamers looking for some simple pillaging, or those waxing for a less fun, Scandinavian alternative to the old, seafaring classic *PIRATES*.

PROS Didn't crash.

CONS Doesn't work as a package; role-playing elements are boring; strategy elements are horrendously simple. Dialogue and gameplay too simple and juvenile. Combat is over-simplified, and documentation is woefully inadequate.



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Mystery Word Grid

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		E				
P	I	N	C	H	W	
	R					
S						

WORD LIST and LETTER CODE chart

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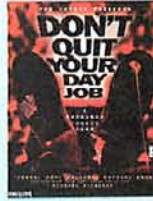
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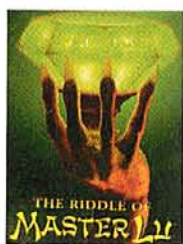
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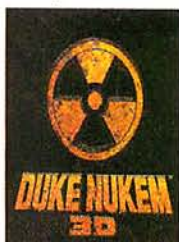
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- Blond Justice \$25
- BodyCelo Six Pack \$49
- Bra Busting Babes \$25
- Bustin' Through \$24
- California Calendar \$29
- California Girls \$9
- Centerfold CvrGirls \$24
- College Girls 2 \$24
- Condo Cuties \$19
- Crazy w/the Heat \$324
- Day Dreams \$25
- Deep Thr Girls 4Pk \$49
- Demon School \$22
- Dirty Debut 6 Pk \$44
- Doors of Passion 2 \$26
- Endlessly \$24
- Exposure \$24
- Doors of Passion 2 \$26
- Endlessly \$24
- Enter the Night \$19
- Exposure \$24
- Fantascenes \$39

MOTION

- Fantasies 2 \$26
- Fantasy Lifestyle 2 \$19
- Fatal Temptation \$19
- Girls Doin' Girls 2 \$26
- Glamor Girls 2 \$24
- Hidden Obsession \$25
- Home Front \$30
- Hot Dog Girl Florida \$19
- Hot Wired \$26
- Indiscretion \$29
- Insatiable \$24
- Justine \$39
- Kinky Debutante 2 \$32
- La Blue Girl 3 \$22
- Legend 4 \$16
- Legonds of Porn 2 \$19
- Lethal Passions \$26
- Lethal Pasion \$26
- Little Irresistable \$24
- Love Bites \$26
- Model Wife \$24
- Models, Etc. \$19
- Mystique Orient 2 \$24
- Naked Reunion \$24
- Natural Instinct \$18
- Naughty But Nice \$24
- New Lovers \$24
- New Machine 6 Pk \$42
- Nova Collection 5 \$19
- Oriental Action \$26
- Passion Files \$16
- Platinum Six Pack \$42
- Private Collection \$48
- Romsoft Six Pk 2 \$39
- Savannah Superstr \$24
- Secret Garden 2 \$19
- Seductions \$24
- Sex Foot Slut Pack \$59
- Sex Games \$24
- Sexual Instinct \$26
- Sexy Nurses 2 \$25
- Seymore Six Pack \$39
- Sin 95 \$44
- Sinfully Yours \$19
- Tokyo Nymphs \$16
- Urotsukidoji Pit Col \$48
- Virgins Vol 3 \$39
- Voices in My Bed \$24

STILLS

- Asian Pearls 2 \$28
- Celebrity Nudes \$25
- Domin-A-Trix \$19
- Elite Amer Modls \$19
- Elite Ctrld Modls \$24
- Erotic Playground \$28
- Heavenly Bodies 6 \$39
- Japanese Pearls \$28
- Secret Treas Japn \$17

3DO ADULT

- Blond Justice \$29
- Love Bites \$29
- Neurodancer \$39
- Sex \$29

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- Cheating \$19
- Passion \$29
- The Coven \$19
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Welcome to the Cooperstown of Computer Games. Here, raised upon pedestals, you'll find the games that broke

the records, established the benchmarks, and held gamers in delighted trances for hours untold.

INDUCTION CEREMONY!

X-COM

MicroProse, 1994

Certainly, gaming products from Europe have had success on these shores, but the greatest hits of recent years were

puzzle/action affairs, such as *MAGIC CARPET* or *LEMMINGS*. Who would have believed, especially given the subject matter—bug-eyed monsters with zap guns—that the Brits could corner the more cerebral market of turn-based strategy games?

X-COM arrived totally unheralded, and many gamers figured that it would be a mere rehash of *LASER SQUAD*. Certainly, concepts like hidden movement and opportunity fire have been around for ages, yet rarely have they been so well employed in a man-to-man tactical combat game. Soldiers statistics improved with time—provided they survived—adding a welcome element of role-playing. The alien opponents were creepy, challenging, and on the higher levels, downright merciless. The insidious mind-control of the alien leaders drove more than one gamer to psi-frustration, and the horror of watching *Chryssalids* transform members of your squad to aliens gave more than one *X-COM* commander nightmares.

The strategic shell was surprisingly robust, as you were forced to balance economic and political concerns in order to field your *X-COM* operatives and defend Earth's nations. Researching exotic alien technologies recalled the joys of *CIVILIZATION*, while the variety of weaponry could keep any space marine ferreting out *Sectoids* from *UFOs* until well into the 21st century. *X-COM* is a great game which proves that pushing the technological envelope is often less important than stoking the gamer's competitive fire.



TIE FIGHTER

Lucasarts, 1994

Nineteen years ago, George Lucas opened our eyes to new galaxies far, far away. Ever since then, the *Star Wars* saga of a small

Rebellion struggling against a merciless Empire has captured our collective imagination.

While several games have attempted to transport us into the fiery battles of the *Star Wars* universe, none was more successful than *TIE FIGHTER*. Project leaders Lawrence Holland and Edward Kilham designed the game with an authentic *Star Wars* atmosphere, a strong storyline that expanded on the evil Empire, and a rousing space simulator. Players discovered what it was like to be a *TIE Fighter* pilot and experienced the power of the Empire's evil propaganda machine. We became a party to its nefarious pursuits, ensuring its survival with our brilliant piloting skills. We even flew escort for the dreaded *Dark Jedi* himself, *Darth Vader*.

In addition to excellent graphics and nicely animated cut-scenes, *TIE Fighter's* gameplay was superb. You could fly up to five different Imperial spacecraft in the extensive Campaign Game, dogfighting with *X-Wings*, *Frigates* and myriad Rebel craft in a host of progressively difficult missions. The missions were challenging and logical, fitting nicely into the storyline, and the enemy pilots were intelligent, tough foes. There are few space sims with a combination of great gameplay, plot and atmosphere, but *TIE FIGHTER* stands out even among this elite company. For a true *Star Wars* experience, there is only one game worthy of the Emperor's favor: *TIE FIGHTER*.



Modern Inductees

Inductees Prior To 1989

BATTLE CHESS (Interplay Productions, 1988)
CHESSMASTER (The Software Toolworks, 1986)
DUNGEON MASTER (FTL SOFTWARE, 1987)
EARL WEAVER BASEBALL (Electronic Arts, 1986)
EMPIRE (Interstel, 1978)
F-19 STEALTH FIGHTER (MicroProse, 1988)
GETTYSBURG: THE TURNING POINT (SSI, 1986)
KAMPFGROPPE (Strategic Simulations, 1985)
MECH BRIGADE (Strategic Simulations, 1985)
MIGHT & MAGIC (New World Computing, 1986)
M.U.L.E. (Electronic Arts, 1983)
PIRATES (MicroProse, 1987)
SIMCITY (Maxis, 1987)
STARFLIGHT (Electronic Arts, 1986)
THE BARD'S TALE (Electronic Arts, 1985)
ULTIMA III (Origin Systems, 1983)
ULTIMA IV (Origin Systems, 1985)
WAR IN RUSSIA (Strategic Simulations, 1984)
WASTELAND (Interplay Productions, 1986)
WIZARDRY (Sir-Tech Software, 1981)
ZORK (Infocom, 1981)

ALONE IN THE DARK
(I-Motion, 1992)

BETRAYAL AT KRONDOR
(Dynamix, 1993)

DAY OF THE TENTACLE
(Dynamix, 1993)

DOOM
(id Software, 1993)

FALCON 3.0
(Spectrum HoloByte, 1991)

FRONT PAGE SPORTS FOOTBALL PRO
(Dynamix, 1993)

GUNSHIP
(MicroProse, 1989)

HARPOON
(Three-Sixty Pacific, 1989)

KING'S QUEST V
(Sierra On-Line, 1990)

LEMMINGS
(Psygnosis, 1991)

LINKS 386 Pro
(Access Software, 1992)

M-1 TANK PLATOON
(MicroProse, 1989)

MASTER OF ORION
(MicroProse, 1993)

RAILROAD TYCOON
(MicroProse, 1990)

RED BARON
(Dynamix, 1990)

SID MEIER'S CIVILIZATION
(MicroProse, 1991)

THEIR FINEST HOUR
(LucasArts, 1989)

THE SECRET OF MONKEY ISLAND
(LucasArts, 1990)

ULTIMA VI
(Origin Systems, 1990)

ULTIMA UNDERWORLD
(Origin Systems, 1992)

WING COMMANDER I & II
(Origin Systems, 1990-91)

WOLFENSTEIN 3-D
(id Software, 1992)

Computer game programs have grown so massive and the number of hardware configurations has become so huge that incompatibilities and glitches are frustratingly common.

Software fixes, or "patches," for buggy programs have become a necessary evil until we reach the golden age of standardized platforms and bug-free programs.

Absolute Zero V1.04 Update:

Fixes crash bug found in version 1.0.3, and corrects some minor bugs in the following missions: Attack on Aegis 2, Attack on Aegis 3, and Hammer and Anvil 2.

Allied General V1.1 Update for Windows/Windows 95:

Fixes numerous bugs.

Anvil of Dawn V1.1 Update:

Fixes crashes, several graphics problems, armor rating malfunction, and corrects the problem with entering Gorge Keep from the northern entrance and getting stuck when the portcullis is shut.

Battleground: Gettysburg V1.02 Upgrade:

Incorporates various fixes and upgrades game to v1.02. Install instructions are found in the Install Note Text file (BGGSETUP.TXT).

Civilization 2 V1.06: Fixes AI damaged from earlier patches. Also cleans up multimedia glitches and other annoying bugs.

CivNet V1.03 Update:

Fixes the "Cannot write to AUX" error. Refer to the PATCH.TXT file for installation instructions.

Descent II Update:

Contains the configuration file for the Thrustmaster FLCS (w/o TQS or WCS) from the DESCENT II Interactive Demo. This file was accidentally omitted from the full version of DESCENT II.

Front Page Sports Football Pro 96 V1.01:

Updates game to version 1.01. Fixes various technical issues.

Hardball 5 V5.12 Update:

Updates stats for the end of the 1995 season. Rosters updated to the end of January 1996.

Heroes of Might and Magic DOS V1.2 Update:

Improves compatibility with certain sound and memory configurations. Resolves dialing problems with certain modems.

IndyCar Racing II Update:

Enhances online/modem play and adds time acceleration to the game.

MechWarrior II GIDDI for DOS Update:

Fixes reported joystick problems.

NBA Live '96 Update:

Latest update with new rosters, including Michael Jordan, Magic Johnson and Charles Barkley.

NHL Hockey Update:

Fixes numerous technical problems.

NASCAR Racing V1.21:

Updates NASCAR Racing to v1.21. Addresses many issues including computer opponents being affected by damage.

Panthers In The Shadows V1.14:

Fixes all known bugs including the artillery bug. Copy the file into your Panthers subdirectory, type "PS-114" and overwrite the old files with the new ones.

Ripper V1.02 Update:

Corrects problems with the WAC and notebook, fixes display problems with the Matrox Millennium video card and other known bugs.

Terra Nova Update:

Fixes the problem with the Random Scenario Builder, which crashed the game if used four times consecutively.

Unnecessary Roughness '96 Update:

Fixes sound and video problems.

Wing Commander IV Update:

Fixes the 16-bit SVGA palette problem found with video cards using the S3 Vision 968 chipset and the IBM RGB524 RAMDAC. Fixes problems in using Hercules Graphite Terminator Pro 64 PCI and the STB Velocity PCI cards.

Warcraft II V1.0 Update:

Fixes final color randomizing bug, Exorcism crash and system specific problems. V1.0 also includes a map editor update, WAR2KALI patch and the unregistered shareware version of KALI.



New Patches are on the cover disk.

ZDNet

These patches can usually be downloaded from the major on-line networks (CompuServe, GEnie, ZDNet) and Computer Gaming World's Web Site (<http://www.zdnet.com/gaming>), but can also be obtained from individual software publisher's BBSes or direct from the publisher with proof of purchase.

Publisher Websites

Many of these patches are available directly from the publishers, at the following sites:

- Accolade :<http://www.accolade.com>
- Activision: <http://www.activision.com>
- Apogee/3d Realms: <http://www.apogee1.com>
- Bethesda: <http://www.bethsoft.com>
- Blizzard: <http://www.blizzard.com/tech.htm>
- Bullfrog: <http://www.ea.com/bullfrog.html>
- Domark: <http://www.domark.com>
- EA: <http://www.ea.com/tech.html>
- Interactive Magic: <http://www.imagicgames.com/games.html>
- Interplay: <http://www.interplay.com>
- Looking Glass: <http://www.vie.com/lgt/utility.html>
- LucasArts: <http://www.lucasarts.com>
- MicroProse: <http://www.microprose.com/mpsfiles.html>
- Microsoft: <http://www.microsoft.com>
- Mindscape: <http://www.mindscape.com>
- New World Computing: <http://www.nwcomputing.com>
- Ocean: <http://www.ef2000.com>
- Origin: <http://www.ea.com/origin.english/index.html>
- Papyrus: <http://www.sierra.com>
- Phillips: <http://spider.media.philips.com/media/games>
- Sierra On-Line: <http://www.sierra.com>
- Spectrum HoloByte: <http://www.trek.microprose.com/shfiles.html>
- SSI: <http://www.cmaact.com/ghole/ssi.htm>
- Take 2: <http://westol.com/~taketwo/ripper.html#patches>
- Virgin: <http://www.vie.com/html/viesupport.html>

THE COMPUTER GAMING POLL • A MONTHLY SURVEY OF THE READERS OF COMPUTER GAMING



You've read our take on the latest games, now here's a chance to see what your fellow gamers think. The CG Top 100 is a monthly tally of game ratings provided by our readers. Approximately 50 games are rated each month, and the results are added to the aggregate results from past months. This historical database serves as a terrific reference for what you, the gamers, feel are the best plays in gaming. (Starting this month, the Poll ballots will be mailed to a different group of randomly chosen subscribers each month.)

TOP ACTION GAMES

GAME	COMPANY	SCORE
1 Crusader: No Remorse	Origin	9.95
2 Marathon 2	Bungie	9.85
3 DOOM II	id Software	9.77
4 Dark Forces	LucasArts	9.70
5 Virtual Pool	Interplay	9.52
6 Magic Carpet	Electronic Arts	9.48
7 System Shock	Origin	9.19
8 TerraNova: Strike Force Centauri	Virgin	9.14
9 The Need For Speed	Electronic Arts	9.12
10 Heretic	id Software	9.08

TOP ADVENTURE GAMES

GAME	COMPANY	SCORE
1 Gabriel Knight 2	Sierra	9.97
2 Full Throttle	LucasArts	9.44
3 Woodruff & Schnibble	Sierra	9.28
4 Mission Critical	Legend	9.22
5 Relentless	Electronic Arts	9.12
6 Ecstasica	Psygnosis	9.09
7 Under A Killing Moon	Access	9.04
8 Legend of Kyrandia 3	Virgin/Westwood	8.94
9 Riddle of Master Lu	Sanctuary Woods	8.94
10 Star Trek: TNG, Final Unity	Spectrum HoloByte	8.75

TOP CLASSIC/PUZZLE GAMES

GAME	COMPANY	SCORE
1 You Don't Know Jack	Berkeley Systems	9.01
2 Incredible Toons	Dynamix	8.86
3 Incredible Machine 2	Sierra	8.85
4 Monopoly	Virgin/Westwood	8.73
5 Clockwerx	Spectrum HoloByte	8.25
6 Hodj n' Podj	Virgin Interactive	8.16
7 Shanghai-Great Moments	Activision	7.75
8 Connections	Discovery Channel	7.56
9 Lemmings 3D	Psygnosis	7.50
10 Lemmings Chronicles	Psygnosis	7.47

TOP SIMULATION/SPACE COMBAT GAMES

GAME	COMPANY	SCORE
1 Wing Commander 3	Origin	10.57
2 Wing Commander IV	Origin	10.33
3 MechWarrior 2	Activision	10.05
4 NASCAR Racing	Papyrus	10.01
5 U.S. Marine Fighters	Electronic Arts	9.76
6 U.S. Navy Fighters	Electronic Arts	9.60
7 Wings of Glory	Origin	9.56
8 Flight Unlimited	Looking Glass	9.51
9 EF2000	Ocean	9.48
10 Aces of the Deep	Dynamix	9.38

TOP SPORTS GAMES

GAME	COMPANY	SCORE
1 NBA Live '95	EA Sports	9.86
2 NHL Hockey	EA Sports	9.70
3 Front Page Sports Football 95	Sierra	9.64
4 FPS Football Pro 96	Sierra	9.19
5 PGA Tour Golf 486	EA Sports	8.93
6 Front Page Sports Baseball	Dynamix	8.76
7 Hardball 4	Accolade	8.70
8 Hardball 5	Accolade	8.36
9 Tony LaRussa 3	Stormfront Studios	8.12
10 NFL Pro League	IBM	8.01

TOP STRATEGY GAMES

GAME	COMPANY	SCORE
1 Warcraft II	Blizzard	10.50
2 Command & Conquer	Virgin/Westwood	10.00
3 Jagged Alliance	Sir-Tech	9.81
4 Heroes of Might & Magic	New World Computing	9.77
5 Master of Magic	MicroProse	9.66
6 Warcraft	Blizzard	9.64
7 X-COM: Terror from the Deep	MicroProse	9.38
8 Warlords II Deluxe	SSG	9.27
9 Transport Tycoon	MicroProse	8.94
10 1830	Avalon Hill	8.72

TOP ROLE PLAYING GAMES

GAME	COMPANY	SCORE
1 Might & Magic: Clouds of Xeen	New World Computing	9.07
2 Anvil of Dawn	New World Computing	9.04
3 Ravenloft: Stone Prophet	SSI	8.98
4 Wolf	Sanctuary Woods	8.64
5 Stonekeep	Interplay	8.44
6 Menzoberranzan	SSI	8.26
7 Mordor	TDA	8.00
8 Dark Sun: Wake of the Ravager	SSI	7.64
9 Thunderscape	SSI	7.63
10 Druid	Sir-Tech	7.00

TOP WARGAMES

GAME	COMPANY	SCORE
1 Panzer General	SSI	10.46
2 Steel Panthers	SSI	10.36
3 Rise of the West	RAW	9.63
4 Flight Commander 2 Mission Bldr	Avalon Hill	9.48
5 Battleground: Gettysburg	Talonsoft	9.47
6 Stalingrad	Avalon Hill	9.38
7 Flight Commander 2	Avalon Hill	9.35
8 Custer's Last Command	Incredible Simulation	9.12
9 Perfect General II	QQP	8.96
10 Allied General	SSI	8.81

Reader Poll #142

	GAME	COMPANY	TYPE	SCORE
★ 1	Wing Commander 3	Origin	SI	10.57
★ 2	Warcraft II	Blizzard	ST	10.50
★ 3	Panzer General	SSI	WG	10.46
4	Steel Panthers	SSI	WG	10.36
5	Wing Commander IV	Origin	SI	10.33
6	MechWarrior 2	Activision	SI	10.05
7	NASCAR Racing	Papyrus	SI	10.01
8	Command & Conquer	Virgin/Westwood	ST	10.00
★ 9	Gabriel Knight 2	Sierra	AD	9.97
★ 10	Crusader: No Remorse	Origin	AC	9.95
★ 11	NBA Live '95	EA Sports	SP	9.86
12	Marathon 2	Bungie	AC	9.85
13	Jagged Alliance	Sir-Tech	ST	9.81
14	DOOM II	id Software	AC	9.77
	Heroes of Might & Magic	New World Computing	ST	9.77
16	U.S. Marine Fighters	Electronic Arts	SI	9.76
17	NHL Hockey	EA Sports	SP	9.70
	Dark Forces	LucasArts	AC	9.70
19	Master of Magic	MicroProse	ST	9.66
20	Front Page Sports Football 95	Sierra	SP	9.64
	Warcraft	Blizzard	ST	9.64
22	Rise of the West	RAW	WG	9.63
23	U.S. Navy Fighters	Electronic Arts	SI	9.60
24	Wings of Glory	Origin	SI	9.56
25	Virtual Pool	Interplay	AC	9.52
26	Flight Unlimited	Looking Glass	SI	9.51
27	EF2000	Ocean	SI	9.48
	Flight Commander 2 Mission Bldr	Avalon Hill	WG	9.48
	Magic Carpet	Electronic Arts	AC	9.48
30	Battleground: Gettysburg	Talonsoft	WG	9.47
31	Full Throttle	LucasArts	AD	9.44
32	Stalingrad	Avalon Hill	WG	9.38
	X-COM: Terror from the Deep	MicroProse	ST	9.38
	Aces of the Deep	Dynamix	SI	9.38
35	Flight Commander 2	Avalon Hill	WG	9.35
36	Woodruff & Schnibble	Sierra	AD	9.28
37	Warlords II Deluxe	SSG	ST	9.27
38	Mission Critical	Legend	AD	9.22
39	System Shock	Origin	AC	9.19
	FPS Football Pro 96	Sierra	SP	9.19
41	TerraNova: Strike Force Centauri	Virgin	AC	9.14
42	Custer's Last Command	Incredible Simulation	WG	9.12
	The Need For Speed	Electronic Arts	AC	9.12
	Relentless	Electronic Arts	AD	9.12
45	Ecstatica	Psygnosis	AD	9.09
46	Heretic	id Software	AC	9.08
★ 47	Might & Magic: Clouds of Xeen	New World Computing	RP	9.07
48	Hexen	Raven Software	AC	9.04
	Under A Killing Moon	Access	AD	9.04
	Anvil of Dawn	New World Computing	RP	9.04

	GAME	COMPANY	TYPE	SCORE
★ 51	You Don't Know Jack	Berkeley Systems	CP	9.01
52	Ravenloft: Stone Prophet	SSI	RP	8.98
53	Perfect General II	QQP	WG	8.96
54	Riddle of Master Lu	Sanctuary Woods	AD	8.94
	Legend of Kyrandia 3	Virgin/Westwood	AD	8.94
	Transport Tycoon	MicroProse	ST	8.94
57	PGA Tour Golf 486	EA Sports	SP	8.93
58	Descent	Interplay	AC	8.86
	Incredible Toons	Dynamix	CP	8.86
60	Incredible Machine 2	Sierra	CP	8.85
61	Allied General	SSI	WG	8.81
62	Front Page Sports Baseball	Dynamix	SP	8.76
63	Romance of 3 Kingdoms IV	Koei	WG	8.75
	Star Trek: TNG, Final Unity	Spectrum HoloByte	AD	8.75
65	Monopoly	Virgin/Westwood	CP	8.73
66	1830	Avalon Hill	ST	8.72
67	Hardball 4	Accolade	SP	8.70
68	Buried In Time	Sanctuary Woods	AD	8.65
69	Mortal Kombat 3	GT Interactive	AC	8.64
	Wolf	Sanctuary Woods	RP	8.64
	King's Quest VII	Sierra	AD	8.64
72	Caesar II	Sierra	ST	8.62
	Superheroes of Hoboken	Legend	AD	8.62
	Phantasmagoria	Sierra	AD	8.62
75	1942 Pacific Air War Gold	MicroProse	SI	8.61
76	Magic Carpet 2	Electronic Arts	AC	8.56
	The Dig	LucasArts	AD	8.56
78	Shannara	Legend	AD	8.55
79	Werewolf vs. Comanche	NovaLogic	SI	8.50
	Death Gate	Legend	AD	8.50
81	CivNet	MicroProse	ST	8.47
82	FX Fighter	GTE Entertainment	AC	8.46
83	Stonekeep	Interplay	RP	8.44
84	Apache	Interactive Magic	SI	8.43
	Destruction Derby	Psygnosis	AC	8.43
	Dark Legions	SSI	AC	8.43
87	Lords of the Realm	Impressions	ST	8.42
88	Warhammer	Mindscape	ST	8.39
89	Cyclemania	Accolade	AC	8.37
90	Hardball 5	Accolade	SP	8.36
91	Fighter Duel	Philips Media	SI	8.35
92	Earthworm Jim	Activision	AC	8.33
	Top Gun	Spectrum HoloByte	SI	8.33
94	Loderunner	Dynamix	ST	8.31
95	Future Shock	Bethesda	AC	8.30
96	Celtic Tales	Koei	ST	8.28
97	Bioforge	Origin	AD	8.27
98	Menzoberranzan	SSI	RP	8.26
99	Clockwerx	Spectrum HoloByte	CP	8.25
	Panthers in the Shadows	HPS	WG	8.25

Games on unnumbered lines have scores equal to the line above. ★ = Top game of type. 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.

What's The Deal With... Upgrade Fever?

Yes, folks, it finally happened. Thanks in part to *CGW* and my thousands of loyal fans (well, three anyway) who couldn't bear to see me stumbling further behind the technology curve, I have finally abandoned the world of 486s forever and now revel in the realm of Pentium/4-billion-and-66s, 90x CD-ROMS and graphic cards with more memory than the Library of Congress. After a year and a half of watching computer games slowly leave me behind, now I'm on top of the virtual world!

So, why do I feel like I've just gotten a nose job so I can hang out with those kids on "Beverly Hills 90210"?

Will all this power change me? Will my reviews start featuring those genius statements like, "This game ran like a dream on my Pentium 200!" Will I surrender to the glow of multimedia chrome? Will sloppy programming cease to bug me because my machine is too fast to care? To be honest, I dunno. Power still does corrupt.

I can't say I wasn't chortling over how great *Wing Commander 4* looked and played on my new rig, or "wow-ing" over finally being able to run *Advanced Tactical Fighters*—in all its high-res glory and multiple-aircraft

complexity—without a single hiccup. But you know, *EARTH SIEGE 2* is still a little flat after the first few minutes of "ooohs" and "ahhhs" fade...so I know my objectivity isn't completely gone.

On the other hand, my recent experience with *Civ2* has shown me how technology can enhance chrome. When I first started playing it on the noble old clunker, the little videos for the Wonders of the World were more cute than inspiring, as they chugged onto the screen in stuttering double-speed. But playing it on the new rig and viewing the videos as they were meant to be elicits the "cool" response that is so important for a game. Now, I can hear the moans of the old-timers out there saying that my head is being turned by things that are completely superfluous to a game, and to be honest, you're probably right. Video clips have nothing to do with the mechanics of a wargame. And there is no doubt that a good strategy/wargame should be playable on a 286 or even on a board, for that matter, and the ideal strat game is one where the basic game will run on anything. But I have to admit that more hardware power and accessibility to more options makes a good game even better.

Speaking of running on a 286, one of the things that's really bothering me about riding the upgrade wave is the idea is that I am somehow now endorsing the outrageous system

demands on games that really don't merit them. I mean, I didn't really blow 4-odd grand on this machine just so I could play *THEXDER* or *THIS MEANS WAR*

“ I sincerely doubt high-tech chrome will ever make me like a bad game. ”

at normal speed, simply because nobody bothered to code these things properly. Remember the good old days, when *DOOM* squeezed every single ounce of processor power out of your 386 and 4 megs of memory? Some game programmers sure seem to have gotten cocky these days about what consumers are expected to have on their desks. When programmers say, "We sure wish they'd all get Pentiums!" My response is, "We sure

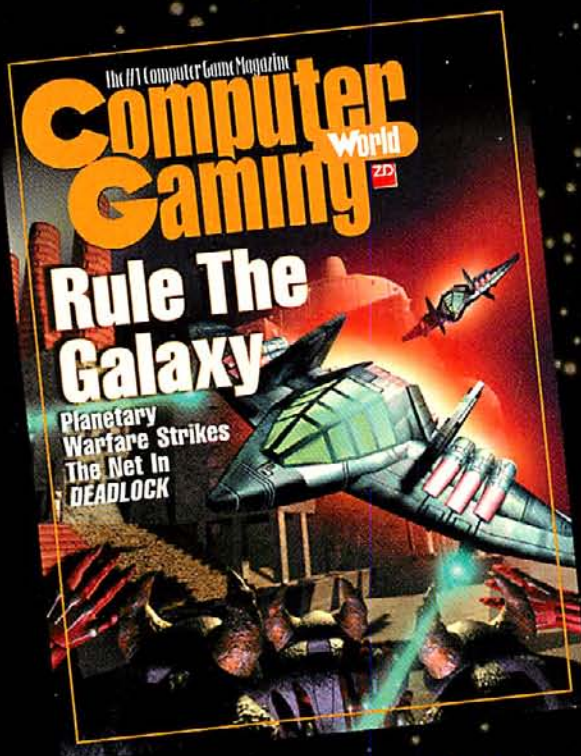
wish you'd learn to code tighter!"

It reminds me of a little disagreement I got into with a couple of Netwits over Origin's *STRIKE COMMANDER*. Now, this was in the days when a Pentium 60 was a rare and wondrous beast, and both of these upper middle-class wunderkinders were going on about what an incredible game it was, while I vainly questioned the wisdom of a computer game that could only be properly played by, at the time, a very small percentage of the gaming public. I don't recall exactly how it turned out, but I believe my point fell on ears which had been deafened by computing power.

Does the load of dough I just dropped mean I must now join them, and proclaim that only the absolutely most demanding games are the best ones? Probably not. Even though I have once again caught up, I still won't care to be taken for granted by programmers who think we all make 100 g's a year and can get our computers wholesale, just like them.

So, give me the *Wing IVs* and the *ATFs* and the *Quakes*, 'cause I want to put this rig through its paces. But while you're at it, don't forget to give everybody the *X-Coms* and the *Civs*. ☺

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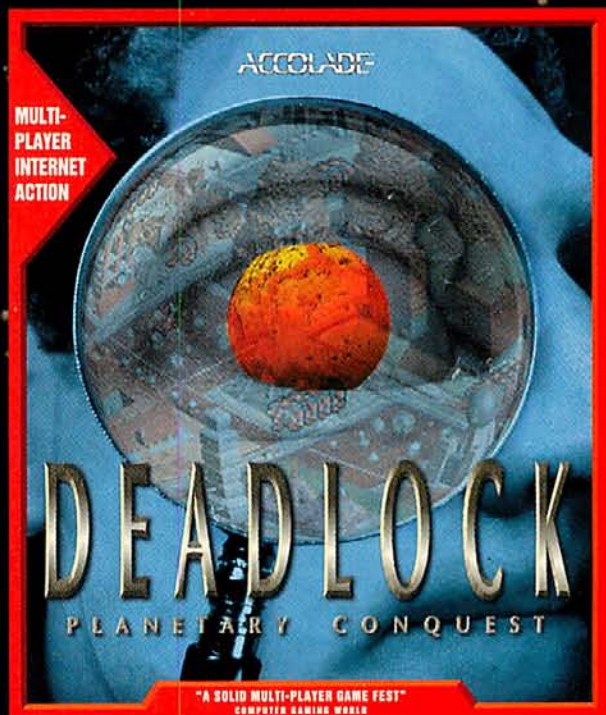
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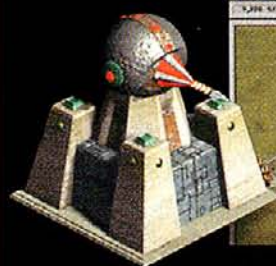
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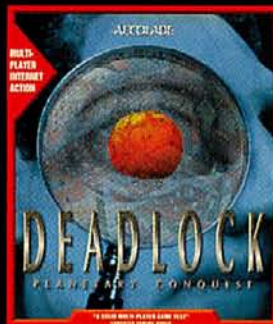
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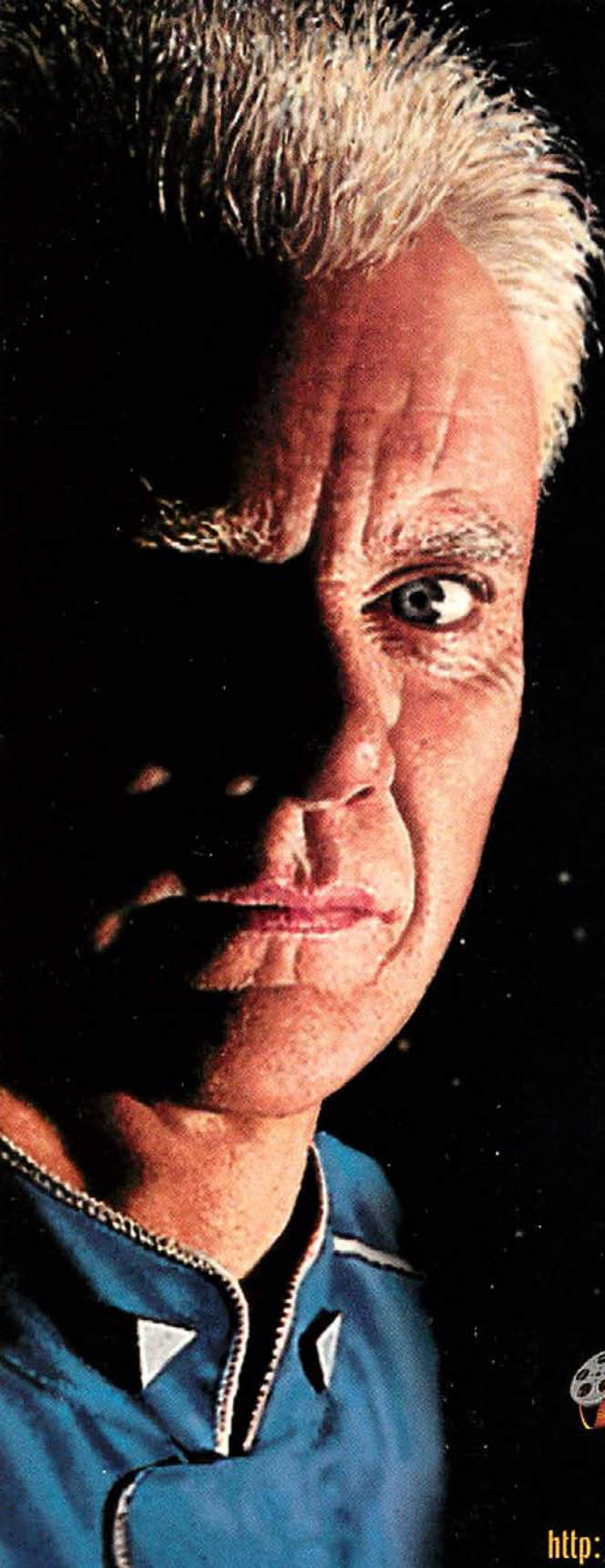


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