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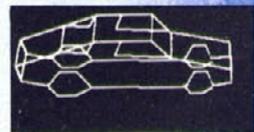
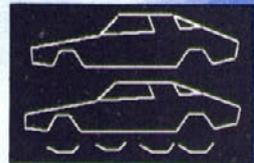
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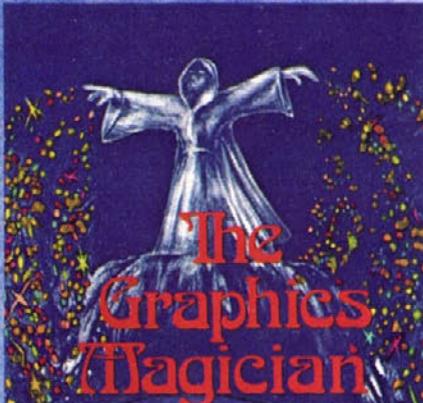
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by Mark Pelczarski

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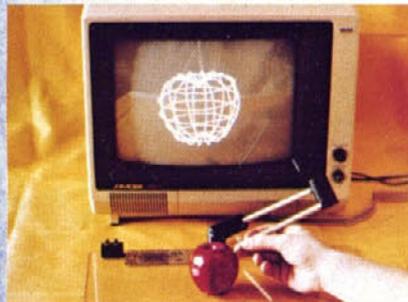
picture/object builder that lets you store hundreds of 100-color pictures on a single disk and recall them quickly from your own programs. These exact routines are being used in the new graphic adventure games from Scott Adams' *Adventure International*. Plus, a new shape editor greatly extends the capabilities of Apple shape tables with multicolors and angles that are preserved on scaling. All design of graphics is done through menu-driven editors; to use in your programs, just attach our machine language routines. Extensive documentation makes this package easy to use for the beginning programmer, yet flexible enough for the most advanced.



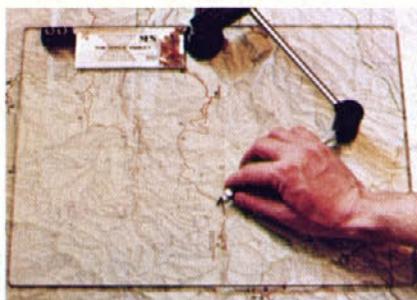
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Apple II Graphics is on vacation. Never fear; it will return.

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Composition by Photographics, Hollywood, California. Printing by California Offset Printers, Glendale, California.

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**Moving?** Send new address and old to *Softline* Circulation, 11021 Magnolia Boulevard, North Hollywood, CA 91601; telephone (213) 980-5074.

**Postmaster:** Send address changes to *Softline*, 11021 Magnolia Boulevard, North Hollywood, CA 91601.

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## Photo Finish

I'm a good photographer and a lousy gamer; perhaps I can help some keyboard wizards get their verifications.

The ideal setup for shooting a screen is a good single-lens reflex camera, fast film, a shorty tripod or bean bag, and a normal or slightly wide-angle lens (55 to 35 millimeter focal length) that focuses to one foot or eighteen inches. This rules out the box Brownie but might include a Polaroid "Super Shooter" with focusing lens. You need fast film because you'll have to set the shutter speed below one-thirtieth-second to avoid a big black bar through the picture. You need a tripod or bean bag because at shutter speeds of one-fifteenth or one-eighth-second the camera itself makes enough vibration to fuzz up the picture. Exposure is hard to predict. A good place to start with EI 400 film (Tri-X, HP-4, or Kodacolor 400) is one-eighth-second, f/5.6 at the lens, and the camera set on full manual. Keep all the automatic gee-gaws switched off.

Apply the professional's top rule: bracket the shot by reshooting the screen with the lens f-stop up one notch, down one notch, up two notches, down two notches, up three notches, down three notches from that f/5.6 setting. It will look strange if you don't use a filter when shooting color. A FL-B or CC40R color-correction filter on the lens will work. Getting a good picture is the same as cracking *Threshold* or *Snake Byte*; practice is the X factor to do the job.

Scott Schrader, Fargo, ND

## Blood, Guts, and Dust

Fortunately, I had my Epson printer running while I was playing, so I can provide verification for my *Crop Duster* tally of 14,375. As you know, Slipshod has been notorious for making it impossible to dump graphics to a printer. I was using two peripherals from Slipshod Hardware that contributed to the problem. The Slipshod Chameleon card (set to make the Apple emulate a partially assembled Heath H-89) was in slot 0. I was using it in tandem with Slipshod's ubiquitous forty-column card. I couldn't get pictures of the chickens or even those cows (I crashed into most of them anyway), but I got the last pages of the printout showing the end of the game.

I was in good shape until I tried to do some pinpoint spraying and a cow snuck up on me. I veered away, but to no avail. I hit a cow and, to make matters worse, I committed the cardinal sin of dusting while I started to bank left. Needless to say, it's obvious from the printout that the machine loaded *VisiCalc* on me. I managed to return to the game by hitting control-shift-escape while holding down the C, O, and W keys, but I crashed only moments later. I look forward to the stockholder's award ceremony.

Victor De Grande, Venice, CA

Managed to beat the high score for *Crop Duster* after playing it for more than two weeks. Started to count cows in my sleep, and one night had a nightmare that I crashed into an electric utility's high tension line and got fried. I picked the game because I didn't think too many people were playing it. See printout for proof of high score 15,825. I hit only seven cows!

Jeff Stanton, Staten Island, NY

I have a high score to report for the popular program, *Crop Duster*, by Slipshod Software. My score was 99,999. I would have gotten higher, but just as I reached that point, the computer exploded. Luckily nobody was injured.

Did you know that when you run into a hi-res cow, you can milk it and get some bonus points?

As verification of my score, I can report that when the score hits 90,000 the computer plays Schubert's Unfinished Symphony, and finishes it.

Daniel Tobias, Poughkeepsie, NY SL

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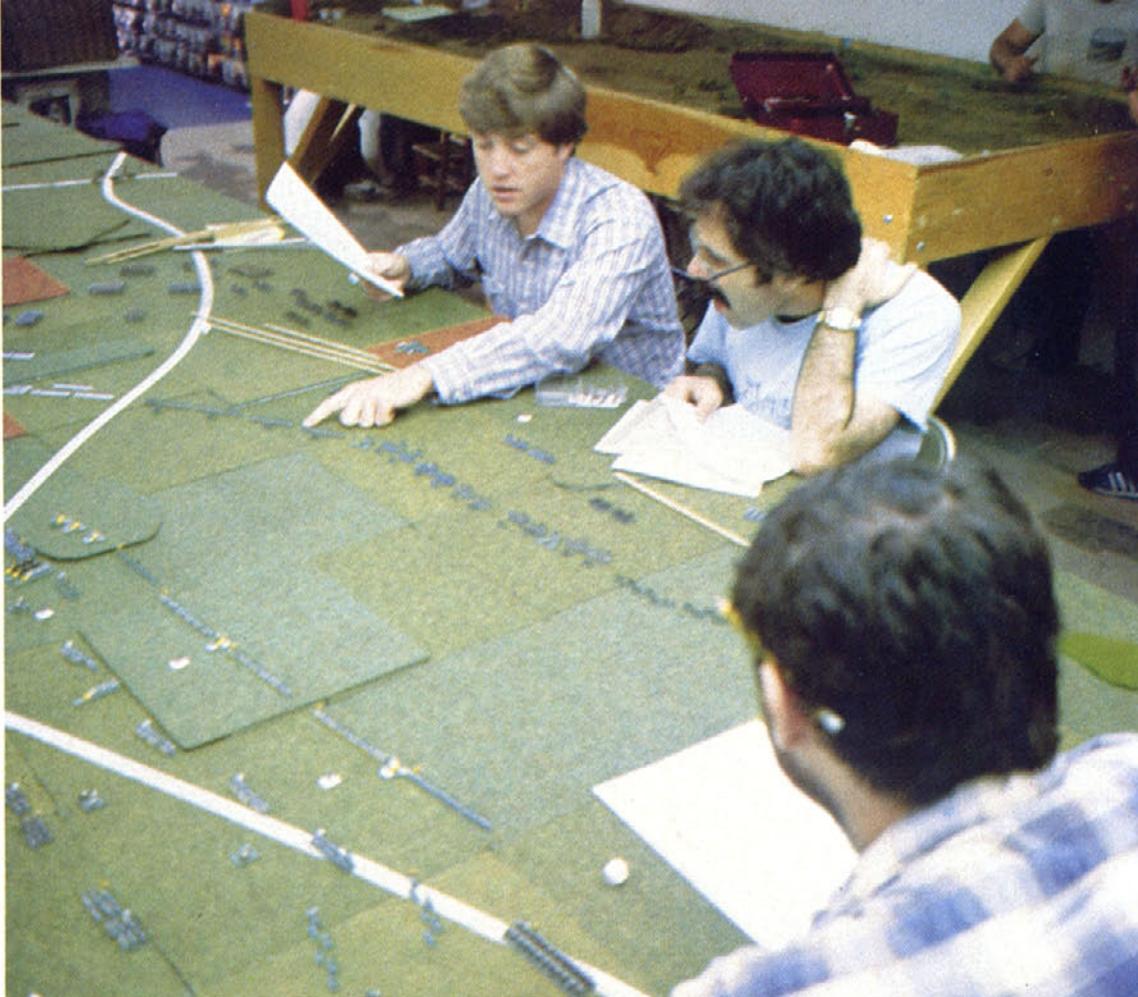
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# Attack from the Stone Age

## The History of War Games

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by JOHN CHAMPLIN

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In some forgotten prehistoric battlefield, a Neanderthal strongman prepares his tribe for battle with hostile neighbors. He uses carefully placed rocks to represent the locations of opponents and, by tracing lines in the earth with a stick, shows his men how they must move. In the ensuing battle, the chieftain's tribe, now well-versed in strategy and tactics, rids the territory of enemies. Thus was war gaming born.

A strictly hypothetical scenario, of course. But history shows that war gaming not only is as old as war itself, but closely parallels the development of war strategies over the ages.

One of the earliest known war games that bears a resemblance to modern day games was developed by the Chinese in about 3000 B.C. Called Wei-Hai, the game was played on a map board using colored stones with which the players tried to outflank and encircle each other. Wei-Hai, not too surprisingly, means "encirclement," and the game has evolved into the modern Japanese game of Go.

Not all the earliest war games were used solely for the formulation of strategy. Some evolved as instructional tools for young recruits to learn the basics of strategy and tactics. Others were simply leisure pastimes for soldiers in times of peace.

An example of this is an early form of chess, thought to have originated in India around the seventh or eighth century A.D. According to a 1959 Rand Corporation report, "It has been proposed that early forms of chess provided safety valves for belligerent Hindus." Perhaps some ancient pacifist invented board games to relieve man's desire for physical war. True or not, history, sadly, made short work of that hope.

Other games involved players in questions of fate and the workings of destiny. The ancient Egyptian game of Senet precreated the journey through the afterlife. Two players moved their pieces past each other in a backward S pattern on a three-by-ten-square grid, with the first player to complete the journey the winner. This technique of moving pieces past each other has evolved into such games as backgammon and Parcheesi (a modern version of the Hindu game pachisi).

**Enter the Prussians.** After the ancient Chinese games, there was little effort to relate board games to military applications until the seventeenth century in Europe. In the early 1600s, chesslike boards and pieces were used to simulate troops and war materiel. These games gradually expanded in scope and detail during the seventeenth and eighteenth centuries. The new sophistication of war games during this period generally paralleled the advent of the Enlightenment, when new sets of scientific laws were being applied to all areas of learning.

The people who did the most to develop the modern war game were the scientifically militaristic Prussians. A Prussian military writer, Georg Yiturinus, brought board games closer to representing the battlefield with his *neues Kriegsspiel* (new war game), developed around 1800. With about sixty pages of rules and a board of 3,600 squares, it was the first war game to represent actual terrain—the Franco-Prussian border. The name *Kriegsspiel* stuck, spreading to other countries. Another development was the introduction of dice to add war's uncertainties to the game.

In 1811, the Prussian war counselor at Breslau, von Reisswitz, invented the sand table, a relief model depicting actual terrain at a scale of 1:2,373. Model troops were at last able to move as actual troops would, without being limited to chesslike squares. His son, von Reisswitz, Jr., now known as "the father of modern war gaming," created still more realistic game maps, introduced the convention of "red" and "blue" sides still used today, and added a third player, an umpire, who enforced rules that duplicated military practice. He also limited the players to only that information about each other that would be available under wartime conditions.

In 1824, the chief of the German General Staff, von Meffling, agreed to watch a demonstration of a war game. He was skeptical that anything played on a board could be of use to the army, but during the course of the game he became enthusiastic.

"It is not a game at all!" he exclaimed. "It is a training for war! I shall recommend it most emphatically to the entire army." Shortly thereafter, game materials were given to every regiment for training. At about this time, war gaming began to catch on abroad, and soon war games were being played by nearly every military force on the continent.

**On the Home Front.** The Prussian wars of 1866 and 1870 gave war gamers a whole new set of military information and caused a fundamental change in the games. The rules of the von Reisswitz game had been growing increasingly complex and binding because they had to devise a rule for every new situation that might arise. The result was that the good tactical sense of the umpires was being sacrificed, making the games less representative of battlefield situations.

A solution was proposed in 1876 by Colonel Julius von Verdy du Vernois; he suggested that many of the rules be abandoned, freeing the umpires to apply some of the tactics learned from the two previous wars and to develop creative new ones.

The result was a fundamental split of war gaming into two groups: the old games with umpires who were little more than record-keepers and rigid rules; and "free" games in which the experts were allowed to use tactical sense to decide the outcome of engagements in the absence of rules. In the free games, the dice too were thrown out—the umpires, not chance, determined the outcome of engagements.

**The Best Laid Plans.** In England, the greatest exponent of the *Kriegsspiel* was the military reformer Spenser Wilkinson who, among many other things, convinced the British military to adopt the German General Staff system (much respected throughout Europe after the German victories of 1866 and 1870). In 1874, Wilkinson formed the Oxford *Kriegsspiel* Club and, later, the Manchester Tactical Society, where he and his fellow enthusiasts busily translated German military texts and made their own contributions to the art of war gaming.

One of Wilkinson's major publications was *Essays on the War Game*. In it, he pointed out the dangers of overrelying on war games or misinterpreting their results.

In computer parlance there's the term, *garbage in, garbage out*, and the concept applies to war games as well—ancient or modern. Games are no better than the assumptions or data that go into them, and, no matter how good the data, no game should be taken as a blueprint for an actual campaign. The Germans, despite their expertise at war gaming, only gained this wisdom after the disastrous consequences of the Schlieffen Plan.

Named after German General Staff chief Alfred von Schlieffen, this plan was developed between 1894 and 1905 and represented Germany's intention to invade France through Belgium. Many of the decisions that were based on the plan (actually an extended series of war games) eventually led to Germany's defeat in World War I.

The plan accurately indicated that the invasion would require greater manpower than Germany had. Schlieffen ignored this. It failed to take into account severe Belgian resistance to being used as a steppingstone to France, and the possibility of British intervention was not figured into the plan at all. Also, such material considerations as the invention of barbed wire and improved French weaponry, together with the psychological factors of morale and the will to resist, were grossly underestimated or completely discounted.

The Germans didn't realize that, by having German officers play the part of the French in the games, they would unconsciously wind up expecting the French to respond as Germans would—a potentially fatal miscalculation. Maintaining the realism of the other side is still a major concern of war gamers. Germany's combination of errors in the play of the game led to the failure of the invasion and the rapid descent into the muddy, bloody trench warfare of World War I.

**No Cheating.** War games played a part in another disaster, this one involving the Japanese in World War II. But this time the games weren't at fault; quite the contrary.

The Japanese had been working on war games since the turn of the century and had become quite sophisticated. But, during the war, their commanders showed a penchant for juggling the outcomes of the games in Japan's favor.

One such juggling act led them to believe in an unrealistically low estimate of American naval strength and an unrealistically high survival rate for Japanese carriers in the planned attack on the Midway Islands. The preparatory games showed that several vital Japanese carriers would be lost, but the admirals arbitrarily decided that no vessels would be lost and denied all requests that the invasion be delayed.

During the actual battle, Japan lost two-thirds of her carriers to American dive bombers—exactly the number the original version of the game had predicted. Midway turned out to be the decisive victory that turned the war in the Pacific in America's favor.

**The Input Problem.** Traditionally, war games have improved in sophistication and accuracy either by having their results tested in actual battle or through data acquired in recent wars. Because of this, American strategists took to war games slowly; at the end of the nineteenth century there were no significant wars in recent memory on which to construct games (the Civil War was not considered sufficiently modern).

An opposite example of the relevancy of real war to war gaming involves German war gaming of the Battle of the Bulge. When the actual battle began, the strategists in Berlin updated their game with actual reports coming in from the front. Even such updates, of course, didn't help much.

The advent of the Cold War presented significant problems in war gaming. How is it possible to construct scenarios for such events as a tactical nuclear strike (or, for that matter, an all-out nuclear exchange) when there is no information upon which to base conclusions? True, the results of Hiroshima and Nagasaki should provide some background for war gaming in the nuclear age. But the destruction of those two cities almost forty years ago can't help political and military leaders avoid today's crises involving other countries—crises that could lead to nuclear war.

The result is that, since the fifties, American strategists have spent as much time creating political and social scenarios as military ones. And the players are no longer limited to Pentagon experts but include representatives from the White House, the State Department, and the CIA.

Because politico-military games are expected to provide accu-

rate predictions of how other powers (such as the Russians or the Chinese) will react to American initiatives, it is necessary for the player representing that country to respond as those leaders would. This is difficult, if not impossible, since no American can know precisely how the Russian or Chinese political and military mentality works. In fact, enhancing the realism of the red (enemy) player is a major goal of war game experts, both military and academic.

**The Battle of Santa Monica.** The politico-military game had its origins at the Rand Corporation in Santa Monica, California, in 1954. Social scientist Herbert Goldhamer proposed a technique whereby some players would represent certain governments and others would represent nature. In Goldhamer's game, *nature* consisted of those forces over which the governments had no control, such as the deaths of leaders, unexpected resource shortages, natural disasters, and the like.

Eventually, it was discovered that because the games presented so many possibilities to be explored and took months to complete, they weren't the best method for long-range predictions, and they were abandoned. Nonetheless, Rand has continued to develop war games, and has become the nation's major think tank on the subject.

Of the hundreds of reports, memoranda, and books that Rand has produced since the fifties, most are classified. But the list of those that are not shows that war game techniques have been applied to many areas other than confrontation. For example, there are games designed to educate players on the supply logistics for an air force base or the best techniques for storing spare parts. Game studies are also used by the commercial sector to improve such operations as inventory and personnel allocation.

A Rand report divides games into four basic types, which, during an actual game, are interdependent.

(1) Mathematical games that fall under the heading of game

theory. Here a matrix is used to match up the various strategies available to one side with the strategies available to the other. Numbers in the matrix denote the outcome of the two strategies.

(2) Machine (that is, computer) and man-machine games. The natural advantage of computer gaming is speed: hundreds or thousands of scenarios can be examined in a relatively short time. The disadvantage of mathematical and computer games is their rigidity. There is no room for the moment-to-moment tactical decisions, involving human intuition and subtlety, found in games played by experts alone.

(3) Board and bookkeeping games. Board games are usually direct descendants of the Prussian games of von Reisswitz. Bookkeeping games employ entries on score sheets rather than actual pieces on a board. These games are naturally much slower than computer games but have the advantage of allowing the players a virtually unlimited set of decisions, something even the fastest computers lack.

(4) Umpired games. These can involve a single player against an umpire who represents both nature and the opposition or two players whose strategies are evaluated by the umpire (usually an experienced, high-ranking Pentagon official).

The military prefers umpired games because they present the opportunity for a "learn-as-you-play" approach. Players and observers can discuss the success or failure of any given tactic, thereby gaining more immediate insights into strategy than are possible from studying scoresheets or computer printouts. Umpired games are largely descended from the free games created by Colonel von Verdy du Vernois.

**Modern Times.** Board games available in games stores, such as *Waterloo* or *PanzerBlitz*, are a relatively recent phenomenon. In 1953, Charles S. Roberts created a game called *Tactics*. It consisted of a board, with a grid of squares colored to represent different

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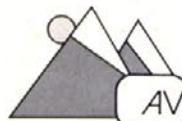
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types of terrain, and cardboard pieces printed with strength and movement, factors based on how well each piece fought with other pieces and how far it could move. The armies were imaginary; the battle they fought had no historical counterpart.

Subsequently, Roberts formed the company Avalon Hill to produce games commercially. Its first product was *Gettysburg*, the first board game to simulate an actual battle. For his game *D-Day*, he replaced the squares with a hexagonal grid, solving the problem of how to move the pieces in all directions. He got the idea from the master of war games, the Rand Corporation.

Roberts's innovations made him the Henry Ford of board war games. Before, war game pieces were expensive to produce (and to acquire); Avalon Hill games, like Ford's Model T, were within the budget of just about anyone.

Avalon Hill had the market cornered until 1970, when James Dunnigan and Redmond Simonson took over the magazine *Strategy and Tactics* and formed Simulations Publications, Inc. (SPI). By taking a more aggressive marketing approach and publishing more games per year (twelve to Avalon Hill's two), SPI attained the sales level of its competitor within three years. The two companies now publish about three-quarters of all board war games sold. A recent upstart, however, is TSR Games, publisher of the ubiquitously popular *Dungeons and Dragons*.

The scope of war games extends across the entire spectrum—from games that attempt to reenact historical battles as accurately as possible (such as *Gettysburg* or *Waterloo*) to games that allow a great deal of historical revision, like *Diplomacy*, which allows players to reorient completely the alliances of turn-of-the-century Europe. Then there are the science fiction games, among them *After the Holocaust* and *Ogre*. Lastly, there are fantasy games, including *Temple of Apshai*, *Wizardry*, and the *Ultima* series.

The games that don't rely heavily on historical accuracy are the most popular because they allow players to use free imagination rather than only strategic thinking. They also permit examination of such interesting possibilities as, "What if Germany and England were allied against France in World War I?" Or, "What if Germany decided not to invade Russia in World War II?"

**Crimea River.** Computer war games generally take after their board counterparts. Since there's no need for a board or pieces, most of these games consist of only a disk and a book of rules (sometimes a rather lengthy volume). Still, they employ all the conventions of board games: the hexagonal grid, the various levels and strengths of the pieces, and similar rules.

One advantage of computer games over board games is that the gaming enthusiast has a constant partner. The computer plays any number of games without complaining and is never a sore loser. In fact, most computer games are so challenging that it's usually the human who is the sore loser.

Computers also eliminate the mass of records that must be kept during board games—all the data is in the computer's memory. Some computer games, such as *The Road to Gettysburg* and *Napoleon's Campaigns: 1813 and 1815*, provide a hex map and pieces to help the player keep better track of the exact battlefield situation.

Many computer games are electronic versions of existing board games. There are board and computer versions of the *Battle of Shiloh*, most major World War II campaigns, and space battles loosely based on *Star Trek*.

Recently, word got out that the military was scouting video game arcades for future talent to run its new high-tech weapons systems. Little came of this, mostly because the teenagers, when questioned between sessions of *Pac-Man* and *Donkey Kong*, said they weren't interested in the military—only in the games.

That ancient Hindu pacifist who invented chess as a replacement for war may not have been wrong, but before his time. Now, instead of imagining a Neanderthal chief playing with rocks, picture presidents Reagan and Brezhnev deciding the future of Afghanistan over a game of *Crimea*. SL

# The War Game Matrix

Game theory may be the most peaceful form of confrontation known to man (other than competitive tanning). In general, it is the technique of using mathematical models to predict the outcome of various possible strategies.

The strategies available to one side (*blue*) are matched up with the strategies available to the other (*red*) in a matrix.

For example, red has two routes over which it can move its troops and materiel in a planned attack on blue. One route is slow but offers concealment; the other is much faster but leaves red exposed to an attack by blue. In the matrix, the slow-but-safe route would be strategy A and the fast-but-exposed route would be strategy B.

Blue, who does not know which route red will take, has two sets of troops to deploy against red. One is small; the other is large and effective. Blue must choose which group to deploy against each possible route red might take—the large group against the concealed route and the small group against the open route (strategy A) or vice versa (strategy B).

The matrix comes into play when the two sets of strategies are compared. For example, if red decides to move his force over the slow-but-concealed route (strategy A) while blue decides to pit his large force against the fast route and his small force against the concealed route, then the matrix indicates that red will lose one regiment (or platoon, or tank—whatever the numbers in the matrix are designed to represent).

		Red Strategies	
		A	B
Blue Strategies	A	2	2
	B	1	3

This is a simple example of gaming theory. In practice, the matrices are much larger, involving many more sets of strategies. SL

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Asked to name his current favorite Apple games, the head of TG Products immediately replies, "Castle Wolfenstein, Choplifter, and Cannonball Blitz." What else would you expect from the man whose first product was the joystick for the Apple computer?

Now chief of a company that bears his initials, Ted Gillam has always been good at spotting an opportunity and seizing it.

When he was a freshman majoring in engineering, Gillam was required to take a one-hour computer class. "On my way out each day, I noticed all the index cards on the bulletin board advertising for computer programmers and operators and figured, 'Hey, I'm passing up some good money here.'"

When finals were over, Gillam received a "C" for his efforts. Undaunted, he added his own name to the bulletin board as a programmer for hire, charged twice as much for services, and got just as much response.

After earning a bachelor's degree in industrial engineering, Gillam went to work for General Motors in production control applications. From there, he switched over to Scientific Data Systems.

Gillam left the technology field and spent the next four years with a certified public accounting firm as a consultant. He worked the following six years with Perkin-Elmer, a computer manufacturer whose products are used in seismographics and in the space shuttle.

"Having been in management for so many years, I felt myself becoming somewhat of a technical dinosaur; my job wasn't allowing the technical growth I wanted," he explains. By December 1979, Gillam was ready for a new challenge. The feeling of stagnation and his inquisitive twelve-year-old son prompted him to purchase an Apple II.

**Four-Point Solution.** When Gillam compared the game software on the market with his own programming ideas and abilities, it struck him that he could do some programming on his own. But he soon discovered that most good games required four-directional movement (up, down, left, and right). He found that using two paddles was just too awkward and concluded that there had to be a better way.

There was a better way, and Gillam found it in the joystick, one module that would control all four directions of movement.

Gillam constructed his own joystick. When he took to the road to promote it, the response was, "If you can make them, we'll buy them." And make them he did. Gillam was soon traveling four days a week, hitting every area east of the Rockies except New England.

But while Gillam was on the road for himself and simultaneously working full time for Perkin-Elmer, someone else was assembling his joysticks—his family.

# New Players

"We're a close-knit group at home; without my family, TG Products wouldn't be around," Gillam says. While Gillam was away, his wife Joyce and children Richard and Leigh Anne were at home keeping up the production end of the business.

"They were totally supportive. Joyce began by packing the joysticks, and then the kids got involved, too. Sometimes they would be up until midnight or one in the morning putting joysticks together and getting them ready for delivery. They're a great bunch."

Though still working at Perkin-Elmer, Gillam began his proprietorship in March 1980 and incorporated TG Products in May 1981. Though TG Products was a part-time business, it had outgrown the confines of his living room. Gillam had to find someone to handle the increased production for him, and this led him to Phoenix-Lamar, based in Austin, Texas.

TG's relationship with Phoenix-Lamar was brief; Gillam turned his business into a full-time endeavor three months later in August 1981. But the relationship was not uneventful. From Phoenix-Lamar Gillam recruited Terry Lewis, TG's production manager.

"He made me an offer that I just couldn't pass up," Lewis recalls. "I was frustrated with my position, and this was an opportunity to do something new and exciting."

**The Clock Struck One.** Another recruit to TG Products was Gillam's coworker from Perkin-Elmer, Marilyn Bengtson. When Gillam left the company to work full time for TG, Bengtson came along. Unlike Lewis, Bengtson did not need a formal offer. "We had talked about it many times at work, and we both knew it was simply a question of time," she explains.

Bengtson handled the business management aspect of TG until her husband's job transfer required a move to Chicago. But this didn't take Bengtson away from TG.

With two children away at college, Bengtson foresaw dull days ahead. Instead, she handles TG's midwestern sales from her Chicago home.

TG's underlying philosophy is to produce superior products, even though it may cost a bit more.

"I've seen a lot of junk on the market and have received less than what I paid for several times," Gillam says. "Nobody's perfect, and sometimes, no matter how much you test something, it will break in the hands of the user."

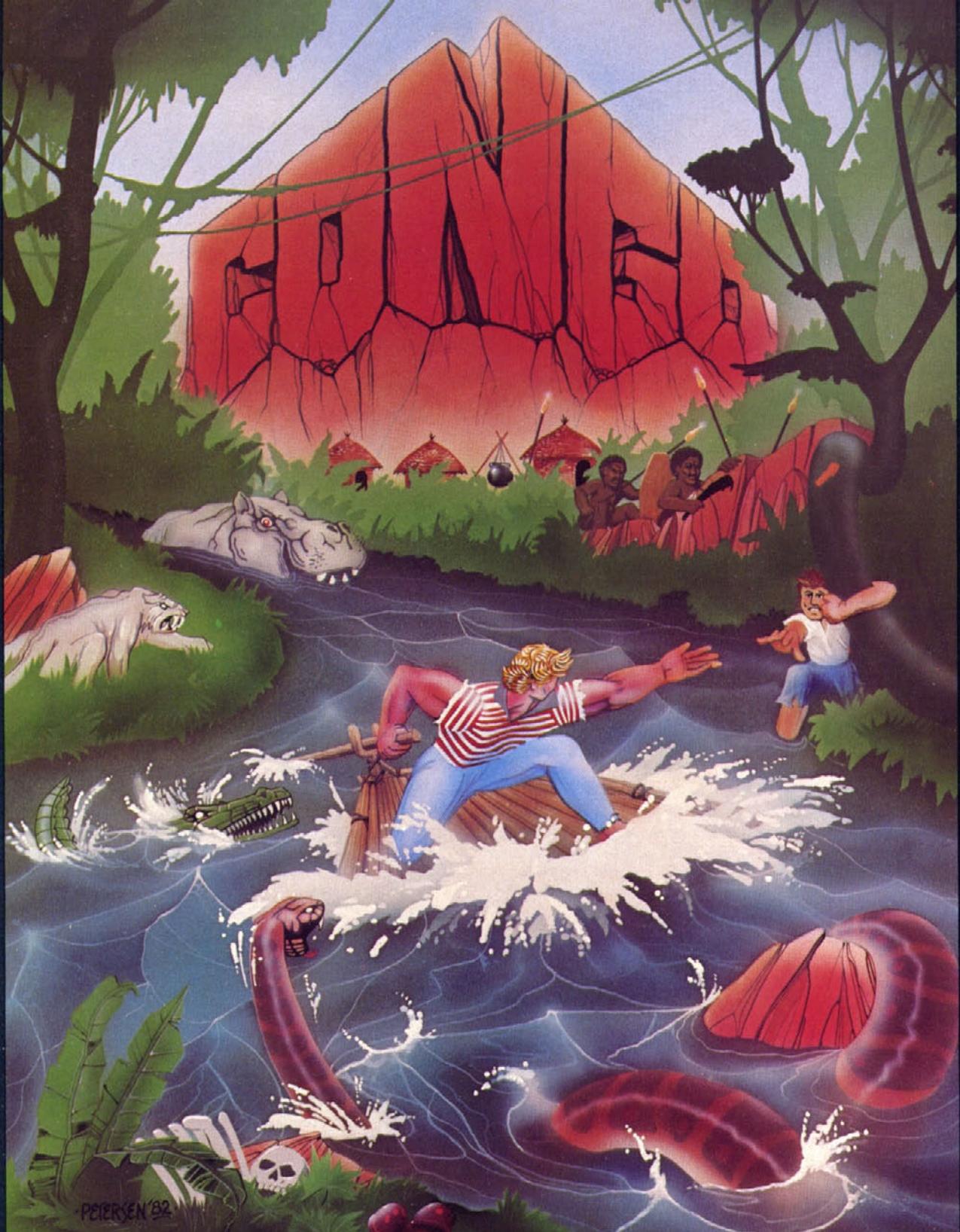
Gillam believes strongly in providing service to buyers. Any TG product under warranty will be repaired free; after ninety days it will be fixed for a nominal service charge.

Terry Lewis does his part to ensure that the firm's products will never need repair. "All our products are hand assembled to avoid workmanship defects. The main problem is that we are tied to suppliers, and once in a while we may receive a part that isn't top quality."

**Testing, One, Two.** "We have written test programs for the potentiometers in the paddles," Lewis continues, "and joysticks are tested on certain games." As for endurance, TG employees can sit down at any of five Apples before, during, and after work to test the products' durability.

TG's products are not confined to paddles and joysticks. Select-a-Port, which provides switch-selectable sockets to extend the Apple's game port, was born from Gillam's frustration with lifting his monitor from the Apple and removing the lid just to change modules.

Currently in the works are joysticks for the IBM pc and the Apple III; the joystick for the latter will be accompanied by an emulator disk to make more Apple II games playable on the Apple III. TG also plans to expand its line to paddles for the IBM, joysticks for other machines, and a track ball for those spin-the-ball-type arcade games. SL



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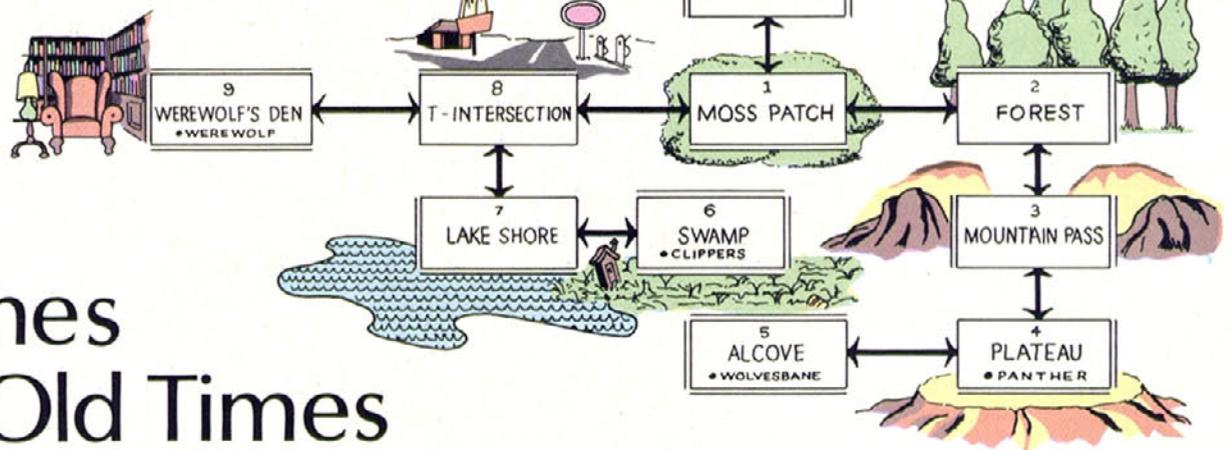
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# Adventures in Adventuring

## Themes Like Old Times



by KEN ROSE

Let's talk a little bit about times and time and how these concepts relate to computer gaming.

Take a look at the ads in the issue of *Softline* that you hold in your hands. Of all the games you see advertised, how many are contemporary? That is, how many take place in the reality of today's world?

Most arcade-style computer games tend to be set in the future, full of spaceships and alien monsters, while the puzzle-type adventure games are set in fantasyland, with ghosties and ghoulies and things that go bump in the night. If an era in a computer game is identified, it tends to be the prehistoric or mythological past or the future. Certainly there are exceptions—*Beer Run*, *Castle Wolfenstein*, and *Deadline* come to mind—that have an element of contemporary realism, but the vast majority of the games we know and love are not set in today's world.

Why isn't anyone interested in playing *Nine to Five*, *On Golden Pond*, *A Day at the Office*, *Widget Assembly Line*, or *Twelve Hours Driving a Truck from Natchez to Mobile*? Why? Because it's dull.

The element of time or elsewhere or otherwise comes into play because computer game players are creatures of imagination. We like to see ourselves in the role of dragonslayer or spaceship pilot or warrior or elf or savior of the universe. There is no satisfaction in turning on your computer and assuming the role of student if you've been in school all day or playing *Accountant* if you've just come in from eight or nine hours of adding numbers at the office. Moving the player into a different role in a different time is a requisite to almost every successful game on the market today.

The difference between "times" and *time* is that time is used within programs as a unit of measure. How fast does the computer react to the player pushing a key? How many times (turns) does it take to accomplish a given goal? How long has the game been in progress before you can reach a goal?

You may have heard that all computers contain a clock. This clock exists, but it is actually a signal that generates regular periodic voltage pulses that are used to time events in the central processing unit. For our purposes, this clock isn't very useful. You can also purchase a clock board for most microcomputers that will allow you to time events in real time. Because such devices are expensive, no game currently on the market requires one.

In some programs, for-next loops are used to time events. Using the second hand of a watch, it's easy to figure out the amount of

real time it takes for a=1 to 1000 to run. Once you know this, you can incorporate a routine within the loop that will watch for a key being pressed on the keyboard. The amount of time spent in the loop can then be calculated and displayed or used. The actual method is beyond the scope of this article but it's discussed in the programming manuals for your computer.

The easiest way to control time is to set up a counter that keeps track each time a move is made. These moves can be called hours, or minutes, or stardates, and they can be incremented every time another move is made. This is the technique illustrated in this month's program. All other routines used in the program have been described in previous *Softline* articles. Look in the rem statements for references to the appropriate issues.

And now, without further ado, let us present:

### *The Werewolf Howls at Dawn*

```

10 DIM A$(13),M$(30),N(13),S(13),E(13),W(13)
20 FOR A = 1 TO 12
30 READ A$(A)
40 NEXT A: REM THIS READS IN ROOM DESCRIPTION DATA
50 FOR A = 1 TO 12
60 READ N(A),S(A),E(A),W(A)
70 NEXT A: REM THIS READS IN ROOM VECTORS. SEE ARTICLE
  "FROM HERE TO THERE AND BACK AGAIN" IN MAY 1982
  ISSUE OF SOFTLINE FOR COMPLETE DETAILS ON HOW IT
  WORKS
80 O(1) = 12:O(2) = 6:O(3) = 5:O(4) = 4: REM O(1) IS THE
  CATNIP, O(2) IS THE PLANT CLIPPERS, O(3) IS THE
  WOLVESBANE, AND O(4) IS THE PANTHER
90 FOR A = 1 TO 6: READ M$(A): NEXT A
100 M = 24: REM YOU HAVE 24 MOVES
110 R = 1: REM YOU START OUT IN ROOM #1
120 HR = 12:MI = 0: REM IT'S 12 PM, WITH 0 MINUTES
130 HOME
140 GOSUB 1600: REM THIS SUBROUTINE DISPLAYS THE GAME
  INSTRUCTIONS
150 GOSUB 1800: REM THIS SUBROUTINE DESCRIBES THE GAME
  SITUATION
200 REM THE PROGRAM PROPER STARTS HERE
210 PRINT A$(R): PRINT : REM THIS DISPLAYS THE ROOM
  MESSAGE OF THE ROOM YOU'RE IN.
  
```

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```

220 REM LINES 230 THROUGH 260 CHECK THE OBJECT LIST TO
    SEE IF YOU'RE IN A ROOM CONTAINING AN OBJECT. MORE
    ON THIS NEXT ISSUE.
230 IF O(1) = R THEN PRINT "THERE IS CATNIP HERE": PRINT
240 IF O(2) = R THEN PRINT "THERE ARE PLANT CLIPPERS HERE":
    PRINT
250 IF O(3) = R THEN PRINT "THERE IS WOLVESBANE HERE":
    PRINT
260 IF O(4) = R THEN PRINT "THERE IS A PANTHER HERE THAT
    GUARDS A PASSAGE TO THE WEST": PRINT
300 REM FOLLOWING IS THE TIME KEEPING SECTION. THE
    VARIABLE "M" KEEPS TRACK OF THE NUMBER OF MOVES
    YOU HAVE LEFT. IN LINE 100, M IS SET TO 24, THE NUMBER
    OF MOVES YOU HAVE LEFT.
310 REM THE VARIABLES "HR" AND "MI" ARE FOR THE HOURS
    AND MINUTES. YOU SHOULD BE ABLE TO FIGURE OUT
    HOW LINE 320 WORKS TO KEEP TRACK OF THE TIME IN 15
    MINUTE CHUNKS.
320 MI = MI + 15: IF MI = 60 THEN MI = 0:HR = HR + 1: IF HR >
    12 THEN HR = 1
330 IF MI = 0 THEN PRINT M$(HR): PRINT
340 IF HR = 6 THEN PRINT : GOTO 1470
350 REM FOLLOWING ARE THE DISPLAYS FOR THE TIME AND
    THE ROUTINE ASKING WHAT YOU WANT TO DO
360 PRINT HR;" ":"MI: IF MI = 0 THEN PRINT MI:
370 INPUT " AM  COMMAND: ":"C$: HOME
380 IF C$ = "GO" THEN PRINT : INPUT "GO WHERE? ":"C$: PRINT
    : GOTO 430
390 IF C$ = "GET" THEN 600
400 IF C$ = "CUT" THEN 800
410 IF C$ = "THROW" THEN 700
420 IF C$ = "EAT" THEN 900
430 REM LINES 440 THROUGH 550 ARE PART OF THAT MOVING
    AROUND ROUTINE FROM THE MAY ISSUE. NOT VERY
    COMPLICATED, HUH?
440 IF C$ = "N" AND N(R) > 0 THEN R = N(R): GOTO 200
450 IF C$ = "NORTH" AND N(R) > 0 THEN R = N(R): GOTO 200
460 IF C$ = "S" AND S(R) > 0 THEN R = S(R): GOTO 200
470 IF C$ = "SOUTH" AND S(R) > 0 THEN R = S(R): GOTO 200
480 IF C$ = "E" AND E(R) > 0 THEN R = E(R): GOTO 200
490 IF C$ = "EAST" AND E(R) > 0 THEN R = E(R): GOTO 200
500 IF O(4) = R AND C$ = "WEST" THEN PRINT "SORRY, THE
    PANTHER WON'T LET YOU PASS...ALIVE!!!": PRINT :
    GOTO 200
510 IF O(4) = R AND C$ = "W" THEN PRINT "SORRY, THE
    PANTHER WON'T LET YOU PASS...ALIVE!!!": PRINT :
    GOTO 200
520 IF C$ = "W" AND W(R) > 0 THEN R = W(R): GOTO 200
530 IF C$ = "WEST" AND W(R) > 0 THEN R = W(R): GOTO 200
540 REM *** THIS IS IF THE COMMAND IS ILLEGAL ***
550 PRINT "I CANNOT DO THAT": PRINT : GOTO 200
600 REM THIS ROUTINE GETS THINGS FOR YOU. MORE TOO
    ON THIS NEXT ISSUE.
610 INPUT "WHAT DO YOU WANT TO GET? ":"C$: PRINT
620 IF C$ = "CATNIP" AND O(1) = R THEN O(1) = 0:I(1) = 1:
    PRINT "YOU GOT IT": PRINT : GOTO 200
630 IF C$ = "CLIPPERS" AND O(2) = R THEN O(2) = 0:I(2) = 1:
    PRINT "YOU GOT IT": PRINT : GOTO 200
640 IF C$ = "WOLVESBANE" AND O(3) = R AND WC = 1 THEN
    O(3) = 0:I(3) = 1: PRINT "YOU GOT IT": PRINT : GOTO 200:
    REM IF WC IS 1 THEN THE WOLVESBANE IS CUT
650 IF C$ = "WEREWOLF" AND R = 9 THEN PRINT "OH NO YOU
    WOKE HIM UP AND HERE HE COMES.": PRINT: PRINT "YOU
    LOSE": END
660 IF C$ = "PANTHER" AND R = 4 THEN PRINT "THE PANTHER
    GETS YOU": PRINT : PRINT "YOU LOSE.": END
670 PRINT "I CANNOT": PRINT : GOTO 200
    
```

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## OUT OF THE ORDINARY



700 REM YOU'LL NEED TO THROW THE CATNIP AND THIS TELLS  
THE PROGRAM WHERE AND HOW

710 INPUT "WHAT DO YOU WANT TO THROW? ";C\$: PRINT  
720 IF C\$ = "CATNIP" AND I(1) = 1 AND O(4) = R THEN I(1) = 0:  
PRINT "YOU THROW THE CATNIP INTO A PIT. THE PANTHER  
TUMBLES IN AFTER IT.": PRINT :O(4) = 0: GOTO 200

730 PRINT : PRINT "YOU CAN'T DO THAT HERE": GOTO 200  
800 REM SUBROUTINE FOR CUTTING  
810 IF I(2) = 0 THEN GOTO 850  
820 INPUT "WHAT AM I TO CUT? ";C\$: PRINT  
830 IF C\$ = "WOLVESBANE" AND R = 5 THEN WC = 1: PRINT  
"THE WOLVESBANE IS CUT!!!": PRINT : GOTO 200  
840 PRINT "I CANNOT CUT THAT": PRINT : GOTO 200  
850 PRINT "I CANNOT CUT WITHOUT THE CLIPPERS.": PRINT :  
GOTO 200

900 REM THIS IS THE EATING ROUTINE  
910 IF I(3) = 1 THEN 930  
920 PRINT "I DON'T HAVE ANY WOLVESBANE.": PRINT : GOTO  
200

930 REM THIS IS THE WINNING ROUTINE  
940 HOME : PRINT "A SURGE OF ENERGY RUSHES THROUGH  
YOUR BODY AND YOU FEEL REJUVENATED."  
950 PRINT : PRINT "YOU'RE CURED AND YOU'VE WON THIS  
GAME."  
960 PRINT : PRINT "UNFORTUNATELY, BECAUSE OF ALL THE  
COMMOTION A WEREPIG RUSHES FROM THE BUSHES,  
NIPS YOU ON THE LEG AND FLEES...BUT THAT'S ANOTHER  
GAME!!!"  
970 END  
1000 REM ROOM DESCRIPTIONS  
1010 DATA "YOU ARE AT A MOSS PATCH. TO THE EAST, THERE IS  
FOREST. TO THE WEST, A SMALL PATH. AND TO THE  
NORTH, A CAVE ENTRANCE."

1020 DATA "YOU ARE IN A FOREST. TALL TREES SURROUND  
YOU. TO THE NORTH AND EAST ARE IMPASSIBLE  
MOUNTAINS; BUT TO THE SOUTH THERE LOOKS LIKE  
THERE IS A PATH THROUGH."  
1030 DATA "YOU ARE ON A PASS THROUGH THE  
MOUNTAINS. GIANT MOUNTAINS THOUSANDS OF FEET  
HIGH ARE ON EITHER SIDE OF YOU, BUT TO THE SOUTH,  
THE PATH CONTINUES ON."  
1040 DATA "YOU HAVE REACHED A PLATEAU. GRASS IS RICHLY  
DISTRIBUTED HERE, A FEW SHEEP CRINGE IN FEAR, AND  
RUN AWAY AS YOU APPROACH."  
1050 DATA "YOU ARE IN A SMALL DARK ALCOVE"  
1060 DATA "YOU HAVE COME UPON A DENSE SWAMP.  
PASSAGE MOVING ANYWHERE BUT BACK TO THE WEST  
IS IMPOSSIBLE."  
1070 DATA "YOU ARE AT THE SHORE OF A SMALL, BUT VERY  
DEEP LAKE. THE WATERS ARE IN TURMOIL, MAKING  
SWIMMING IMPOSSIBLE. THERE IS A SMALL PATH LEADING  
EAST."  
1080 DATA "YOU ARE AT A 'T' INTERSECTION. YOU CAN GO  
EAST, WEST OR SOUTH. THE PATH YOU'RE ON SEEMS TO  
HAVE BEEN USED BY A LARGE WILD ANIMAL."  
1090 DATA "YOU ARE IN THE DEN OF A WEREWOLF. THE  
WEREWOLF IS HERE EITHER UNCONSCIOUS OR SLEEPING.  
IT HAS A LARGE BUMP ON ITS HEAD."  
1100 DATA "YOU ARE AT A CAVE ENTRANCE. THE INTERIOR OF  
THE CAVE STRETCHES NORTH. TO THE SOUTH IS A MOSS  
PATCH."  
1110 DATA "YOU ARE IN A VERY SMALL CAVE. IT TURNS  
(TIGHTLY) TO THE EAST AND TO THE SOUTH."  
1120 DATA "YOU HAVE REACHED THE END OF THE CAVE. THERE  
IS BARELY ENOUGH ROOM TO TURN AROUND AND GET  
OUT."

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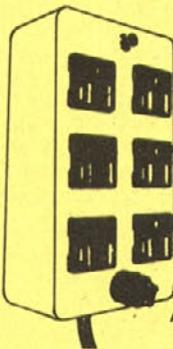
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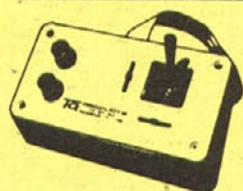
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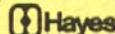
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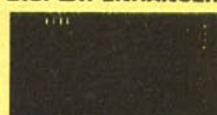
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1250 DATA 0,0,4,0  
1260 DATA 0,0,0,7  
1270 DATA 8,0,6,0  
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1290 DATA 0,0,8,0  
1300 DATA 11,1,0,0  
1310 DATA 0,10,12,0  
1320 DATA 0,0,0,11  
1400 REM YOU'RE TURNING INTO A WEREWOLF DESCRIPTIONS  
1410 DATA "YOU SUDDENLY FEEL YOU NEED A SHAVE... ALL OVER!!!!"  
1420 DATA "YOU SCRATCH AT A FLEA ON YOUR NECK... WITH YOUR LEFT FOOT."  
1430 DATA "YOU HAVE AN INTENSE CRAVING FOR A MILK BONE."  
1440 DATA "YOU'RE GETTING ANGRY... YOU WANT TO KILL AND MAIM."  
1450 DATA "THE SKY IS BEGINNING TO GET LIGHT. YOU HAVE AN INTENSE DESIRE TO HOWL."  
1460 DATA "YOU DROP TO ALL FOURS AND TUCK YOUR TAIL BETWEEN YOUR LEGS."  
1470 REM YOU'VE LOST  
1480 PRINT "YOU TURN INTO A WEREWOLF AND BEGIN HOWLING AT THE RISING SUN."  
1490 PRINT : PRINT "YOU ARE NETTED BY THE LOCAL DOGCATCHER AND AFTER BEING KEPT FOR THREE DAYS SENT TO THE LOCAL ZOO WHERE YOU ARE KEPT IN A CAGE NEXT TO NASTASSIA KINSKI."  
1500 END  
1600 REM INSTRUCTIONS  
1610 PRINT "THIS INTRICATE GAME USES ONE WORD"  
1620 PRINT "COMMANDS. THE VOCABULARY CONSISTS OF"  
1630 PRINT "THE WORDS 'GO', 'GET', 'CUT', 'EAT' AND"  
1640 PRINT "'THROW' AND THE DIRECTIONS 'N', 'S',"  
1650 PRINT "'E' AND 'W' WHICH STAND FOR 'NORTH', "  
1660 PRINT "'SOUTH', 'EAST' AND 'WEST' RESPECTIVELY."  
1670 PRINT  
1680 PRINT "AS THE GAME BEGINS, IT IS MIDNIGHT"  
1690 PRINT "YOU HAVE UNTIL SIX IN THE MORNING TO "  
1700 PRINT "SAVE YOURSELF. GOOD LUCK!"  
1710 VTAB 23: PRINT "PRESS ANY KEY TO CONTINUE.":; GET AS\$  
1720 RETURN  
1800 HOME : PRINT "THE LAST THING YOU REMEMBERED WAS"  
1810 PRINT "HITTING A LARGE MEAN DOG-LIKE CREATURE"  
1820 PRINT "OVER THE HEAD WITH YOUR SILVER HANDLED"  
1830 PRINT "CANE. LOOKING UP YOU SEE A FULL MOON."  
1840 PRINT "IN THE DISTANCE YOU HEAR THE "  
1850 PRINT "CHURCH CLOCK CHIME MIDNIGHT."  
1860 PRINT  
1870 PRINT "LOOKING DOWN YOU SEE A WOLF-TAG."  
1880 PRINT "ON IT ARE THE WORDS:"  
1890 PRINT  
1900 PRINT "CAUTION...THIS ANIMAL HAS BEEN"  
1910 PRINT "INOCULATED WITH WEREWOLF SIMPLEX II."  
1920 PRINT "IF BITTEN TAKE WOLVESBANE IMMEDIATELY"  
1930 PRINT "(IF NOT SOONER)."  
1940 PRINT  
1950 PRINT "HIS NAME IS LARRY."  
1960 PRINT : PRINT "IT IS MIDNIGHT."  
1970 VTAB 23: PRINT "PRESS ANY KEY TO CONTINUE.":; GET AS\$  
1980 HOME  
1990 RETURN  
2000 REM BY MICHAEL A. ROSE

# Things To Come Bitten by the Atari Bug

K-Byte is releasing three new ROM cartridges: *K-Razy Kritters* in mid-July and *K-Star Patrol* and *K-Razy Antiks* in September.

These games are all fast-moving, action-packed, and original. The graphics and sounds are marvelous (in *K-Razy Kritters* there are ten colors in the opening play field). The detailing is excellent and all three games have a pause feature and an attract mode—a first for cartridges. Currently K-Byte is only writing for the Atari, and it shows. They know this machine inside and out and they know what Atari home arcaders want.

*K-Razy Kritters* starts out with eight columns of Kritters, ten per column, each one in its own little box. As you shoot the boxes, you release them to attack you; you must dodge them or they will swoop down and destroy your ship. You cannot shoot at them to destroy them. However, there are more Kritters that travel down the paths between the columns. These Kritters fly straight down and can be shot off the screen. Periodically a big Kritter flies across the top of the screen—hitting him earns you a free ship. Each screen gives you one Super Bullet that can wipe out an entire column of Kritters, and you can accumulate them to use on the faster levels when you will really need them.

You'll recognize the Droid from *K-Razy Shoot-Out*; it drives a bulldozer that comes out to clean up the debris when one of your ships is hit. (With ardent arcaders in mind, K-Byte has given you the option to program out this feature.) It does give you a break between ships, and it's worth watching, but real gamers may want to skip it during the heat of play. This clean-up crew takes its time. (The fact that you have the option to remove it shows real consideration for the user.) Another character from *K-Razy Shoot-Out* charms with an appearance after you've successfully cleared a screen. *K-Razy Kritters* is a one-player game with ten skill levels.

*K-Star Patrol* is a defend-your-planet game. Your fleet uses missiles to stave off a continual onslaught of attackers. The patrol is vertically aligned on the left side of the screen, as bombs and attackers rise from the planet's surface. There are hydrogen-fueled shields that protect your fleet. You must refuel your shields by dipping into the water that runs through the rocky terrain scrolling across the bottom of the screen.

You have an ultimate weapon, which must be saved for the Super Scavenger. Nothing kills the Super Scavenger, but it can be deflected by your lasers. Once it encompasses your ship, you can only shake it loose by releasing your all-powerful "smart bomb," which rattles the roof and shakes the screen.

This game is fast and fair and should well satisfy space arcaders. It has K-Byte's trademark of excellent graphics, music, and sound—and a new twist in scoreboard representation. *K-Star Patrol* can be played by one or two players.

Coin-op games spawned the home-arcade market; it's unheard of for a home-arcade game to be translated for the arcades. *K-Razy Antiks* could be the one to change all that. This a unique game, definitely arcade quality.

It offers four ants running around a maze; you can select one of six mazes, each with ninety-nine levels to conquer. You are the fifth ant, and it's your job to get the four bad ants before they get you. Not so simple! Your lives are controlled by your eggs, and if you have laid an egg before you are eaten you will be reborn. No egg, no more game.

The bad ants also lay eggs and will regenerate as long as they have eggs in the maze. If you eat one of their eggs, you become

radioactive and can lay an exploding egg. This is your chance to destroy the bad ants.

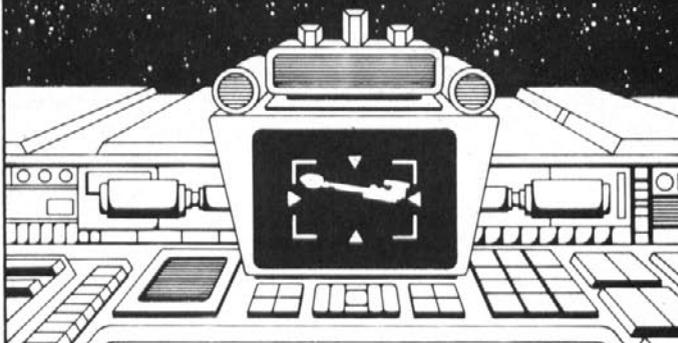
You do have some outside help; however, these assistants can also mean the end of you. First there's the anteater, who sticks its tongue into the maze and sucks up everything it can. Then there's Mother Nature—the top of the screen erupts in a downpour and, as the water pools up from the bottom of the screen, it drowns all living creatures. If you clear all four bad ants, you'll be treated to four new ants marching into the maze to the tune of "The Ants Go Marching Two by Two"—or "When Johnny Comes Marching Home Again" for those of a previous generation.

*K-Razy Antiks* is outstanding, with great animation, sound, music, and action.

K-Byte, since its release of *K-Razy Shoot-Out*, is totally committed to the Atari home computer. Not only a game company, it has released *K-DOS*, which is an alternate disk operating system, and *K-COM*, a communications package. Its parent company, Kay Enterprises, is involved in robotics, the automobile industry, and micro-processing technology. With thirty-five programmers, K-Byte is planning educational software for the Atari and a 6502 tutorial for the complete novice.

With the release of *K-Razy Kritters*, *K-Star Patrol*, and *K-Razy Antiks*, K-Byte establishes itself as one of the top software producers for the Atari home computer. SL

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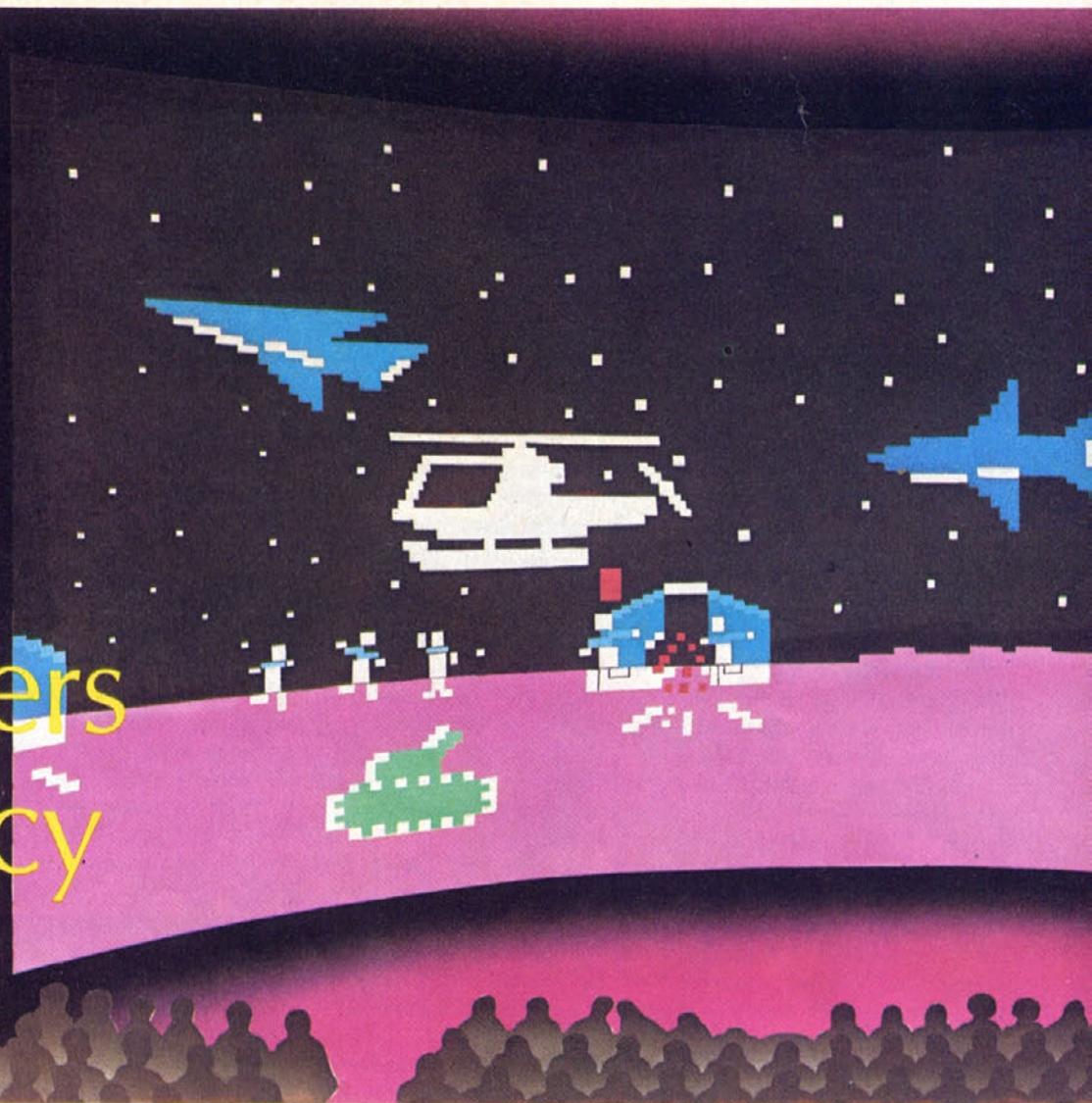
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by JIM SALMONS



"War is a matter of statistics to those who give the orders and a matter of life or death to those who carry them out. Success of a mission is relative. Generals speak of 'minimal acceptable levels of casualties' to attain a military objective. Success is measured in terms of loss of life and equipment in pursuit of goals and ideals."

Fellini, Huston, Spielberg, move over: Dan Gorlin has arrived.

Just when you thought it was safe to ignore the incessant stream of variations on the *Space Invader* theme, Gorlin decides to unleash his creative talents on the Apple to present us with what may well be the first Interactive Computer-Assisted Animated Movie. A fusion of arcade gaming, simulation, and filmic visual aesthetics, *Choplifter* is destined to occupy a place in the software Hall of Fame.

"Like most of us, I've watched a lot of television and movies, so I know what I like to see," Gorlin remarked recently. "And I just wasn't seeing what I liked in arcade-type games."

What Gorlin wasn't seeing was the use of the broad range of image processing preferences we have developed in this culture. These image preferences are like the implicit linguistic preferences we subconsciously apply when deciding whether an utterance sounds grammatically correct. Linguistic theorists speak of "performance" and "competence"—that puzzling ability to perform or speak a natural language without being able to verbalize the semantic rules that explain why certain words go together while others make gibberish.

**Celluloid Dreamers.** Having been exposed to a lot of television and film, most people in this culture have developed a "cinematic vocabulary," a set of predispositions to feel more comfortable when stories are told using certain visual images. In recent years, psychiatrists even report an increased frequency of patients describing dreams with detail befitting the shooting script for a movie, replete with close-ups, camera pans, and fade-outs. An intimate revelation is communicated between whispering lips in a close-up; a handheld camera shot intensifies the frantic feel of a rowdy crowd scene.

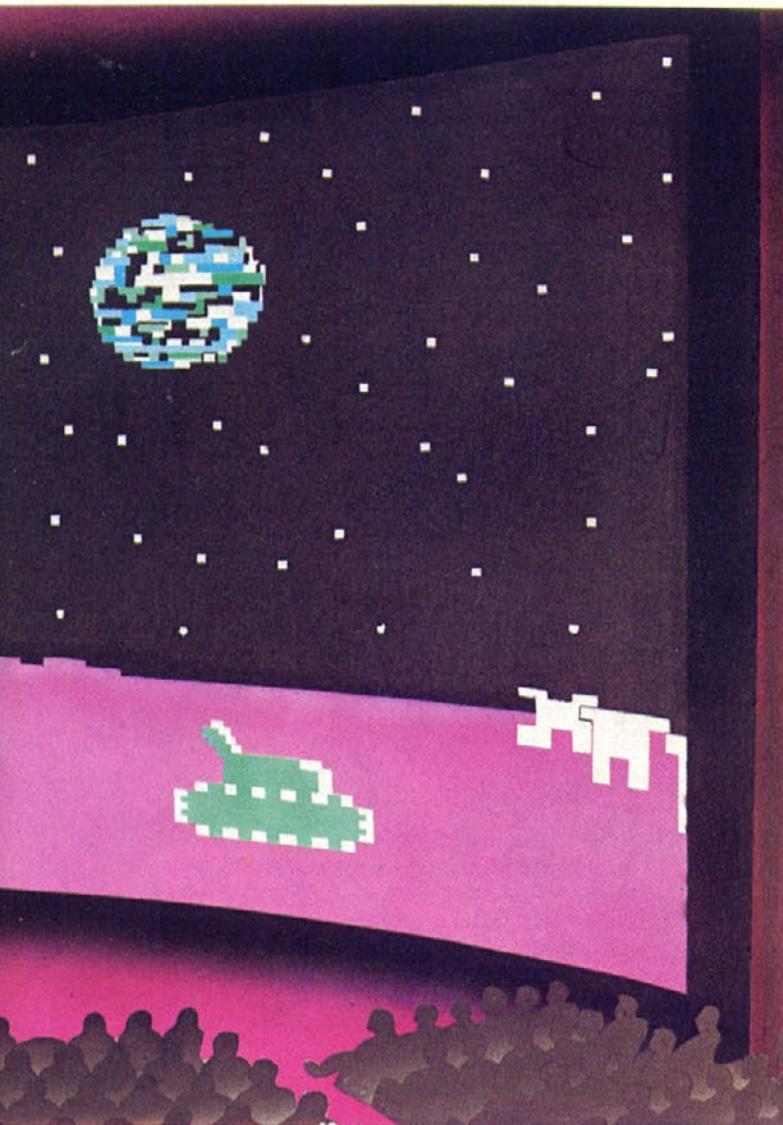
A director can make or break a movie depending on how well his visual images enhance viewers' vicarious participation in the unfolding story. In this sense, Dan Gorlin might seem more like *Choplifter's* director than its author. He applied his skills as a programmer to his goal: to provide an interactive, animated story in which he would see what he liked on the video display of the Apple he had borrowed from his gadget-collecting grandfather.

Gorlin did not explicitly set out to make an animated, movie-like game.

"I started fooling around with animated graphics on the Apple. I was intrigued by the challenge of doing a joystick-controlled helicopter. The physics of its motion is so complex and interesting.

"After I got the chopper flying around I had to put it somewhere, so I added the moving scenery. Then I added the tanks and planes. The idea of the hostages came last and really rounded out the scenario.

"I just kept adding what made it feel right to me. A story developed and I kept fooling around with the graphics until they looked



right. Because the game developed a storylike scenario, movie camera techniques seemed appropriate, so the graphics grew out of the development of a scenario that required a movielike presentation. For instance, it just seemed right to have the final message be 'The End' instead of 'Game Over.'"

And just what might one expect from an Interactive Computer-Assisted Animated Movie game? Prior to purchase, magazine advertising and point-of-purchase packaging communicate an idea of what to expect from a new game. Too often, these sources of information are marketers' and artists' conceptions of what the game ought to be like to play. Too often, expectations are not met.

**The Universal Hero.** Unrealized potential is pleasantly not the case with *Choplifter*. The packaging is simple but effective. A wrap-around card protects the program disk, a full-color illustration depicts an action-packed battle scene on the front, and the back carries an enticing introduction urging the prospective buyer to become a hero—a hero of grand proportions.

The Bungeling Empire, a nation of militaristic ideologues, has kidnapped the sixty-four delegates to the United Nations Conference on Peace and Child Rearing. The hostages are imprisoned in four barracks. By virtue of an old treaty, the United States has a free-zone Postal Service building with protected status inside the territory. Three helicopters have been smuggled in disguised as mail-sorting machines.

The mission: fly into the empire, rescue the hostages, and return them to the post office so that discussions on world peace can begin in earnest.

Who can resist? Nasties holding nice folks whose "crime" is being interested in peace and kids. Throw in a slice of apple pie and just about anybody would jump into that chopper in the name of Truth, Justice, and the American Way. But remember, no one ever said being a hero would be easy.

The post office helipad and fluttering stars and stripes recede as the chopper crosses a pylon border that marks the Bungeling Empire. Twinkling stars and a full moon illuminate the background, while the scenery passes below.

The first chopper is not harassed by air attack, though Bungeling tanks can destroy it while it's on the ground to pick up hostages. Only after a copter has returned some hostages to safety do the Bungelings call in air support—streaking jet fighters that fire twin air-to-air missiles. With stray missiles and cannon shots exploding everywhere, the situation becomes a nightmare for the hostages.

**The Sheep Look Up.** The hostages are detailed little figures who behave amazingly like you would expect innocent folks to while running about in a scene where all hell is breaking loose. While the chopper is high and moving in, they pause to stand tall and wave as if to say, "Hey, we're over here. Please help us!"

These innocent victims then begin a desperate dash to meet the chopper wherever it lands. If the chopper takes off or a heated battle begins, some hostages may retreat, while others make a beeline in a last ditch effort to jump aboard despite tank blasts and air strafing.

When hostages make it to the chopper, they actually bend over and climb in the door. When the chopper has not landed solidly, a frantic group of hostages wildly scrambles at the chopper doors. If the pilot attempts to settle in such a hysterical crowd, lives can be lost under the landing gear.

Upon safe arrival back at the landing pad, the delegates pile out of the chopper. Most scamper straight for the front door of the post office; a few stop to turn and wave thanks to the hero for a job well done.

With just sixteen seats in the chopper, it takes at least four runs into enemy territory to rescue the hostages. If the tanks and jet fighters are unsuccessful in stopping the mission, Bungeling leaders unleash their most deadly weapons—drone air mines that float relentlessly toward the chopper, their presence creating deadly obstacles in crowded airspace until they're blasted away by the chopper's Gatling gun. Gatling gun?

That's right. The scenario calls for a hero, but even the peace-loving United Nations wouldn't send one in without some defensive weaponry. The rapid-fire cannon can be turned against the tanks and planes. And, like any real gun, it doesn't make value judgments. As its wielder, you must exercise extreme care not to produce "friendly fire." The mission is to rescue, not to kill.

**Wings of the Dove.** About Broderbund's role in the game's design, Gorlin explained, "They taught me about playability. They helped me with control of the joystick.

"The first *Choplifter* I showed Broderbund was too realistic, too much a helicopter simulation. De-emphasizing the weight of the calculations that simulated the vertical force control of the rotors made the chopper more flyable to the average player. I hated to see the realism go, but it did improve the game. In a lot of ways, Broderbund helped me fine-tune and polish the presentation."

And a polished presentation it is, the result of six months' program development.

In the process, Gorlin has exploited the potential of the two-button joystick; while most games provide joystick control as an option, *Choplifter* requires it.

Most computer games use a rather unreal movement, which, incidentally, signals the brain, "This must be a video game. I can't ex-

pect the ship to move the way it would in reality." Not so in Gorlin's creation.

The *Choplifter* joystick controls a helicopter, not a caricature of a helicopter on a video monitor. There's a distinction, and you can feel it the first flight out.

The chopper has a hovering feel to it. A sustained push of one button kicks the chopper around to face left or right, though the joystick allows left or right movement regardless of the chopper's orientation. This orientation is useful for covering the long distances between the post office and the hostage barracks. It's also the orientation used to counterattack the jet fighters that swoop out of the background and attack the chopper from the left or right.

A short button push puts the chopper into tank attack posture, facing front to the camera's-eye view. This makes it possible for the chopper to attack tanks in the foreground. With practice, you begin to develop an intuitive feel for the flight characteristics of the chopper, and the battle aerobatics become awesome.

Such subtle flight control is vital to a successful mission, because that Gatling gun, activated by the other button, is locked in the straight-ahead position. Aiming the cannon is accomplished by pointing the chopper in the appropriate direction and tilting its nose, bringing the gun into alignment with the target.

Of course, each aim and fire movement results in a follow-through motion. So the hero is caught in a harrowing game of cat and mouse where timing is everything. In the midst of this melee, you (you're the hero, remember?) must pick up the hostages without endangering their lives.

As a simulation, *Choplifter* forces player decisions, with resulting insights, well beyond those required in typical video games. There are situations in the heat of battle where split-second decisions must be made, such as whether to wait for the sixteenth hostage to scramble across the screen even as a tank and a couple of jets are fast approaching firing range. Risk all for one? Is being a hero dying for that last person or making it back with fifteen?

Such questions lead to insights not unlike the gruesome lessons to be learned from today's world news.

War is a matter of statistics to those who give the orders and a matter of life or death to those who have to carry them out. Success of a mission is relative. Generals speak of "minimal acceptable levels of casualties" to attain a military objective. Success is measured in terms of loss of life and equipment in pursuit of goals and ideals.

In the *Choplifter* scenario, the sixty-four delegates are worth the risk of three helicopters and pilots. If three choppers are shot down, the mission is scrapped, regardless of how many hostages are saved, killed, or still captive. If the helicopters survive, then as soon as all hostages are safe or dead the scenario ends.

Scoring is simple. Only the number of hostages dead, the number in the chopper, and the number safe at the post office are dis-



Creator, programmer, director Dan Gorlin.

played. You get no points for destroying tanks or planes.

Your temperament and values determine whether aggressive behavior is warranted. Sometimes, you can't avoid it. On other occasions, it's righteous reflex, as in retaliation for an enemy tank having just obliterated a huddled mass of frightened hostages.

No matter what heroics were involved, when all hostages are accounted for or all choppers lost, a transformation occurs. The eyes of the hero turn into the eyes of the general reading the dead and rescued statistics. What is the measure of success? Were three helicopters lost worth the return of six hostages? Though sixty were returned, did four have to die?

**The Answer, My Friend.** The best resolution is sixty-four saved without losing a helicopter. The worst is total loss of choppers and hostages. In reality, the results seem inevitably in between.

So they seem in *Choplifter*.

*Choplifter* takes place in the midst of an altercation between hostiles. The situation requires you to fight. You are there because the enemy has committed an act of war. In all these things *Choplifter* is a war game.

Yet, in *Choplifter*, you join in battle to defend, not to destroy. Your goal is to save lives, not to kill. Your purpose is to prevent war, not to wage it. In all these things, *Choplifter* is an antiwar game—perhaps even a peace game.

If you look closely at the little people waving, you see their hope and excitement, their faith in you; you see their innocence. This makes *Choplifter* hard to play. It hurts to see one of those lively people killed by your landing gear or by the tank you missed. You may feel you want to turn the game off and go back to alien invaders; after all, you don't need to feel pain over a computer game.

But isn't this just a hint of how you'd feel if it were real? If you were the pilot and this were Iran two years ago? Shouldn't you go on anyway and get rid of the bad feeling not by tuning out, but by doing all you can to see the hostages safely home?

Maybe there is something we could do in real life, too, instead of turning off the seven o'clock news.

SL

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# Gameline

## The Pursuit of the Graf Spee

By Joel Billings.

The sinking of the German pocket battleship *Graf Spee* got a lot of attention in 1939 because it was the only Allied victory in the first four months of World War II. Since then, it really hasn't been much in the news, but even if it's an obscure event, it makes a dandy computer war game. *Pursuit of the Graf Spee* is an excellent example of how a computer serves as a referee in a game where both sides only know part of what's happening. The game uses a system similar to Strategic Simulations's *Computer Bismarck*, only this time improved; it's faster, simpler, and just as much fun to play.

As the British commander, you have two aircraft carriers, four heavy cruisers, five light cruisers, and the battle cruiser *Renown* with which to find and sink the marauder. The German commander (which is the computer in solitaire mode) has only the *Graf Spee* and one supply ship, the *Altmark*. In his favor, these ships are already loose in the Atlantic; there's no need to break through a blockade like the *Bismarck* had to.

The game begins on December 1, 1939, and proceeds in sequential turns, each cycle representing half a day. The strategic picture is displayed on a hi-res color map of the Atlantic. Ports are marked with anchor symbols and the major shipping lanes are indicated with small white dots. Lightly traveled routes have just one dot per zone, heavily traveled lanes have three dots, and areas of extremely dense traffic near busy ports have nine dots. The shipping density plays an important part in the game. The *Graf Spee* is more likely to find victims in the crowded lanes; those are the places most likely to be patrolled by the Allied ships, which is also a danger.

Each ship on the map is represented by a single letter: G for the *Graf Spee*, E for *Exeter*, and so on. Giving orders consists of telling a ship to patrol or to move in one of eight compass directions. You don't need to repeat movement commands every turn; ships will continue to sail in a given direction until handed new orders or until they run out of ocean (at which point they will randomly patrol). A patrol order to a ship in port will cause it to refuel and attempt to repair any damage.

When all orders are complete, the computer moves all the ships and checks for contact with enemy forces. Success during the search phase depends on weather, the number of ships present, and whether they are patrolling or moving. If either side finds an enemy freighter, it is automatically sunk with a 50 percent chance of radiating its location and the identity of its attacker. If opposing warships sight each other, the game enters the tactical mode to resolve combat; this can happen two or three times in a game.

Once you become familiar with the game, it proceeds quite rapidly. An entire fifty-turn game would take about three to four hours, but many games will end before this.

Victory is determined by points gained according to enemy ships sunk and friendly key ships surviving. You may stop the game at any time if, say, either side gets too far ahead. One excellent feature of *Graf Spee*'s end-of-game routine is that it shows you the route the *Graf Spee* and *Altmark* followed, turn by turn.

The tactical mode has a reasonable surface combat system that takes into account armor thickness, gun caliber, range, and targeting ability. Since the computer keeps track of these details, it is easy to use. Players set the speed and course for each ship and select targets. Each group of guns—bow, stern and secondaries—may fire at different ranges as long as the target is within firing range. Ships with torpedoes can't reload during battles; they can only fire them once per combat. Ships' positions are displayed on a crude battle map—crude because it is a text display rather than a hi-res graphics one. Using a letter symbol for each ship, it displays ship status,

speed, course, and range to target. If you want to try the tactical mode without preliminaries, there is an option to begin the game on December 13 and replay the Battle of the River Plate.

If you want more detailed action, any battle in the game may be resolved using a different system, such as naval miniatures or a board game. Afterward, the computer will prompt for the factors of the ships engaged. These may be entered to reflect whatever damage occurred. It is left to you to translate ship factors from one system to another.

In combat, the *Graf Spee* is vastly superior to any of the Allied ships except the *Renown*. Scattering cruisers around by themselves will certainly maximize your chances of locating the *Graf Spee*, but it will also cost you two or three cruisers and the game. Leaving your aircraft carriers unprotected is another good way to lose instantly. The best strategy seems to be forming hunter/killer groups of three or four ships—enough to pose a threat to the *Graf Spee*. These groups should patrol the shipping lanes; sooner or later the *Graf Spee* will cruise into one of these ambushes. When this happens, you must use your best tactics to shield damaged ships and close the firing range so your smaller guns can penetrate the enemy armor.

Good hunting!

BP

Apple II or Apple II Plus with Applesoft in ROM; 48K, disk. \$59.95 from Strategic Simulations, 465 Fairchild Drive, Suite 108, Mountain View, CA 94043; (415) 964-1353.

## Pac-Man

The game that captured America's fancy has been released for the Atari home computer. Both young and old players can fall in love with a circular creature who eats everything in its path. Plug in a 16K *Pac-Man* ROM cartridge, turn on your computer, and you are confronted with those four famous gremlins, Blinky, Pinky, Inky, and Clyde, and the *Pac-Man* maze.

Upon first viewing, you might ask, "Why did they change the maze?" Relax. It's still the same except that certain areas have been re-proportioned to accommodate the dimensions of your monitor.

You can start the game on any of eight levels. Beginners can start on the slow cherry level and advanced *Pac*-maniacs can battle on the much-touted key level. The speed of both *Pac-Man* and the monsters varies on the different levels. On the cherry level, for example, *Pac-Man* is faster than the gremlins, but on the strawberry level the reverse is true. The duration of the gremlins' vulnerability is also affected by the level of play.

Several books have been written on how to beat the creatures in this game. Too bad; none of those patterns apply to this version. You can develop patterns of your own, but be careful! The gremlins don't run around the maze in a random manner; instead, they react to *Pac-Man* as he travels through the maze chomping his dots, energizers, and bonus objects.

There are many variations on *Pac-Man* for home computers. *Jawbreaker* and *Ghost Hunter* are two that play off this theme. Eat-the-dots games are all unique, and playing one game is not the same as playing another.

Atari's version attempts to duplicate the original arcade game in every detail and *Pac-Man* looks and sounds like *Pac-Man* should. Atari has done itself proud with the home-computer version of the game.

GR/MR

Atari 400 or 800; 16K, cartridge. \$44.95 from Atari, 1265 Borregas Avenue, Box 427, Sunnyvale, CA 94086; (800) 538-8547; in California, (800) 672-1404.

## Bandits

By Tony and Benny Ngo.

You thought you were good when you finally made it past the Scrubs in *Sneakers*. You patted yourself on the back when you got to level 50 on *Snake Byte*. You probably even wrote to On-Line

when you saw the last character in *Threshold*. Now comes a game that challenges you to not only score hundreds of thousands of points but to discover the mystery of the last level.

Welcome to *Bandits*. In this new shoot-'em-up, you shoot the Bandits not only to score points and protect your supplies, but also because you learn to hate them—personally. Forget that you're in charge of guarding the lunar supply base and that once all the supplies are stolen the game ends. These little guys are out to make a fool of you, and the whole thing soon turns into real grudge gaming.

The format is familiar. You sit at the bottom, they attack from the top, and they outnumber you. You begin with five ships and earn an additional one every 5,000 points. Limited shield energy, which replenishes itself during play, is also available.

In the first two waves come Phalanxes I and II. They can attack one at a time or in groups. Though the name suggests deep files of bold attackers, these guys are wimps. In fact, they were probably sent as decoys. But watch out! They shoot heat-seeking missiles that know where you are if you keep still long enough. If they manage to get by you, they will pick up some of your supplies and fly back to their mothership. Hit them while they're carrying the loot and you earn extra points.

In the third wave, the Phalanxes come back for more, but this time they bring their friends, the Menaces. You can't predict when they'll show, but when they do, they live up to their name. These guys are pesky, but they don't steal any of your goods. They do keep you preoccupied and fire heat-seeking missiles that dog you even more closely than those of their buddies.

Once your ship is hit, *Bandits* replaces it immediately—giving you no breathing time. And the new ship appears just where the previous one was; if you're not quick, they'll hit you again faster than you can say, "Come on, you gunsels, try that again!" Fortunately, each new ship brings with it a full supply of shield energy.

Next come the Carriers. These are harmless enough; they don't attack, and they're worth the most points by far. The trouble is they

drop Nuisants on you, which prove to be more than just a nuisance—they're deadly, they bounce, and they follow you. There is a technique, however, to beating them and replenishing your shield energy at the same time. Figure it out and you'll be that much more ahead.

The last group are the Torrents, centipede types who drop napalm. Once past these creepy crawlers, the game really begins: Phalanxes, Menaces, Carriers, Nuisants, and Torrents come at you at once.

The supplies range from fruits to tools, ammunition, and television sets. There are twenty-eight different levels and, except for level four, each features a different item to guard.

*Bandits* offers some new features: besides the choice of sound or silence, you have the options of loud or soft volume. And for those of you who want to restart after taking some early cheap shots from the Phalanxes and losing a ship or two, control-R starts the game over without your rebooting.

Written in assembly language, this game uses color graphics to the fullest and displays everything in typically smooth Sirius animation. *Bandits* can be played with keyboard, Apple paddles, joystick, or Atari-type joystick connected to a Sirius Joyport. **MTY**

Apple II, Apple II Plus, Apple III (emulation mode); 48K, either DOS. \$34.95 from Sirius Software, 10364 Rockingham Drive, Sacramento, CA 95827; (916) 366-1195.

### Ali Baba

By Stuart Smith.

Considering the plethora of interactive adventure games on the computer software market, it stands to reason that different players are attracted by different features. Some prefer detailed graphics, others an intelligent parser, still others, sound effects.

Picture and sound, however, will not alone determine a product's staying power. Like a multi-million-dollar film comprised only of gorgeous sets and majestic music, the whole will not succeed un-

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less the parts include an imaginative plot.

Stuart Smith's *Ali Baba* displays a sense of creative humor that lifts it above routine adventure games. Every aspect of *Ali Baba* quickly draws the player's attention. The program is stuffed with pearls of wisdom, puns, jokes, and exceedingly funny situations. The text is fresh, the action fast-paced, and the options sufficient to render the game challenging to novice and expert alike.

The adventure takes place in a mountain honeycombed with chambers and secret passageways. Each chamber appears on the screen as it is reached. Access to rooms is through doors—some open, some closed. Bumping against a closed door will usually cause it to "creak open slowly," but occasionally it will only rattle or produce a bruised shoulder.

The player plays the part of Ali Baba and starts penniless, with two swords and a dagger. Though stout, Ali Baba will not last long without some form of armor, which can be purchased at several trading posts. Unfortunately, most are well guarded, two by a tiger that's the devil's own to defeat. Gold pieces are picked up in covered urns that appear along the way. Be warned, though: some of them are booby-trapped with poison needles.

One of the first runes encountered instructs the player to "Rescue Princess Buddir and hide her in the home of Ali Baba." Others are more oblique: "To rescue the princess unaided, attack only the unseen." The Royal Library is best for background information, and its most helpful advice is that the player should rest whenever possible. When Ali Baba is fatigued, "rest" will appear as one of the joystick options.

Movement is sequential. Ali Baba always moves first, and then the cursor will indicate and move any other beings, living or unliving, in the same chamber. Reinforcements are available; a few rooms contain captives. Once rescued by Ali Baba, these new characters will be controlled by his joystick. Other players may also play with additional joysticks. A further option is the ability to alter the

monster's regeneration rate. It starts at 18, and can be dropped to 0 or raised all the way to (gulp!) 127.

Fighting is quick, although it's hard for a novice Ali Baba to land a blow of much consequence. The degree of injury is indicated by the number of impact sounds and the use of different verbs: starting with a weak "jab," moving up through "clout," "smack," "smite," and others all the way up to "whomp." The player's reaction, correspondingly, starts with "Hah! Only a scratch!" and moves up to "Aiiieeeee!" Even death is not without its merits, for players do not simply kick off in this game. They "shuffle off this mortal coil," "give an obolus to Charon," or "turn the toes up to the daisies."

While the graphics are simplistic, they are recognizable. Because the tales of sultans and djinn are somewhat fanciful anyway, it seems appropriate that visuals be more stylized than precise.

The major joy of this game is its sense of discovery—its secrets, therefore, will not be spilled here. Allow plenty of time for play at first; the computer, in its infinite wisdom, will reincarnate Ali Baba for further adventures.

Finally, remember the lesson learned with the discovery of the quartered body of Cassim, the rich brother of Ali Baba: "He came to grab all of the gold, but when he went to leave, he said, 'Open Barley!'"

DB

Apple II, Apple II Plus; 48K; Atari; 32K. \$32.95 from Quality Software, 6660 Reseda Boulevard, Suite 105, Reseda, CA 91335; (213) 344-6599.

### Gold Rush

By Michael Berlyn with Harry Wilker.

*Gold Rush* is a new video game that puts you in another place and time in search of one of the world's most precious treasures while battling barbarians in the wilderness. Your mission is to find the gold and bring it to waiting mining cars. But the stakes are high, and you have to outmaneuver your enemies at every turn to avoid getting killed or robbed.

You ride in on a steam engine train, disembark, and find yourself stranded between cavalry and Indian territory. Cautious of the soldiers guarding the fort and the Indians creeping among their tepees, you set off on your way. Your best move is to wait around the fort and tepees before you head toward the forest. If by chance you cross the soldiers' paths, they will take one of your lives (of which you have three).

In the forest you must beware of the ferocious grizzly bears. It's up to you to find the hiding places throughout the forest and mountains that will help you escape the definite patterns of the enemy.

Finally, you must deal with pesty claim jumpers, who won't harm you but love to return the gold you've gathered to its original spot.

When you've delivered two loads of gold to the mining cars, friendly cavalry retrieve the gold you've collected and take it to the train. This begins a bonus round in which you have sixty seconds to deliver another round of four bags of gold, beset only by persistent claim jumpers. Succeeding earns you an extra life.

Your enemies increase in number with each successful round until you reach 40,000 points. Then the game goes back to the second pattern at twice the speed. The authors of this program have designed a game that will keep you on the edge of your seat. You can't go wrong; you'll love it.

AL

Apple II, Apple II Plus; 48K, disk. \$34.95 from Sentient Software, Box 4929, Aspen, CO 81612; (303) 925-9293.

### Chicken

By Mike Potter.

There are certain books you read because of the author and certain movies you see because of the director. As the Atari software market grows, certain programs will be purchased because of the programmer.

Mike Potter is just such a programmer. Games from Mike Potter have a professional pizzazz; fans who enjoyed Potter's *Protector*

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have been eagerly awaiting his next release. It's here from Synapse Software, it's called *Chicken*, and again Potter has created a fanciful and fun program with outstanding sound and graphics.

You control Mama Hen, who pushes a little cart along the bottom of the screen. At the top, a wily fox snatches eggs from the henhouse and drops them into the egg sifter, three rows of moving bricks with intermittent holes. As the holes line up, the eggs fall farther down until they reach the last row where they descend to the ground. As Mama Hen, you must catch the eggs in your wagon before they become candidates for Humpty Dumpty heaven.

If you allow an egg to crash, it will hatch a chick. You can continue to play as long as you do not step on it. Pushing the trigger allows you to jump over the chirping chicks. It will take some practice to coordinate your jumping, especially if you have several chicks on the ground.

You start with three hens. Every 40,000 points earns you another hen. If you can catch all the eggs in any given round, you receive bonus points. The number of eggs increases each round, the egg sifter becomes lower and faster, and the fox speeds up until he's only a blur.

You may begin play on any of sixteen levels using either joysticks or paddles; paddles are recommended for finer control. Up to four people can play.

The hi-res graphics are sharp, clean, and colorful. The animation is smooth and realistic and shows off the Atari's unique player/missile graphics. The concept started by Atari's *Avalanche* and continued in *Kaboom* from Activision has been taken further still in Synapse's *Chicken*.

GR/MR

Atari 400 or 800; 16K, disk or cassette. \$29.95 from Synapse Software, 820 Coventry Road, Kensington, CA 94707; (415) 527-7791.

#### **Star Blazer**

By Tony Suzuki.

Graceful galactic living is a thing of the past in this home-arcade

game from Broderbund. "There is evil on the loose, and men and women of good will are on the run." World War III is over and the Milky Way is in the grip of the repressive Bungeling Empire. Only one hero can save the galaxy now, and that's Star Blazer, who has lived for many years incognito.

In this hi-res, keyboard/joystick controlled game you are asked to fly a dredged-up World War III jet against a radar installation, a pair of supersonic tanks (the second shoots heat-seeking missiles), an ICBM installation, and, finally, the Bungeling Empire headquarters. You are given three jets to accomplish your mission, and it's a good thing, too, because there isn't anything easy about this game. One exception is the destruction of the radar installation, which is the first level of play and so designed to give you time to discover your jets' acrobatic maneuvering capabilities.

Throughout each of the five levels of play, you fly against time in the form of dissipating fuel reserves. Points are scored by dropping bombs on targets and firing missiles horizontally at intercepting enemy targets. You have thirty bombs, which are replenishable along with fuel, and an unlimited supply of missiles. Beware, however, as shooting missiles rapid-fire hastens the evaporation of your fuel supply. In order to refuel you must catch a refueling cell dropped by parachute from another airship which periodically flies across the top of the screen. Occasionally, a little bluebird appears on screen to spirit away the refueling package as it falls. If you're skillful enough to reach the package before the bird (a maneuver that requires increasing skill with each level of play) or some other preventive obstacle, both fuel and armaments are restored.

The game is interesting as there are many nuances to be learned by combining flying and bombing techniques (there are at least three ways to destroy the supersonic tank), but arcade games are measured by point totals, and with *Star Blazer* it isn't necessary to accrue points to move into the next level of play. This makes scoring secondary to completing each segment of the game. Another problem with this particular approach is that of repetition. Every time you use up your fleet of three warships, you must start over

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from the very beginning, and since the beginning is repetitive the tendency is to skip all the other target points and go directly for the radar. Patiently plodding through those early targets does nothing to advance you within the game.

Your frustration increases as the enemy seems to be everywhere while the fuel supply diminishes as fast as your pulse quickens. And, while frustration and the invigorating anger it inspires are two of the better qualities of arcade games, *Star Blazer* begins to wear all too early, although it does offer some of the fastest paced shooting/maneuvering available in home-arcade software. Because of this speed of play you should use the joystick, as the use of the keyboard requires 256K of manual dexterity. **NE**

Apple II, Apple II Plus; 48K, disk. Atari conversion by Solitaire Group, Atari 400, Atari 800. \$31.95 from Broderbund Software, 1938 Fourth Street, San Rafael, CA 94901; (415) 456-6424.

### The Vaults of Zurich

By Felix and Greg Herlihy.

*At that moment, Lars touched the stud on the left. The circuitry of the maze inaudibly shifted—and a last, totally unexpected barrier dropped in the victim's path, halting him just as he perceived freedom.*

*Lars, the operator, linked by the weak telepathic signal emanating from the toy, felt the suffering—not acutely, but enough to make him wish he had not touched the left-hand stud.*

—Philip K. Dick, *The Zap Gun*

The late Philip K. Dick left us a legacy of imaginary worlds, each a terrifying mixture of dream and reality, much like the world we live in. His characters are typically paranoid, uncertain of their abilities, fearful, and never quite able to escape their imaginary pursuers. So Dick invented paranoid games for them to play.

In *The Zap Gun*, a Dell reprint published in 1978, the ultimate weapon in a war between worlds is a maze game. Trapped in the

center of the maze is a roly-poly animal, the kind kids automatically love. The animal cannot win. "No matter how fast or how cleverly or how inexhaustibly he scampered, twisted, retreated, tried again, sought the one right (didn't there have to be a one right?) combination, he could never escape. He could never find freedom."

Phil Dick's hapless maze inhabitants may come to mind when you enter *The Vaults of Zurich*, far famed as impregnable, where the rich and powerful come from all over the world to deposit their wealth. The vaults are a fatal attraction for a master thief. To win the game, the thief must journey to and from the lower vaults down a maze of corridors, eluding the most sophisticated security system in the world. There are nine levels to the maze, with the ultimate treasure on the bottom level. Each time the game is played, the disposition of the maze shifts and changes.

In the Atari version, both the joystick and the keyboard are used. The joystick guides the thief's movements; the keyboard is used for other actions such as unlocking doors, fighting, and using tools. The rules of *Vaults of Zurich* are easy to learn; to win or even to reach the lower levels of the vaults is quite another matter.

Each vault contains treasures, from Swiss bank notes to Swiss cheese: tools, keys, drills, plans or explosives, plus people—employees or tourists who must be dealt with before you can proceed. It's better to bribe the people you encounter than to fight them. Not only are you spared the ignominy of defeat and having to start all over again on the first level of a totally different maze, you gain a dedicated following and whatever treasures and tools are at hand. You must have followers. You won't be able to penetrate the lower levels without a sizable band. The guards on the lower levels are tough. The people are sterner and more avaricious the deeper you descend.

The alarm will also sound if you leave a vault without successfully bribing or fighting its occupants (nonetheless, retreat is sometimes the prudent course), or if the closed circuit television goes on

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while you are in its range. Once the alarm sounds, you have twenty-five seconds to reach an unguarded stairway. If you don't make it, the game is over. If you do escape, you may lose your tools in the rush.

You have exactly two hours to reach your goal. In some attempts, you may easily penetrate five or six levels within ten or fifteen minutes. In others, the complexity of the maze may force you to backtrack again and again to gain the tools and followers you need to reach the lower levels.

On the ninth and lowest level, the office of the chairman of the board is shielded by four vault doors. You won't be able to use keys on those doors; you'll have to drill instead. And drilling takes time; two minutes for each door.

You hardly noticed the clock before. Now, you're running out of time. Not only do you have to reach the chairman's office and beat him and anyone he has with him in a fight—how many minutes will that take?—but you have to get back to the upper level of the vaults to escape. If the two hours are up, if the alarm sounds, or if you're nabbed by the guards. . . .

Dennis Zander, who is an employee of Artworx and the creator of *Rings of the Empire* and *Intruder Alert*, is responsible for the Atari version of *Vaults of Zurich*. His latest version of *Vaults* can create a nine-level maze in three seconds, while the initial Atari version and the present Pet version require more than four minutes. Atari 400 or 800; 24K; Pet. Cassette, \$21.95; disk, \$25.95 from Artworx, 150 North Main Street, Fairport, NY 14450; (800) 828-6573; in New York, (716) 425-2833. **PG**

## Trailblazer

By Games Research Group.

It's always a pleasure to run across an interesting multiplayer game on a microcomputer. Computer gaming is, for the most part, a solitary endeavor characterized by eye strain, joystick elbow, and a marked decline of social activity.

Many of the multiplayer computer games available to Apple owners today are adaptations of extant board games, usually war games, fantasy role-playing games, and strategy games. As with the nonelectronic versions of these games, the price is usually quite high and the packaging elaborate.

Among the most refreshing developments in the gaming world were the emergence of Steve Jackson Games and the Microgames from Metagaming/Games Research. Both are series of inexpensive, booklet-sized games as good as any of the slick, high-priced, boxed games. *Trailblazer* is one of the most popular Microgames; it's now available in a computer version from ZSI.

*Trailblazer* maintains the tradition established by its noncomputer predecessors. It is good—and inexpensive relative to similar game programs on the market. It offers space exploration and trading for one to four players, with an option that permits the computer to play along with any number of players. The computer isn't a tough opponent in a simple face-off, but in the multiplayer version it does add to the game by being something of a spoiler.

The game is played in four distinct phases. The object is to accumulate the greatest number of victory points in a predetermined number of rounds of game play. Victory points reflect a player's success in both commerce and exploration. The phases of play are: bidding, cargo loading and movement/exploration, cargo unloading and product sales, and finance.

Players must bid against each other for limited supplies produced on known worlds in the galaxy. The bidding is open and competitive. Sales information on the products (selling price on different worlds at different quantity levels, for example) is available at all times, as is reference information on one's fleets, location of branch offices, fleet status, star status (with information on production and consumption of goods), and galactic and local maps.

Once players have bid and purchased products for resale, they

must load the cargo onto their faster-than-light vehicles and move it to other planets for resale or warehousing in branch offices.

Providing one does not lose a fleet in space, products are unloaded and sold, and the money is then used to make further purchases in the next round as well as to pay for maintenance on ships and offices.

The finance phase is used to restructure companies: to open or close branch offices; to delete ships or cargo; and to advertise products in order to get a better selling price.

Exploration is accomplished by sending ships to empty quadrants on the galactic map, with a one-in-seven chance of discovering a new world. As the game progresses, all known worlds develop technologically, evolving into planets with starship production capabilities. At the beginning of the game there is only one such planet, Sol. Thus the goal in *Trailblazer* is twofold: accumulate wealth and develop new markets for expansion of commerce.

*Trailblazer* is much more than Outer Space Monopoly . . . as you play, you must develop marketing strategies and carefully plan ahead for several moves if you hope to survive against an astute opponent.

If the game has a bottom line, it is perhaps resource management, for without a careful watch on one's fleet, products, and offices, cash flow problems rear their ugly heads and demolish one's carefully constructed intergalactic conglomerate. With resource management as the prime concern, *Trailblazer* rises above the category of being a simple game and becomes a potential lesson for all.

In what is perhaps a quite intentional piece of irony, *Trailblazer* has a short-term path to victory: one can peddle weapons for a quick megabuck. **DA**

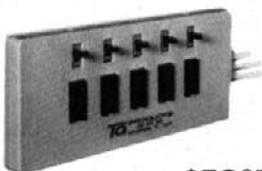
Apple II Plus; 48K, disk. \$29.95 from Zeta Systems, 1725 Adelaide Boulevard, Akron, OH 44305.

Guest reviewers in July were Dave Albert, Derrick Bang, Neil Britt, Phillip Good, Keith Landry, Bob Proctor, and Marcia and Gary Rose. **SL**

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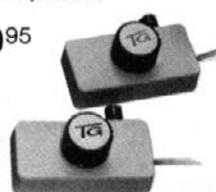
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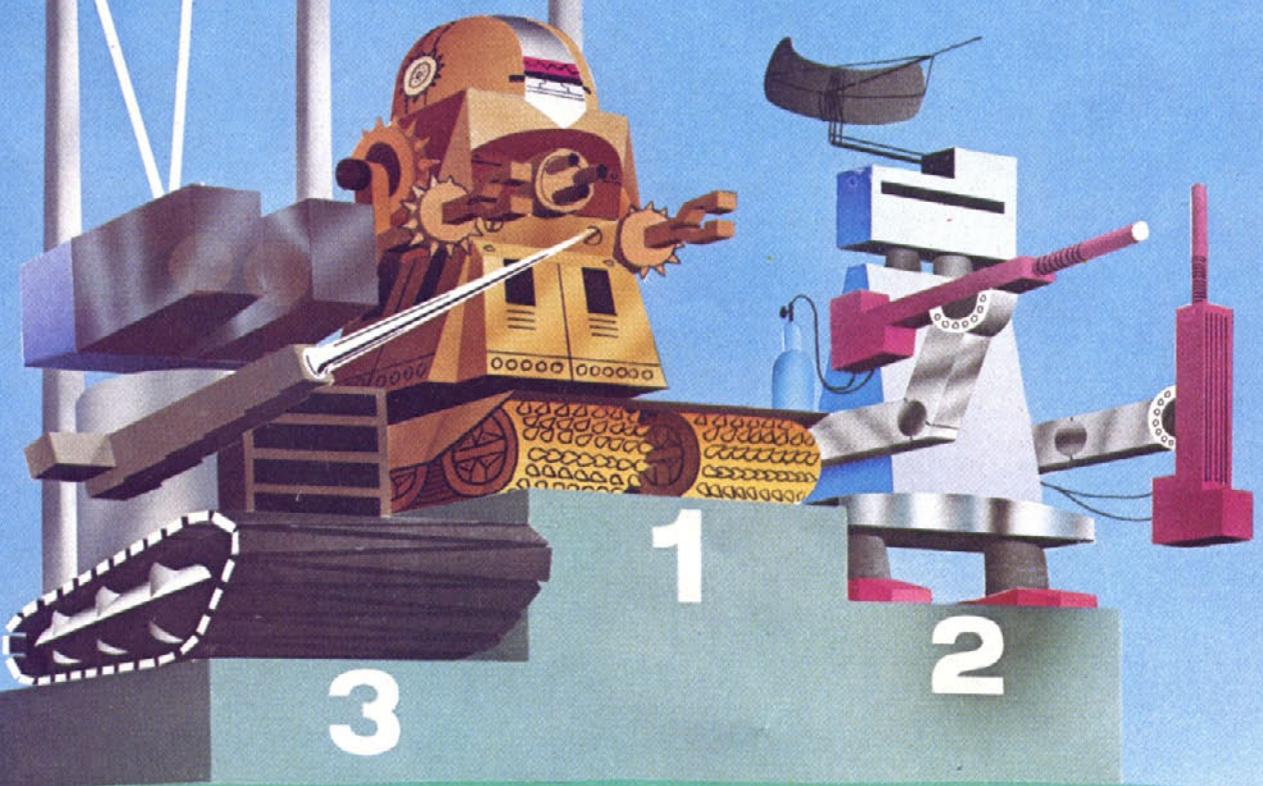


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*Tomorrow we find out. Son of Samson is our strongest creation, but only the battlefield can truly judge. The enemy is not untalented.*

*Tomorrow Son of Samson leaves the safe haven of his secret birthplace for the quickdeath Arctic Circle. On a frozen sea, our champion robot will meet and smite the enemy. His body and weapons are equal to anything they can produce—his mind is superior. Our finest programmers toiled the last three days creating a battlebrain unmatched in our experience.*

*Back here, under the mountains, we can only watch and hope that our strategies are successful. Defeat is always crushing. But how war has changed! It's become a game. A game for mechanical geniuses and computer wizards. A game with very serious consequences.*

*Tomorrow the future of our society may be determined. Millions of people will proclaim Son of Samson a hero or will curse him if he fails. Fools! They should curse us.*

*I retire now in the waning hours of this day, August 15, 2002.*

—From the diary of Commander Zack Taylor

In the waning hours of June 12, 1982, not a few southern Californians were busily preparing for a robot battle. A Mexican restaurant, not the "quickdeath" Arctic Circle, was to be the site. The battlefield: three Apple computers.

What occurred the next day at the Los Arcos restaurant in Burbank, California, did not affect the future of our society. But it was a battle to the death and there was a winner.

Frank Krogh was feeling frustrated because he had no one to compete with. Muse's *RobotWar* captured his imagination like no other program, but there was no easy way to meet and compete with others sharing his passion. So he decided to organize a *RobotWar* tournament.

**Achilles of Steel.** Frank's creation, Slowpoke, rolled away with the most points and was the winner June 13. Slowpoke barely defeated Richard Fowell's Nordan+, winner of Computer Gaming World's *RobotWar* competition earlier this year.

"The great thing about the program is random positioning at the beginning of each battle," Krogh says. "If we played the same robots again, the other guy could win."

The tournaments, which Krogh plans to stage every two months, are divided into two sets of five battles. In the early battles, as many as five robots are locked in combat at once. Every time a robot is destroyed, each surviving robot in that battle is given a point. The five robots with the greatest number of points after ten battles and a semifinal round square off in the finale.

"It would be ideal to have thirty battles," Krogh muses. "But that would take too long. This last tournament took more than seven hours."

Eight people showed up in Burbank by 11:00 a.m., including Robert Zraick, a multitalented graphics artist whose robot illustration, *Contemplating a Byte*, is a popular poster among computer owners. Zraick brought his Apple and two hastily prepared robots.

"They're called Nuts and Crazy. I brought them mainly for comic relief. Definitely underdogs. I didn't really expect much, but Nuts actually won a battle," Zraick boasts.

Another surprising performance was put in by Hank Greely's Unbroke. Greely, a lawyer, programmed Unbroke to travel in a relatively small circle.

"We all thought Hank didn't have a chance," says Krogh. "But his robot was tough for the other robots to see and shoot. He damned near won it."

*RobotWar* competition draws a mixed but devoted crowd. Michael Lombardi came all the way from Alhambra, more than an hour away by the highway. Tom McNicol is a local teenager who won second prize in the first tournament and is always a top contender.

**Gathering on the Plain of Troy.** Just what is it about *RobotWar* that makes this diverse group of computer enthusiasts so zealous? It's the game's unique challenges.

Perhaps best labeled as a strategic programming game, *RobotWar* gives you 255 instruction lines in which to create a robot. Once you grasp the programming strategies involved, 255 lines is never enough. When creating a robot, you're always compromising.

Sometimes the most elaborate strategy is defeated by a few simple but amplified tactics. Richard Fowell, creator of Nordan+, belongs to a group of *RobotWar* players at UCLA and works very hard at creating unbeatable robots.

"They're a bunch of intellectuals out there talking in math, not words," Krogh says. "They delved deeply into the program and really did a number."

"My robot works inefficiently in some ways and it shoots blindly. Nordan+ spent time accumulating information on how to get through. Mine just shoots, and it wiped him out."

Robots frequently take on personalities in the imaginations of their creators. An electronic entity, the programmed robot does the actual fighting. There are no eye-hand gymnastics involved. You're just an observer. Either your creation wins or it's blasted into worthless junk.

The personalities of the human competitors can make for a lively scene. Good-natured digs are part of the fun. The reactions during battle can be entertaining. "Oh no. Here he goes again" is one of the most frequently heard lamentations from a losing commander.

At the end of each tournament, the participants exchange robots. They all share a desire to upgrade the quality of competition, as if the game wasn't complicated enough. If there are limits to the program, Krogh and his group haven't found them yet.

**The Contest That Launched a Thousand Robots.** Krogh has a couple of ideas for luring more *RobotWar* aficionados into the fray. Forming a local club is the first logical step. The current tournaments are open to anyone and held infrequently.

Once a club is formed, team competition is possible. UCLA has a *RobotWar* club with about a dozen members. Krogh theorizes that two robots could battle another team of two robots. There would be competition within a club to see who comes up with the best team.

A national *RobotWar* tournament is an even grander scheme of Krogh's. Plans are being made for one in the fall, sponsored by Krogh.

The national tournament would invite any people with robots to mail their creations on disk to Krogh with a minimal entrance fee, probably four dollars. There will be different classifications; novices will not have to pit their robots against the masters.

Krogh will run the battles over the space of a month or so.



*RobotWar commanders, from left: Frank Krogh (seated), Richard Fowell (standing), Michael Lombardi, Robert Zraick, and Tom McNicol.*

Each robot will get at least two chances in battles against four other combatants. Once the final winner is determined, Krogh would like to send all competitors copies of the champion robot so they can upgrade their own creations.

**Beware Robots Bearing Disks.** Entrants will need to send disks with both source and object code for the robot. This is in case Krogh has to rename a robot because of duplicate names. Worthy prizes will be proffered.

The national tournament is tentatively set for this October and Krogh plans to reach as many *RobotWar* owners as he can. If you're interested in information concerning the tournament, you can write to Frank Krogh at Box 5337, North Hollywood, CA 91616.

One question left is whether Krogh himself will compete. Winning his own tournament might be considered "bad

form." But having Krogh not enter is like telling Achilles to take a walk. He'll come back with a vengeance.

Krogh is unabashedly devoted to *RobotWar*. "My computer hasn't seen anything but *RobotWar*, and occasionally *Data Factory*, for over a year. I haven't even booted some of the prizes I've won in competition."

He can tell when someone has been bitten by the *RobotWar* bug. Eugene Pritchett met Krogh at a user group meeting and attended his first tournament on June 13. Pritchett bought the program months ago, yet didn't grasp its potential until meeting Krogh.

Nowadays, Pritchett can't pull himself away from the computer. At the tournament, according to Krogh, Pritchett displayed telltale signs. "He looked like he'd been up until three in the morning the night before."

Pritchett entered the competition with Avenger II and Killer. The former placed third, while the latter was quickly killed. "He wasn't feeling too good that day," Pritchett explains.

**Son of Elysium.** Frantically keying those crucial *gosubs* and *loops* long into the morning before a tournament is typical behavior. It's one of the attractions of the game. Working hard, you try to find the winning edge, the unique set of commands that makes your robot a winner. But there's a deadline and you'll have to compromise. It's a puzzle extraordinaire.

"You can have two robots with 98 percent damage and they will still search each other out," Krogh says. "They could just touch each other and one would blow up."

Call it whimsical, call it fanatic, call it whatever you like: the *RobotWar* craze is upon us. Never will it be as pronounced a phenomenon as *Pac-Man*, but its loyal fans play this game for keeps.

Having fun, after all, can be serious business. SL



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# New Technology, New Thinking

by SHERWIN STEFFIN

As the microcomputer moves into classrooms across the country, educators and parents are trying to determine how the new technology will affect thinking, teaching, and learning. What effects, people are asking, will computers have on teachers, on learners, and on the learning process itself?

Our view is that the microcomputer has the potential to foster divergent thinking in learners, a variety of thinking that has not been encouraged much in traditional education.

**On the Same Sheet of Music.** Much of elementary and secondary education today focuses on the development of convergent thinking skills. Learners are trained to apply specified algorithms or rules to the problems they encounter.

Students in the so-called "hard" content areas, such as mathematics and the sciences, are taught to seek a single answer to a problem. For example, if they apply the requisite problem-solving and arithmetic skills, all students will reach the same answer to a problem involving a quadratic equation. Often, students are expected not only to reach the same answer to a problem as their classmates, but to apply exactly the same processes in solving it.

In the "soft" curriculum areas, such as English composition and social studies (where intended learning outcomes are less precisely defined), the best you can expect is rule-following. Far more frequently, learners are expected to engage in rote recall of events, times, places, dates, and names.

**Making Melodies.** Students who are presented with a novel situation that holds intellectual challenge—analysis and comparison of different source materials, drafting a piece of poetry or a short story, or other "creative" activity—are frequently bewildered and reluctant to attempt the task. If, after all, they have been directed by and received reinforcement from their teachers for following the rules, then the very idea of constructing their own rules will be seen as threatening. Furthermore, if students' attempts at creative thinking have met with failure, and their failure has met with negative reinforcement in the form of teacher disapproval, poor grades, or peer-group contempt, it makes sense that they have learned to avoid things that draw this kind of response.

**A Good Listener.** Into this mix we introduce the computer. The computer, if appropriately programmed, is infinitely patient. It engages in private interactions with the learner and is helpful and non-condemning. It does none of the punishing things that the learner has experienced in the past. In a very short while the learner feels free to experiment and intellectually to "play," that is, to attack problems without fear.

The computer is now becoming recognized as a tool that facilitates divergent experimental thinking. It does this by helping to create an atmosphere in which students feel relaxed and safe about thinking creatively. While this kind of atmosphere appears to be a necessary condition to divergent thinking, it is certainly not sufficient in itself. In addition to being a patient, helpful teacher, the computer must provide experiences that are rich with problem content. This content should be of enough challenge and interest that the learner will want to solve the problems for their own sakes.

Two approaches seem appropriate.

The first is what has become known as "computer literacy." Computer literacy is, fundamentally, the learner's ability to use and program the computer.

Programming, as those who have done it can attest, is rich in challenge and in the diversity of approaches by which people can

arrive at the same outcome. Put differently, there are numerous ways to solve any given programming problem.

Few learners can resist the allure of taking on and mastering the computer to solve their own problems. The popularity of computer camps, the interest young people show in computing, and the large number of young people in the computer industry support this assertion.

**Stimulating Simulations.** Another tool for fostering divergent thinking is simulation. A simulation is a mathematical or quantitative representation of complex events, either real or created. In this kind of program, learners get a chance to access complex variables and measure the results of their own interventions in problem situations.

Most of us have had some experience with simulations in our everyday lives. Perhaps the simulation with the longest history is chess. A game of chess is a paradigm for medieval warfare and has many thousands of permutations for winning.

The game requires that the player constantly analyze a series of battle parameters that relate to the positioning of the pieces, the value assigned to each piece, and the strategies applied by an opponent. Today, computer-generated chess games of varying quality abound. Computer chess play is an ideal example of a simulation model that effectively fosters risk-benefit analysis.

Chess is an example of a medieval simulation; there is another simulation device far more familiar to microcomputer owners that may be the reason many professionals originally purchased their machines. That device is the spreadsheet calculator—*VisiCalc*, *SuperCalc*, or any of that genre. Tools of this sort help business people, scientists, engineers, and other quantitatively minded individuals to ask "What if?" given the manipulation of complex mathematical variables within their own disciplines.

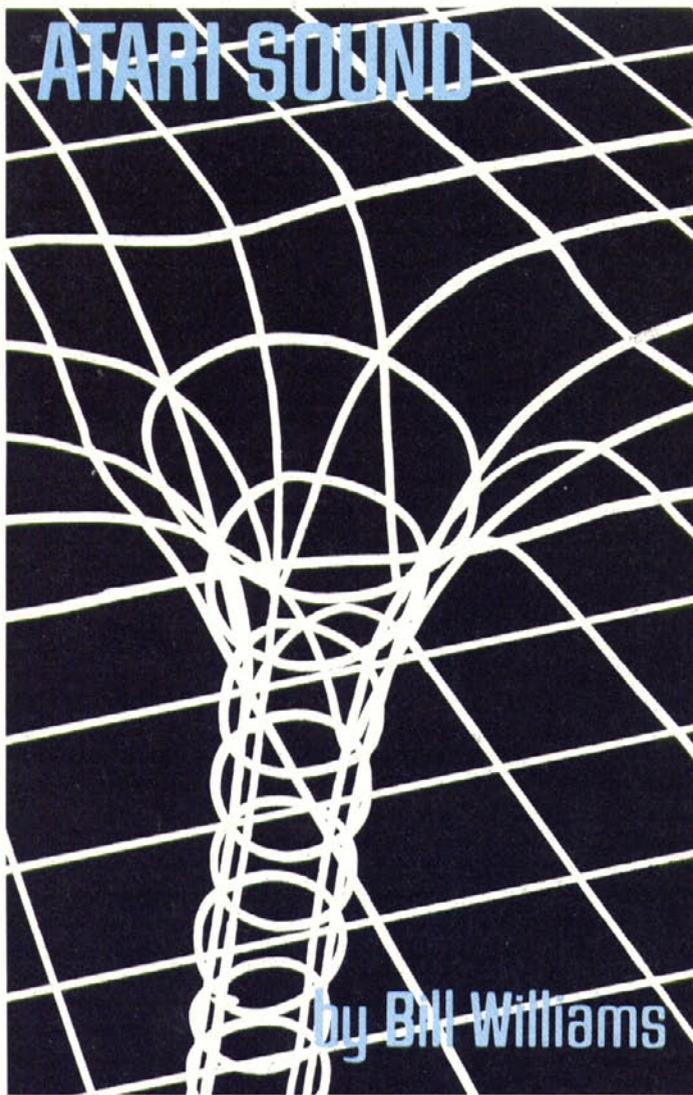
While such programs are of inestimable value and challenge to the sophisticated adult, what is there for the young learner? Simulations designed for both entertainment and instruction have only recently started to appear in the marketplace.

**Easy Listening.** The best simulations are entertaining and instructive. They are also graphic, challenging, and related to a realistic environment.

Simulations involving space travel have the potential to fulfill this set of requirements. The player's tasks in such a simulation might include adjusting a ship's trajectory to move it into a sufficiently high orbit and matching the orbit of the ship with that of another object in order to dock with or upon it successfully—all the while calculating fuel reserves, relative positions, and the velocities of both objects.

While it's easy to see the challenge of such tasks, perhaps it's not so easy to recognize that the problem solving involved is the same as you'd need to solve problems of orbital mechanics and ballistic behavior in any current high school physics course. Few of us will ever have the opportunity to manage the complexity of such tasks in space. But simulations give us a chance to make the intricacies of such a mission a part of ourselves.

Both home users and educators should expect many more powerful, useful, and entertaining simulations in the months ahead. Such programs should be considered carefully, both as vehicles for stimulating and challenging entertainment and as devices to foster the kinds of critical problem-solving skills we all claim we want learners to have.



## Pokey and the Black Holes

We live in an audible universe. Though *Homo sapiens's* primary sensory orientation to the physical world is visual, the species would not have lasted long without the ability to hear a twig suddenly snap, and it's unlikely it would ever have come to much if it had to negotiate treaties by mail. The dogfights in *Star Wars* wouldn't have kept you awake for long if they had really been fought in noiseless space. Nor will you play a game on your personal computer very long if the sounds coming from the speaker are superfluous, irritating, and otherwise poor.

Sound is an essential ingredient. The correct blend of the visual and auditory makes good games good. If you are going to write a game for the personal computer, you should know what you want it to sound like and how to get it to sound like that.

Most computers require microprocessor time for sound generation, either through assembly language coding or a function call to some sound routine provided in the operating system. In both cases the problem is the same: the calculation or graphics routine must stop for the duration of the sound. Considering the time this adds to program execution, it's no wonder that the average program drops the user into a black hole whenever it gets busy.

**The Atari Sound System.** When Atari designed their home computer system, they didn't just drop a 6502 microprocessor into a box. They also created three support chips—*Antic*, *Ctia*, and *Pokey*—to

share the functions usually provided by the 6502 alone. The versatility built into these chips is tremendous; they have horizontal and vertical fine scrolling, color-luminance control, sound generation, player/missile graphics movement and collision detection, and a host of other miscellaneous I/O operations. In each of these, the supporting chips receive their instructions from the 6502, and then carry them out while the 6502 moves on to more esoteric tasks.

Sound generation is a good example of the power inherent in this design. *Pokey* handles four independently programmable sound channels, each with its own frequency, volume, and tone registers. Programs may pass the correct parameter to these registers, and the hardware continues to produce the requested sound until the program gives it different instructions. Advanced programming techniques can extend the range of tones available, provide higher frequency resolution, insert high-pass filters into channels 1 and 2, and bypass the tone generators entirely to create custom-designed waveforms.

Many applications, however, can be adequately handled by the Atari Basic interpreter.

**The Sound Command.** Atari Basic communicates to *Pokey* via the command *Sound C,P,D,V* where *C,P,D*, and *V* are expressions for the following parameters:

**C:** Sound channel. Voices are numbered from 0 to 3.

**P:** Pitch. 0 is the highest frequency, 255 the lowest. Expressions may be higher than 255, but the pitch will "wrap around."

**D:** Distortion. Can be any even number between 0 and 14. Ten is a pure square wave, and the other numbers will mix the pitch information with various amounts of noise. Motors, explosions, and the sound of surf can easily be found by experimentation with the distortion and pitch parameters.

**V:** Volume. The loudest is 15; 0 turns the channel off. This should not be thought of as simply an alternative to the volume knob on your television set—dynamic control of a sound can often yield radically different sounds from the same waveform.

Two things should be apparent immediately about this command: there is no duration parameter, and it can only refer to a single channel at a time. Having a duration parameter would require the processor to stop and count for the duration of the sound, which is what we're trying to eliminate. The channel selection parameter is a definite plus; with it, we can have four completely different sounds at the same time, making the Atari a true polyphonic instrument.

**Filling the Void.** The task for program 1 is to initialize the popularity of three candidates in a presidential election simulation and provide a subroutine that would "poll" the states and furnish the average popularity for each candidate. This subroutine would be called whenever the candidate made a significant change in his platform or in his campaign strategy.

The sound made during initialization wasn't critical; it was provided to confirm that the program was indeed alive and running. The subroutine, however, would be used constantly during the course of the simulation. Any sound provided would have to fit into the texture of the program. It would have to have an obvious reason for its existence, enhance the atmosphere of the game, and perhaps build a little suspense during the unavoidable pause necessitated by the tabulation of data.

For the initialization sound, the loop variables *Scan* and *ldate* were pressed into service for the pitch information. Multiplying the two together produces a series of descending tones. It doesn't take very long for the user to get a feel for the sequence and anticipate how long the calculations will last. In this example, of course, the database is small and the manipulations minimal. But when the loop gets complex, it becomes vital to give the user a way of approximating the time he will have to wait. This might be compared to a long drive to a friend's house. Most people find that as they become familiar with the route the trip seems much shorter than the first time

they took it. The knowledge and anticipation of the time required greatly shortens the subjective time to the traveler.

In the averaging subroutine, data is displayed as incoming results from a nationwide poll. While the candidates huddle around the monitor, hyperactive Morse code dits and dahs away, occasionally spitting out a percentage to the cheers and groans of the participants. The tedious pause has been transformed into the excitement of election night, and involvement in the simulation has been heightened by three lines of coding: one line to randomly turn on the tone, one line to randomly turn it off, and another to stop the sound at the end of the routine.

It could be argued that the time spent selecting sounds could be better used for tabulation, thus speeding the entire process. This is true when the routine is so small that a large percentage of the coding is devoted to sound generation, as in our example. No real simulation, however, is going to be this simple, and as the length of the program increases, the audio portion's contribution to run time will be minimized, and the payoff for filling the void will become greater.

**The Least Common Denominator.** Most programs now being marketed are written for several major brands of microcomputers. Although this situation is better than the extreme exclusivity of earlier days, the sad thing is that there are very few programmers who go beyond the bare minimum of translating their program's syntax to each manufacturer's version of the language. The end result is a least common denominator program: it can run on all the available machines but uses the special features of none of them.

This is especially unfortunate for the consumer, who, by investing a considerable amount in his computer, has obviously evinced an interest in the special features of that brand. If the consumer then buys a program that uses none of these features, he will feel disappointment—if not anger.

None of this is necessary, and it is an inhibiting influence on the market. When an Atari owner buys a game from Doohickey Software and discovers that they developed their original programs on a TRS-80, he will probably stop buying programs from them. He wants a program that uses all 128 colors and stunning polyphonic sound effects; it's up to the programmer to provide them.

Next time, we'll look at music on the Atari, and examine a nifty program that simultaneously draws pretty graphics and plays four-voice randomly generated music. Until then, keep experimenting!

```

10 REM *****
20 REM *   SAMPLE PROGRAM ONE   *
30 REM *****
40 REM
50 DIM STATES(50,3),CAND(3)
60 REM
70 REM **INITIALIZE POPULARITY**
80 REM
90 FOR IDATE=1 TO 3
100 CAND(IDATE)=0
110 FOR SCAN=1 TO 50
120 STATES(SCAN,IDATE)=INT(RND(0)*30)
130 REM **MAKE A NOISE**
140 SOUND 0,SCAN*IDATE,10,6
150 NEXT SCAN
160 NEXT IDATE
170 REM **SHUT OFF SOUND**
180 SOUND 0,0,0,0
190 REM **CALL AVERAGING ROUTINE**
200 GOSUB 1000
210 REM **INITIALIZATION COMPLETE**
220 REM MAIN BODY OF PROGRAM WOULD

```

```

230 REM FOLLOW...
240 END
250 REM
260 REM
1000 REM *** AVERAGING ROUTINE ***
1010 REM
1020 GRAPHICS 0
1030 PRINT "Only 3 weeks 'til the election!"
1040 PRINT
1050 PRINT "Latest UPI Poll Results follow..."
1060 PRINT :PRINT
1070 FOR IDATE=1 TO 3
1080 PRINT "Candidate ";IDATE;" : %";
1090 FOR SCAN=1 TO 50
1100 CAND(IDATE)=CAND(IDATE)+STATES(SCAN,IDATE)
1110 REM
1120 REM *** SOUND PORTION ***
1130 REM RANDOM ON/OFF OF PURE TONE
1140 REM
1150 REM IF TRUE THEN SOUND ON
1160 IF RND(0)<0.4 THEN SOUND 0,20,10,8
1170 REM IF TRUE THEN SOUND OFF
1180 IF RND(0)<0.5 THEN SOUND 0,0,0,0
1190 NEXT SCAN
1200 REM **OUTPUT AVERAGE**
1210 CAND(IDATE)=INT(CAND(IDATE)/5)/10
1220 PRINT CAND(IDATE)
1230 NEXT IDATE
1240 REM **SHUT OFF SOUND**
1250 SOUND 0,0,0,0
1260 RETURN

```

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# HIGH SCORES

Next high-score deadline: midnight, August 16.

## Highlines

Look alive, grunts! This month, a disturbing note is sounded by **Warren Benson**, which we reprint here at length:

"Since many games have different options or levels of difficulty, why don't you specify which options or level was used? For example, in Atari *Asteroids*, my sister got 55,000 points the first time she played, using the shield option, so the 318,940 points listed in the May issue would be easy to get if one wanted to take the time, because with the shield option one can play 'chicken' and wait for good safe shots. With the flip over option, an approaching asteroid must be either blasted or dodged... I think it would be better if you listed only verified scores—after all, all other sports require it."

Good points, all. But frankly, the idea of specifying a required play mode for each and every game, present and future—many games having modes unique unto themselves—boggles the brain. We're open to suggestions. Can one ever really know how **Ken Williams** (no, not that one) got his 492,660 in *Asteroids*? And what about **Eric Czelusta's** two million-plus on *Missile Command*? How much are we being told? You Atari people probably have some explaining to do.

**Marc Tanenbaum** finally beat the 750 high for *Tranquility Base*, and would like to know "how some bum got the impossible score of 1,540." If it's any consolation, Marc, Bill Budge never scored more than 700 and he thinks it's impossible, too. **Marc Vlasak** points out that *Missile Defense* scores only in multiples of ten and could **Dennis Quinn** therefore please clarify his score of 368,796? You Apple people probably have some explaining to do, too. (So would **Mike** and **Doug Prater** for their absolutely absurd score on *Martesor*, probably the highest score ever scored for anything—had they not sent along a picture of the screen. Sure enough.)

Moving to Warren's other major point, there has been a noticeable movement toward verification of scores, which is, of course, commendable. However, if we absolutely required verification for listing, we would still have to disqualify about half of all scores received. **Rocci Cione** reports he made 82,425 on *Eliminator*, "and I'm not lying!" Okay, Rocci, but we do look for something more substantial—**Kevin Rehak** had three signatories to his score of 81,530. It puts us in something of an awkward position. **Jim David** writes of his four highs, "Even though I have no proof of these scores because I don't own a camera, I hope that you print them. I worked very long and hard hours making these scores." It would be hard to disallow such sincerity. However, Jim, you don't absolutely need a camera. We do accept parental confirmation in cases such as yours. We do not accept **Rob Lammers's** cat as a witness to his high in *David's Midnight Magic*. (But in cases such as **George De La Mater's**: we did not say, George, that you should wake up your dad at 1:00 a.m. and force him to sign your *Gobbler* score. Let's use a little tact, shall we?)

For those of you who do have cameras, we direct your attention to **Scott Schrader's** how-to in this issue's Direct-line, wherein the answers to all your questions can be found. A nation thanks you, Scott.

Disturbing Note Number 2: **Melvin L. Norell** points

# HIGH SCORES

Next high-score deadline: midnight, August 16.

## Highlines

out that *Rocket Command* is published by Norell Data Systems, and that at no point in its colorful history was Programma (R.I.P.) licensed to sell or distribute the program. Got it? Good. (Speaking of which, **Mark Rhodes** would appreciate a hint, care of this magazine, as to where the gold nugget goes after it's sent up the chute.)

In besting his own previous high score in *Borg*, **Randi Rost** reports he "got all the way in, killed Grud, got all the way out, got in and killed Grud again, and made it back to room 5 before getting nailed. The bullets do speed up at 15,000 points somewhat." Evidently.

**James Baker** went through *Threshold* four times for his 751,000 and sent in pictures of every single creature on all six levels ("More monsters out there than we think you'll ever see!" James wrote mockingly. "I don't think so.") He also aced *Apple Panic* and performed some interesting calculations to determine the ultimate possible high in the game, which we'll keep on file in case someone turns in an *Apple Panic* score beyond the realm of possibility.

**Mark Adams** found a fruit-channel loophole in *Gobler*, racking up 2,000 points a minute for his total of 484,635, unmolested. Such ingenuity is a long way from playing "chicken" in *Asteroids*; we always approve of individual initiative.

A sudden flurry of highly educated competition on *County Fair* resulted in the victory of **Dr. Selbert A. Chernila** of Los Angeles over **Dr. Steven Schwartz** of Pittsburgh: 2,141 to 1,844.

With his high on *Sheila*, **Greg Autry** notes that one may exchange points for lives, weapons, and such; thus, one's high score should be the highest achieved in the course of the game, though it may be whittled down by the end. Greg is the president of H.A.L. Labs, so we'll go along with that. *Sheila* players, take note.

Last and certainly least, **Daniel Tobias** beat out **Jeff Stanton** and **Victor De Grande** for this summer's *Crop Duster* high, correctly reporting the explosion of his computer at 99,999 as confirmation. And no, Dan, that's not a bug. The case of spare parts that comes with Slipshod's Heathkit cassette version of the game is meant to compensate for this exciting finale.

Company dismissed.

Disputed: *Asteroids*: W. Benson challenging M. Palmer over shield option.

*Missile Defense*: M. Vlasak challenging D. Quinn over point addition.

*Tranquility Base*: M. Tannenbaum challenging B. Donnelly over too-high score.

*Swashbuckler*: N. Fong challenging B. Fargo over rolling over at 255.

Disputed high scores not satisfactorily answered by defenders within one month of challenge will default to next highest score.



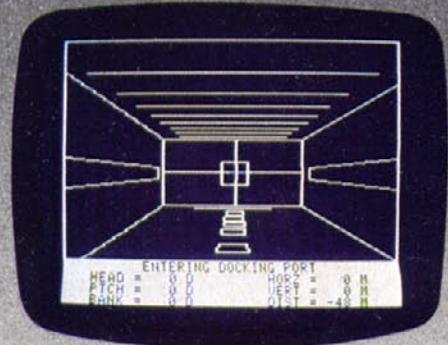
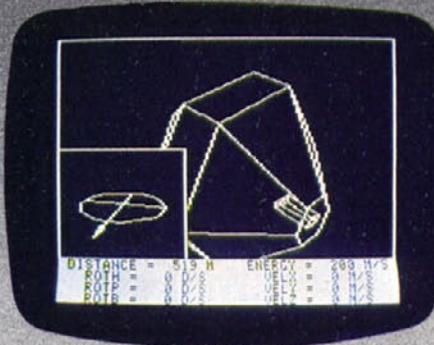
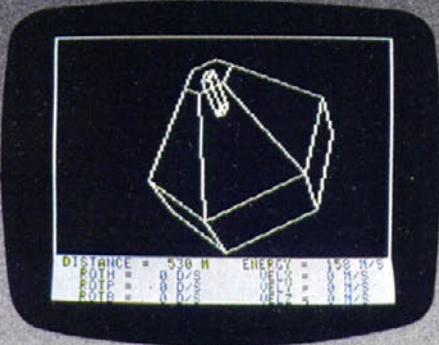
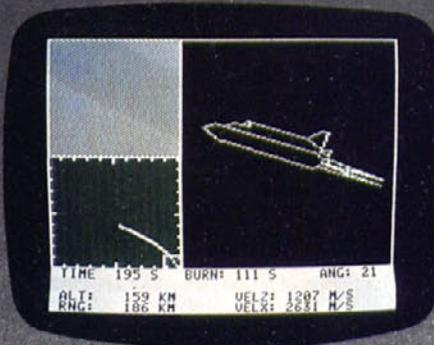
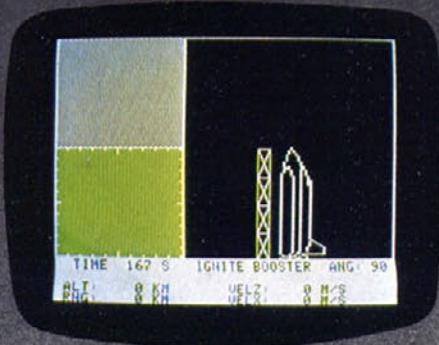
## Game/Publisher Score

## Player

<b>Labyrinth</b> , Broderbund	54,610	Don Carlston, Iowa City, IA
<b>Lemmings</b> , Sirius	*22,701	Dick Nitto, Binghamton, NY
<b>Mar Tesoro</b> , Syncro	\$149,561,409	Michael Prater, Glendale, CA
<b>Marauder</b> , On-Line	*131,400	Derek Brusko, Diamond Bar, CA
<b>Match Racers</b> , Gebelli	4,692.3 Miles	Bill Hoscheit, Saint Charles, IL
<b>Meteoroids (Asteroids) in Space</b> , Quality	555,335	Robert Pettit, Pittsburgh, PA
<b>Microwave</b> , Cavalier	*109,061	Norman Fong, San Francisco, CA
<b>Minotaur</b> , Sirius	*398,285	Christian Juhring, Carmel, CA
<b>Missile Command</b> , Atari	2,235,000	Jon Mellott, Fort Wayne, IN
<b>Mission Escape</b> , CE Software	*3,161	Steve Allen, Des Moines, IA
<b>Missile Defense</b> , On-Line	368,796	Dennis Quinn, Inglewood, CA
<b>Morloc's Tower</b> , Automated Simulations	14,317	Michael Hartwig, Lamoni, IA
<b>Mouskattack (Atari)</b> , On-Line	102,770	Shane Rolin, Monroeville, PA
<b>Nightmare Gallery</b> , Synergistic	*100,000	David Kampschafer, Bellevue, WA
<b>Norad</b> , Southwestern Data	*28,240	Jeff Baker, Alexandria, VA
<b>Odyssey</b> , Synergistic	*105,110	Jonathan Taylor, Macon, GA
<b>Olympic Decathlon</b> , Microsoft	*32,314	Valerie Ward, Boca Raton, FL
<b>Orbitron</b> , Sirius	*153,000	Dennis McEntire, San Jose, CA
<b>Outpost</b> , Sirius	*30,855	Yung-Chi Chu, Flint, MI
<b>Pac-Man</b> , Atari	*93,320	Terry Rora, Roanoke, IL
<b>Peeping Tom</b> , Microlab	*6,500	Brent Shaw, Yorktown, NY
<b>Pegasus II</b> , On-Line	*94,130	Eric Melz, Morgan Hill, CA
<b>Phantoms Five</b> , Sirius	42,670	Steve Rothenberg, Mayfield Heights, OH
<b>Photar</b> , Softape	*324,299	Norman Fong, San Francisco, CA
<b>Pigpen</b> , DataMost	*24,030	Dick Nitto, Binghamton, NY
<b>Pinball: Night Mission</b> , Sublogic	5,385,660	Pete Carino, Downers Grove, IL
<b>Procyon Warrior</b> , Synergistic	*195,000	Keith Goldberg, Bellevue, WA
<b>Protector</b> , Synapse	*58,000	Jon Mellott, Fort Wayne, IN
<b>Pulsar II</b> , Sirius	55,086	Michael Yang, Williamsville, NY
<b>Quadrant 6112</b> , Sensible	71,990	Chuck Hartley, Natick, MA
<b>Raiders of the Lost Ring</b> , Cavalier	*128,030	Francis Wong, Ellicott City, MD
<b>Raster Blaster (Apple)</b> , BudgeCo	7,025,500	Eric Morson, Stamford, CT
<b>Raster Blaster (Atari)</b> , BudgeCo	*990,000	Jon Mellott, Fort Wayne, IN
<b>Rear Guard</b> , Adventure Int'l	2,500	Joey Grisaffi, Houston, TX
<b>Red Alert</b> , Broderbund	*82,800	Michael Yang, Parma, OH
<b>Ribbit</b> , Piccadilly	*231,980	Andrew Mellin, Fort Lauderdale, FL
<b>Rings of Saturn</b> , Dakin5 (Level-10)	757,300	Bill Kuzejka, Holyoke, MA
<b>Roach Hotel</b> , Microlab	11,020	Joey Grisaffi, Houston, TX
<b>Rocket Command</b> , Norell	*767,285	Steve Grambow, Napa, CA
<b>Ruski Duck</b> , Gebelli	241,000	Norman Fong, San Francisco, CA
<b>Sabotage</b> , On-Line	86,431	Steve Cloutier, East Greenwich, RI
<b>Sheila</b> , H.A.L. Labs	64,759	Greg Autry, Riverside, CA
<b>Snack Attack</b> , DataMost	*18,324	James Baker, Alexandria, VA
<b>Snake Byte</b> , Sirius	*623,240 Level 201	Phillip Gee, San Francisco, CA
<b>Sneakers</b> , Sirius	*1,035,982	Marc Brodsky, Woodbridge, CT
<b>Space Eggs</b> , Sirius	38,400	Eric Sussman, Studio City, CA
<b>Space Invaders</b> , Atari	55,625	Darryl Terry, Trinity, AL
<b>Space Quarks</b> , Broderbund	*8,590	Pam Nitto, Binghamton, NY
<b>Space Warrior</b> , Broderbund	44,441	William Tung, Towson, MO
<b>Star Blaster</b> , Piccadilly	*42,491	Frank McCoy, Poway, CA
<b>Star Blazer</b> , Broderbund	99,990	Randi J. Rost, Davis, CA;
		Patrick Volkerding, Fargo, ND
<b>Star Dance</b> , USA	*3,453	Gary Miller, Monroeville, PA
<b>Star Thief</b> , Cavalier	*23,660 (2 Player)	Rob Berkowitz, Kenny Weinstock
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<b>Star Thief</b> , Cavalier	19,400 (1 Player)	Max Harrell, Chickasaw, AL
<b>Stellar Invaders</b> , Apple	*982	Scott Spencer, Centerville, OH
<b>Suicide</b> , Piccadilly	*58,250	Pam Nitto, Binghamton, NY
<b>Super Invader</b> , Creative Computing	99,675	Steve Rothenberg, Mayfield Heights, OH
<b>Super Stellar Trek</b> , Rainbow	7,262	Paul Creager, Sunnyvale, CA
<b>Swashbuckler</b> , DataMost	*1,423	Alex Stuart, Everett, WA
<b>Tail Gunner</b> , California Pacific	*44,898	Charles Campbell, San Jose, CA
<b>Taxman</b> , H.A.L. Labs	*425,440	Norman Fong, San Francisco, CA
<b>Thief</b> , DataMost	11,500	Roby Warmington, Laguna Beach, CA
<b>Threshold (Apple)</b> , On-Line	*941,900	Norman Fong, San Francisco, CA
<b>Threshold (Atari)</b> , On-Line	*143,200	Terry Rora, Roanoke, IL
<b>Thunderbird</b> , Urban Software	*28,260	Erik Talvola, Santa Rosa, CA
<b>Torax</b> , Creative Computing	*34,780	D. Archibald, Minneapolis, MN
<b>Track Attack</b> , Broderbund	48,286	Buell Hollister IV, Shelburne, VT
<b>Tranquility Base</b> , California Pacific	*1,540	Brian C. Donnally, Ipswich, MA
<b>Tsunami</b> , Creative Computing	12,336	Kerry Shetline, Morristown, NJ
<b>Tumblebugs (Apple)</b> , Datasoft	*7,205	Sharron Keck, Huntington Beach, CA
<b>Tumblebugs (Atari)</b> , Datasoft	*7,023	David Rogers, Chagrin Falls, OH
<b>Twerps</b> , Sirius	*6,250	Dick Nitto, Binghamton, NY
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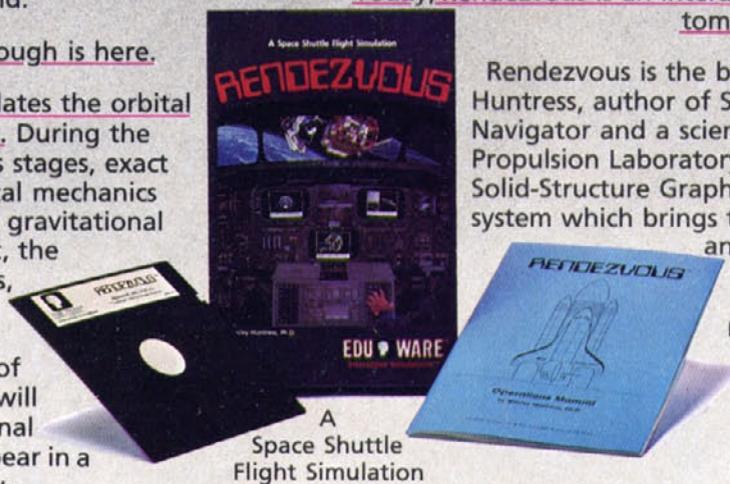
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