



THE WINNERS' BOOK OF VIDEO GAMES

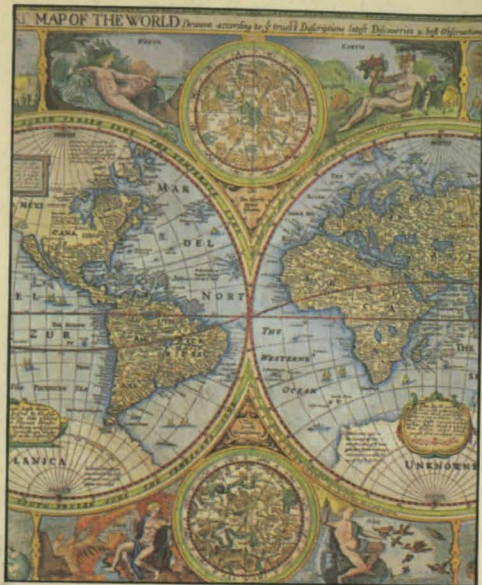


by **CRAIG KUBEY**



How to outfox the most diabolic coin-op and home games—with strategy and style! Including the hottest new games of the year!





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THE WINNERS' BOOK OF VIDEO GAMES


craig hubey



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Acknowledgments

On July 4, 1980, my brother, Ken Kubey, then eighteen, was a passenger in a car on Interstate 80 in California on his way to celebrate my birthday. During his one-hour ride, he used a pencil and a small pad to create a gift he called *The Almost Complete Book of Asteroids*, a nine-page tongue-in-cheek manual on how to play what was then the most popular coin-op video game in the United States.

To build on the joke, I made a professional-looking cover and typed a humorous section called "About the Author." A few days later I showed the "book" to my sister, Linda. She said I should write a full-length book of similar kind. Rather than having the good sense to reject such a foolish idea, I went ahead.

So, above all others, I thank Ken and Linda. Ken has remained an important factor in the book project, providing important research on many games, including *Asteroids* and *Defender*, and also furnishing a large amount of helpful editorial advice.

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Preface

WARNING! EXPLOSIONS ARE OCCURRING ALL OVER YOUR TOWN! Loud, flashing, colorful explosions on video screens, lucrative explosions of the coin-op and home video game industries.

Only a few years ago most people would have defined "video game" as turning the contrast and color knobs on a TV to make Johnny Carson look like a creature from outer space. But now the aliens are here, and games like Space Invaders, Asteroids, Pac-Man, and Defender have become household words. As many as \$8 billion in quarters may have been eaten in 1981 by voracious, bulky coin-op machines in arcades, restaurants, and almost every other type of commercial establishment. And now about one American family in ten has a home video game system that hooks up to the living room television set.

This book deals with every aspect of the video game phenomenon that interests players and prospective players. It covers history, industry structure, technology, and the future of the games. It provides essential information and advice about the critical subjects of video etiquette, videomedicine, video reform, and video slang. Most important, however, it covers *the games the games the games*. There's chapter after chapter on almost every major coin-op and home video hit since the industries began in 1971, with an emphasis on the superstars of the present and of the very recent past. And there's also plenty of material on games that have been unusually amusing or innovative or, in a few cases, even morbid.

Just as games are the main focus of the book, the main focus of the game chapters is *strategy*. A vast amount of research was done for this book—interview trips throughout California, to Chicago, and to New York; a zillion and a half phone calls all over the country; an average of about \$25 a week in coin-op play plus carefully noted play of all three major home video systems—and a great deal of this research centered on not only how to play the games but on how to play the games better than anybody the reader is likely to know. I talked with dozens of all-star players as well as with the programmers of a number of gigantic hit games.

If you're a typical video player, this book can take you from

your current junior-high level through graduate school. Even if you're an expert or a programmer, this book will tell you many things about strategy that you never knew. And, I hope, it'll give you some laughs amid the lessons.

Introduction

Across America and around the world, they storm through the doors of arcades and pizza parlors on their way to battle. There are 35 million of them in the United States alone. They aim their lasers, fire their missiles, and explode their smart bombs in a tense and frantic fight against aliens, flying saucers, and World War III attacks from Russia.

Their battle stations are in America's biggest cities and smallest villages, from the glamorous Westworld Amusement Park of the Future in Los Angeles to the giant Broadway Arcade in New York City to the tiny Kids Arcade in the Nevada ghost town of Virginia City. Millions fight it out in their own homes.

Most of them are what one would expect in any war that engages millions of soldiers: They are young men. Still, this is an all-out Armageddon and, more and more, the young men are being joined by women of all ages, by mere children, and by men of middle age and beyond.

Who are these warriors, these courageous fighters defending their nations and loved ones against onslaughts from across the ocean and from the far reaches of the galaxy? They are the men and women who command the control panels of today's video games.

Yes, they're called *games*. But *games* seems the wrong word to describe a phenomenon never before seen on the planet Earth. Games is fine for hopscotch and checkers. But not for these machines called Asteroids, Space Invaders, Defender, Missile Command, Pac-Man, Galaxian, Phoenix, Star Castle, Scramble, Armor Attack, Battlezone, Centipede, Berzerk, and GORF.

Video machines are something more, something beyond. The machines sparkle, they shimmer, they flash. Some call them art. The machines seduce, they compel, they addict. Some call them drugs. The machines play hard, they demand athletic skill, they attract spectators. Some call them sport. The machines use strategy, they react, they speak. Some call them human. The machines terrorize, they brutalize, they humiliate. Some call them monsters. But games they are not.

Still, to save space, these unique electronic marvels will some-

times be described as games. Let's just remember what they really are. To call video machines games is like calling a Porsche 936 a car.

Video games have exploded into an international craze. In the United States alone, consumers spend more on video games—about \$9 billion a year, including some \$8 billion for coin-op and \$1 billion for home games—than on any other form of entertainment, including movies and records. One game alone, Atari's awesome Asteroids, earned about as much just in its best year (\$700–800 million) than the biggest money-making film of all time, *Gone With the Wind*, has made in four decades of screenings.

Once confined to arcades and an occasional bowling alley or bar, video machines have in the last few years invaded a vast variety of establishments. They are now seen in pizza parlors, ice cream parlors, fast-food joints, posh restaurants, supermarkets, corner groceries, twenty-four-hour convenience stores, liquor stores, laundromats, bus stations, train stations, airports, movie theaters, and tourist attractions from San Francisco's Pier 39 to San Antonio's Hemisfair Tower to New Orleans's French Quarter.

Video games are utterly addictive. Over and over players intending to drop a couple quarters unload three and five dollars and depart only because they've run out of coins or have extended their lunch hour to ninety minutes. Men and women who are generally reliable and honest members of society continually lie to themselves that they are about to leave the machine they are playing. As a result, the most common phrase in America is no longer "How are you?" It is "This is my last game" (often spoken only to oneself, usually in several successive games). Otherwise respectable citizens continually find themselves lurking around seedy, unsightly establishments, sharing a machine with a seedy, unsightly weirdo who wants to play the two-person game. As a result, the most common first statement between strangers is no longer "Hello" or "Can I buy you a drink?" It's "Wanna play doubles?"

Sure you wanna play doubles. Even if the character asking the question hasn't shaved in three days, neither uses nor can spell deodorant, and has fresh whiskey stains on his brown flannel shirt, you wanna play doubles. Anything is better than to stop playing the machine. You're starting to get the knack of how to play well, and in the last game you almost survived that attack that blew you away, and if you had survived, you might have

achieved a personal record (PR) or even qualified for the computerized list of top players that the machine displays.

But don't be embarrassed. We all do it. Two years ago, even a year ago, many of us hadn't gone public. We thought that in our whole group of friends only *we* knew the thrills, but only *we* wallowed in the depravity of video games. Then our friend the doctor reported a fascination with a game called Galaxian; then that nice accountant said she played Pac-Man every day; and just last week that friendly kid down the street turned out to be spending every cent from his paper route on a machine known as Defender.

And you're not just in good company in your town. Walter Cronkite told San Francisco columnist Herb Caen, "My idea of retirement is to sit all day in a big dark room playing Space Invaders." Clint Eastwood has an Asteroids machine in his house. The Who trucked a Space Invaders game to each stop on their 1980 American tour. Celebrities seen putting quarters in machines include Burt Reynolds, Farah Fawcett, Jaclyn Smith, Dustin Hoffman, Barbra Streisand, Sean Cassidy, Hugh Hefner, Rod Stewart, Alice Cooper, the Bee Gees, Ringo Starr, Keith Richard, Paul Simon, Roberta Flack, and Isaac Hayes.

And the media have taken notice of video games. Video madness has been covered by newspapers from *The New York Times*, *The Wall Street Journal*, *Philadelphia Inquirer*, *The Washington Post*, *Detroit News*, *Chicago Tribune*, *Houston Post*, *Los Angeles Times*, *San Francisco Chronicle*, and *Seattle Times* to small dailies and weeklies all over the country. Magazines have been only a step behind, with stories appearing in a dozen trade journals as well as *Time*, *Newsweek*, *Esquire*, *TV Guide*, *Fortune*, *Forbes*, *Business Week*, *Sports Illustrated*, and *Playboy*. Local television stations in city after city have turned their cameras on video players and manufacturers, and reports have also aired on CBS's *60 Minutes*, ABC's *20/20*, and NBC's *Real People*, *Real Kids*, and *NBC Magazine* with David Brinkley. *Saturday Night Live* did a skit about Asteroids. In a forthcoming movie, *TRON*, Jeff Bridges stars as a young computer genius fixated on video machines.

Most media attention has been on the noisy coin-op side of the video game phenomenon. But, more and more, observers are learning that a quiet video revolution has also been taking place in American homes. This is the revolution of home video games. It is part of the larger revolution now occurring in the use of that colorful home electronic box that not long ago could do nothing

more than bring Jack Paar and Mary Tyler Moore into our living rooms.

The once-humble TV set now can project giant pictures, can show first-run films and boxing title fights on cable systems, can record programs and play movies on video recording equipment, can provide new audio and video quality via video discs, and, through home computer systems, can analyze family budgets, transmit electronic versions of newspapers, and even allow family members to instantly communicate their opinions on issues of public policy.

Even with all the other new capabilities of the TV set, video games may eventually have the greatest impact. Already game systems are found in the homes of some twenty million Americans. The market is growing so fast that the number of homes with video game units more than doubled in 1981. Steve Wright of Atari, former head of home game development at that company, the industry leader, thinks home video games in the near future will become as important a part of what people do and what people talk about as motion pictures have ever been.

The evidence is there to support him. Not only have sales skyrocketed, but home games are attractive, even compelling. Many are similar in charm and challenge to their more famous coin-op kin. In fact, the three most successful home video cartridges of all time, *Space Invaders*, *Asteroids*, and *Missile Command*, all were mammoth hits in their coin-op incarnations. Improvements in technology can only make home video games more entertaining.

As video games invade more and more homes in the United States and abroad, their impact will be more heavily felt. At a time in history when most cultural trends seem to be pulling apart the American family, home video games are bringing many families closer together. Instead of going out, many adults and children are lingering at home, trying another game of *NFL Football* or *Breakout* or one of the adaptations of the coin-op giants. When they are home, many parents and kids are no longer staring—passively and independently—at the TV actions of somebody else. Instead they are playing—actively and with one another—the competitive versions of home video games.

Whether in the arcade or the living room, video games are generations past pinball. Success in most video games depends almost solely on skill, which can be honed to its sharpest only through playing hundreds of games. The machines' complex computer programs are the work of perverse geniuses. The

games' complexity is so great that experienced players engage in long, detailed discussions of strategy and technique.

Exactly why video games are so popular and so addictive is not fully understood. Certainly some of the addictiveness of video machines stems from the fact that players naturally have a strong desire to play again whether they have just played well or just played poorly. When the player has just whizzed through a hot game, he thinks he can do even better next time, maybe get a personal record. If he has just ended a game that was disappointing, he knows he could have done a lot better simply by avoiding that last little mistake. So he wants to try another time, avoid the error, and roll up a fat score.

There are plenty of other reasons that help explain the enormous appeal of video games. For one thing, the games involve shapes and acts that are not hard to associate with what one might call physical love. In addition, some of the attraction is due to the fact that coin-op games cost money to play and home video systems and cartridges cost money to acquire: this increases the apparent value and importance of each type of game.

Perhaps most important, video games are a pleasant and effective form of recreation for the player living amid the complexities and disappointments of life in the world of the 1980s. In the other areas of his life the player may feel a lack of ability to affect his destiny. But in the games, surely for a moment and sometimes for as long as he plays, he has a certain amount of control, even mastery—at least over his own spaceship or base, and often over every other element of the game. In addition, video games—which usually involve the justified destruction of ruthless enemy attackers—provide a socially acceptable outlet for the aggression that results from the frustrations of everyday life.

Video games also furnish a refreshing break from the trials of life, be they in school, business, blue-collar work, or the professions. The best refreshment is usually an activity dramatically different from what has been grinding a person down, and except for jet fighter pilots, few people spend much occupational time flying at high speeds and attacking airborne targets. Breaks are also effective when they fully take a person's attention from what he wants to escape; a break on a video machine is therefore ideal because most of these demonic creatures demand constant and intense concentration.

Last in the list of attractions that help explain the allure of video games is glory. Real status, not to mention the oohs and ahhs of

appreciative fans, can be earned by running up a high score on a trendy machine.

For one reason or another video games provide the most enjoyable and most involving experience in the typical day of millions of Americans.

Video game madness has not reached its peak. It may not even have reached its foothills. New technologies are introduced each year that make the machines more colorful, more true-to-life, and more challenging. New, distinctively different, and exciting games come on the market every month, sometimes every week. As the craze spreads from the arcades to the home and to most every place between, new game locations are added in every community and almost no type of commercial establishment is safe terrain for the player with a serious video addiction.

Video veterans keep playing, and as the group of unusually challenging games grows, many of them play more often. Video virgins are tempted by the bright lights, the intense colors, the exotic noises, the humanlike speech, the promise of a contest; they can no longer resist. They reach into their pockets for the first quarter and their lives will never be the same.

This new industry that has only recently pulled ahead of films and discs may soon leave them miles behind. In a few years the approximately \$9 billion consumed in 1981 by video games may sound like small change as video machine manufacturers rocket into the higher altitudes of the *Fortune* 500.

The complexity and appeal of *Space Invaders*, *Asteroids*, and *Defender* may be surpassed in only a year or two by dazzling new games that make these video classics seem the Model T's of the amusement machine world.

This is a book for everyone who is intrigued by video games. The observer who has seen the games but never pushed his first Fire button can become acquainted with the machines and with why they have such powerful appeal. The novice can learn the basics of how to play well. The advanced player can pick up subtle tips from experts who have mastered the hardest games. And everybody can enjoy the absurd humor that grows naturally from these outrageous electronic monsters.

COIN-OPERATED VIDEO GAMES

Coin-Operated Video Games

Coin operated video games are the glamorous stars in today's video game galaxy. Contrasted to home video games, they are in general more challenging, more exciting, more colorful, and more complex. Consumers spend more money on them. And they have received the greater share of the attention showered on video games by television, magazines, and newspapers.

Some coin-op video games have even become household words. Who in the United States has never heard of Space Invaders? And a majority of Americans may even be able to also identify Asteroids, Defender, and Pac-Man as video games.

This section covers many coin-op games, and covers them in detail. There are two main subsections: Monsters and Other Stars. The Monsters are the five games that stand far above the rest in lifetime popularity as indicated by sales of machines and by dominance of earnings surveys. The Other Stars are games that in popularity are clearly beneath the Monsters but clearly above the rest. The Other Stars are games that deserve special attention, sometimes due only to unusual popularity but often for other reasons as well: they include the first coin-op video game and the first successful coin-op video game, the most morbid machine, the game that provides the most fun, the best driving game, the best cooperative game, and the ultimate man-versus-machine machine.

Do you want to know about the safe spot on the Pac-Man board where you can hide for a minute or a year and never get eaten by a monster? Would you like to find out how the International Date Line in Defender helps you deal with Mutants? How about two strong strategies for hunting the nasty little saucer in Asteroids? Or how to get a rainbow to appear on the screen of Deluxe Space Invaders? All this information and much more begins on the next page.

How to Play Coin-Op Video Games

Each coin-operated video game presents its own challenges. Some machines are excruciatingly hard and discourage even skilled players. Others can be played successfully on the first quarter. The player may start with a spaceship, a missile base, a car, a jeep, a tank, a plane, a submarine, a humanoid, or even a little yellow face that gobbles up the enemy. The opposition may be alien beings, saucers, cars, tanks, helicopters, planes, submarines, robots, or monsters of various hues.

Still, happily, there are many strategies and techniques that will help the player in most games, and a few that apply to every game yet invented. Later, specialized advice will be given on each of many popular games. Within that advice, some of the tips in this section will be repeated and amplified. But first, let's run through a quick course on how to play video games in general.

First, you must find a machine. Laboratory tests at a major American university have determined that it is next to impossible to play video games without a video game machine. If you can't quickly find a machine in the obvious places—arcades, bars, restaurants—keep your eyes open for fast-walking, alert-looking, thin, sixteen-year-old boys. Every one of these young men plays video games and they can tell you where to find one.

Once at the game location you have to get the right to use the machine. Customs vary from region to region, and the best course of action may also depend on the size and viciousness of the person already playing the game you want to try. But in most regions you will have a reservation to play if you place a quarter on the machine's control panel. And, in most areas, the current player will relinquish the machine at the end of the game in progress.

4 While you are waiting to play, study the machine. Read the instructions printed on the cabinet and control panel and carefully

note the machine's buttons and levers. Watch the screen and try to figure out what the current player is doing right (and wrong). When the player finishes his last game and your quarter has been waiting longer than anybody else's, it's your turn to play. As video veterans put it, "You're up."

You stand before the machine. It may be that several motorcycle gang members are now pushing up against you saying, "This wimp better finish in time for us to play the game and still make it to the rumble." If this is the case, by all means do not keep the gentlemen waiting. But if you have time before you begin the game, get used to the feel of the controls and try to etch in your memory which control does what. Carefully watch what's happening on the screen: The machine will be in its "attract mode," running a little demonstration show to get players to venture a quarter. In many cases the show will explain a few rudiments of how to play. But, while not totally useless, these rudiments are approximately as helpful as taking a novice karate student aside before a full-contact bout against Chuck Norris and saying, "See that tall guy over there? What you do is go over and punch him."

So take out a quarter and stick it in one of the machine's slots. To look hip, use the slot on the right, pretending to know from long experience that if one slot is out of order it's usually the left one. Push the button that starts the game.

Here are some strategies and techniques to keep in mind as you play. Most apply to most games. All serious video players know all these rules. You might call them the Bylaws of the Awesome Player Society. Since you want to join this club, you should learn its bylaws. They are useful to greenhorns and experts alike. Some of the best-known games will be cited as examples.

BYLAW 1: Be Cool. Video game play, especially for the newcomer, can cause extreme stress. The anxiety it generates can be like that experienced by the boxer fighting Larry Holmes for the heavyweight championship or by the pitcher facing Reggie Jackson in the bottom of the ninth in the last game of the World Series. Destruction is constantly imminent, and split-second decisions must constantly be made, taking into account a dozen factors at once.

To make these decisions and to carry them out you must be calm and confident. Tell yourself that you are better than those spaceships and missiles and that even if they luck out and destroy your ship or base you have more available. Pretend you are Isaac Hayes or Burt Reynolds. If you are basically just too anxious to

be cool, enter psychotherapy. When you score 100,000 on Defender, you'll know it was worth it.

BYLAW 2: Defense! Defense! If you keep just one word in mind when you play video games, that word must be *defense*. Many players concentrate too much on destroying opposing forces and grabbing big points as fast as possible.

But concentrating on points is not the key to a high score. *The key is to survive*. It wouldn't be a bad idea during your first games to hum the Bee Gees song "Stayin' Alive": If you can stay alive, you can play forever, running up millions of points, even if you're the worst shooter in the arcade. But if you are destroyed quickly, you will get a low score even if you fire shots as precisely as Joe Montana fires footballs.

To stay alive you must play defensively. To play defensively you must pay primary attention to the chief threats to your existence. In Asteroids, be careful to evade the fire of the small saucer. In Defender, do everything you can to keep the Landers from turning your last man into a Mutant. In Pac-Man, don't be so hungry to gobble up more dots that you make a video sandwich of yourself between two speeding monsters.

And don't just avoid these threats: do what you can to destroy them. Wipe them out in the order of the danger they pose to you: first blow away aliens or devices most likely to cause you trouble. In Asteroids, for instance, hit small, fast rocks that are rushing toward you before you bother with fat, slow ones that are drifting away. In Defender, wipe out the Landers before pigging out on the points from a single Pod.

BYLAW 3: Fire Furiously but Not Foolishly. An obvious sign of the new boy or girl on the video block is the slow firing of shots, lasers, and missiles. The beginner may blast off one shot every few seconds, taking just one shot at a time at each enemy that gets close. The veteran, however, will look like an amphetamine-crazed bongo player, often banging out ten times as many shots in the same period.

There are many advantages to shooting rapidly: You have a chance to hit more targets and you can atone for shots that miss with shots that strike home. With multiple shots at the same target, even if you don't change your position between shots, there's also a good chance the target will move into your line of fire.

Still, don't waste your weapons. Know your range and your ability. If you can't shoot more than two thirds across the screen, or if you can shoot all the way but aren't accurate at that distance, don't shoot at a distant device; instead aim at one that's closer. In many games you must save shots and bombs so you'll have enough for emergencies and for all the attack waves you'll face.

BYLAW 4: Pig Out When the Slop Is Handy. An occasional machine will offer you a free lunch (easy points for even the novice). Most machines will give the skilled player a chance at a lot of points in a short time. Don't wait till the free lunch is pulled off the table, and choose the routes most likely to lead rapidly to high points. In Defender, Smart Bomb the 1,000-point Pods when lots of them are stupidly floating around in the same place. In Asteroids, don't take the dangerous and unproductive course of blasting away every rock only to have a bigger rack of rocks drift onto the screen; instead, leave one or two rocks alone and hunt the 1,000-point saucer. In Missile Command, don't knock out the twenty-five-point ICBMs in order to defend cities that have already been vaporized; aim your missiles at the high-point Sputniks, planes, and smart missiles.

BYLAW 5: Not Too Much or Too Little, but Just Right. Know your weapons and know your escape mechanisms. Don't forget to use your most devastating weapons when you need them. The classic error of the Defender novice, for instance, is to forget to use any of his Smart Bombs—which wipe out every enemy within a large area—before the game is over. Don't overuse your ultimate weapons either. Another error of the inexperienced Defender player is to use all his Smart Bombs early and have none left when they're most needed.

Similarly, use your escape devices when necessary but not on a whim. Escape systems like Hyperspace and Shields usually have their dangers as well as their benefits. In Asteroids, for example, the player can escape absolutely any hazard by hitting the Hyperspace button and simply disappearing from the screen. But this wonderful advantage comes with a certain risk: the player's ship will explode on return from Hyperspace about one in every four times the mechanism is used.

The basic rule of ultimate weapons and ultimate escape systems is never to use them when something else will keep you alive and always to use them when nothing else can save you.

BYLAW 6: Be Ship-Centric. The more complex the video game, the more enemy vehicles and weapons you must keep in mind. But keep your attention centered on yourself—the device on the screen that represents you. In *Space Invaders*, *Galaxian*, and many other games, it's the mobile Laser Base or Spaceship at the bottom of the screen. In *Asteroids*, *Defender*, and another large group of games, it's the spaceship in the center of the picture.

If you are represented by multiple devices (as in *Missile Command*, where you have up to six cities and up to three missile bases), never lose track of any of them. If you are represented by a single ship or base, as in most games, never take your eye off that object for more than a fraction of a second. If, for instance, you're playing a game where you have a spaceship, identify as much as you can with that ship: Be ship-centric. A young woman at Albany Bowl in Albany, California, achieved perfect unity with her *Asteroids* vehicle. "I am the ship," she said.

Watching your ship closely will increase your chances of avoiding obstructions and enemy fire but unfortunately will also reduce your chances of shooting opposing forces. But refer back to Bylaw 2: avoiding destruction is more important than wreaking it.

Be confident you will wipe out lots of murderous enemies without constantly looking right at them. Peripheral vision is enough to keep your aim quite accurate, especially once you've developed a feel for video games.

BYLAW 7: Practice Makes Less Imperfect. Nobody plays video games perfectly. Unless it's unplugged, any video machine will eventually beat any player. But any video player, however proficient, can get better. KQB, the video games wizard who is the technical adviser on this book, was once so inexperienced and just so *bad* at *Asteroids* that the author had to man the Hyperspace button for him. Then KQB played hundreds of dollars' worth of the game, passed 100,000, passed one million, and kept going. As you read this, he is probably still playing a game he began a couple months ago.

Practice is not the same thing as unloading bags and bags of silver coins. How efficient your practice is depends on how you use that money.

There are two key elements to practice. The obvious one is just to decide which games you want to master and then to play them over and over. To avoid playing like a newcomer day after day on the same game, it's a good idea as soon as you have picked a

game to pour out a lot of money on it in a single day. Five dollars is a good ballpark figure. If you don't have \$5 to spend in just one day on just one game, then *watch* \$5 worth of the game played by other folks. Pay special attention to good players and to players who use novel strategies and techniques. Your long initial immersion in the game will allow its basic elements to sink in. Once these rudimentary aspects have become second nature to you, you can move on to obscure tactics and difficult moves and start racking up serious points. Consider the tennis player: He's not going to look good on the court as long as he still has to try hard to remember to hold the racket tightly and get back to the center of the baseline. Once those skills become second nature, however, he can start thinking about rushing the net and smashing overheads.

The devoted video player must not only plunge into an expensive introduction to a game, he must also play frequently over a long period. The unusually talented player (or the one who has gained a great deal of experience on video games in general that carries over to new machines) can sometimes master a new game in a week or two. Much more commonly, however, a competitor will take months to approach his best possible score.

This again is costly. A serious player will often spend \$10 or more per week on a single game; over just six months this comes to hundreds of dollars. Again, the player who hasn't yet become rich on the video tournament circuit can benefit greatly at low cost by watching many more games than he plays. He can also search out the video bargains: the places that give tokens free with the purchase of a pizza or a record; the places that give 24 tokens for \$5; the places whose machines provide four ships to start instead of the usual three or give a new ship at 8,000 points instead of at 10,000 or 20,000; even the charitable locations that for some reason set their machines for two plays for a quarter. (If you discover one of these two-for-a-quarter sites, *do not* advise the operator that he's out of step with the times. *Do* send the address of the place to the author. Special delivery.)

If you're alert, playing over and over will teach you most of the strategies and techniques the video aces know. It will also bring you into contact with top players whose games you can watch, who will likely offer advice without being asked, and who will almost always answer questions, provided those questions aren't asked during a rough part of a game.

Equally important, playing a lot of games will sharpen your reactions and coordination in general and will improve the skills de-

manded by the game you seek to conquer. You'll learn to make your ship or base do what you want and you'll develop a sixth sense that warns you when a particular kind of enemy is about to approach and that guides your hand in the right motions to maneuver your ship and fire your weapons.

That is the obvious element of practice: playing over and over to learn and improve skills. The less obvious aspect, very important but very uncommonly seen, is to practice isolated techniques. It is amusing that so many people take video games extremely serious in some ways but deal with them so casually in others. They send \$10 or \$20 worth of quarters a week clattering down machine slots, they discuss strategy, they try hard to play well, they read articles to improve their scores, but these electro-athletes don't do what the players of any other sport do: isolate skills.

A football quarterback doesn't spend all his practice time in scrimmages (mock games). Instead, he practices taking the ball from the center, handoffs, screen passes, the long bomb; he even practices collapsing safely under the weight of three defensive linemen. The quarterback practices each of these skills over and over until he has mastered them. Similarly, the basketball player may spend an hour doing nothing but shooting free throws.

Just as the best way to learn a specific video game is to play it over and over, the best way to learn a specific video game technique is to use it over and over. To do this you must use a particular technique as often as possible in each game, necessarily reducing the use of other skills. In one game, concentrate on aiming your shots. In another, work on maneuvering your ship or ambushing the enemy by lurking in a particular part of the screen. In this sort of practice you will not play your best, but you will be doing your best to improve your future performance.

Find your weaknesses and work on them and them alone until they become your strengths. Quarterbacks don't make it to the Super Bowl just by playing in games and scrimmages; they make it there by perfecting individual skills that fit together into an effective whole player. Through the same procedure you can progress from the embarrassing thirty-second game to the point where novices are asking you for advice.

BYLAW 8: Keep Your Mind in Mind. Closely monitor your mental state and manipulate your psyche to your advantage.

Try hard to concentrate throughout the game. A brief mental

lapse can ruin an otherwise brilliant game. Concentration tends to be highest during the first and last games of a series on a single type of machine. During the first game the player generally is freshest and the game seems most novel. In the last game the player knows it is his last chance to do well before leaving the machine. You can use this first/last phenomenon to your advantage: Either play only two games at a time on each machine or tell yourself each game after the first is your last even if perhaps it isn't.

In concentrating, pay attention not only to what's happening on the screen but also keep clearly in mind the keys to successful play: the general bylaws given here and the specific advice provided later on each game. If you have trouble remembering key strategies and techniques, write them down and glance at them before playing. During a game don't do what's easy to do, do what's effective to do.

Use food and drugs properly. Early research indicates that drugs more often than not speed the death of the player, either on the screen or in piloting a nonvideo vehicle home from the arcade. The only two reliable exceptions may be caffeine and sugar, which seem to increase reaction speed and improve concentration in the player who otherwise would feel tired. Food seems to help the player who is due for a meal: reaction time is reduced and shots are fired more rapidly. Pizza with salami and extra cheese is especially recommended.

It has also been determined that vigorous exercise just before play generally improves reactions and judgments. A program of frequent endurance exercise gives the player the stamina to remain strong and alert even when he gets good enough to play for an hour or more on a single quarter.

Video game play is also related to the psychological concepts of frustration and aggression. Psychologist J. Dollard first set forth the frustration-aggression hypothesis in 1934. Simplified, the theory says aggression is always the result of frustration. Video games are a safe and effective means of working off aggression: You can blow up a lot of things without getting arrested. So if your girl friend or boyfriend has just treated you wrong or your boss has just blamed you for his own mistake, go play Defender or Scramble to get rid of your unpleasant emotions.

Also, let aggression work for you. Aggression leads to concentrated, inspired video play. Even if you aren't feeling agitated, work up a little aggression by pretending that people you dislike

are riding around in the little saucers or *are* the ugly little aliens and monsters. You will be surprised how much faster you get off your shots when you intensely hate the enemy ships.

If you happen to be competing in the two-player version of a game, also keep the *other* player's mind in mind. It might be a wise, though sneaky, idea if you're playing second to perform poorly on your first two ships, relaxing your opponent so he doesn't play well. Then play forever on your last ship, rolling up trillions of points while your opponent realizes he has been hustled. For other devious tactics that can be applied to video competition, see Stephen Potter's famous but dastardly 1948 book, *The Theory and Practice of Gamesmanship: The Art of Winning Games Without Actually Cheating*.



Monsters

• ASTEROIDS

Asteroids is the best video game in history and its quality has been reflected in its earnings. In April 1980 it displaced the classic Space Invaders as the nation's most voracious eater of quarters. In an industry full of games that are popular for only a few months, Asteroids clung to first place all the way through April of the following year, according to the earnings-per-machine survey in *RePlay* magazine. It, Space Invaders, Galaxian, and Pac-Man are the only machines in *RePlay* history to be owned by 100 percent of surveyed operators. *Play Meter* magazine named Asteroids Game of the Year for 1980.

In just its best twelve months of release, Asteroids consumed coins totalling some \$700–800 million. This was not simply more than any other video or pinball game in history. It also was more than the *life* earnings of any book, movie, or record. If Asteroids made \$700 million in 1980 and if the machines had been chartered as an industrial corporation, Asteroids, Inc. would have ranked number 383 in the *Fortune* 500, just behind Memorex and *The New York Times* and just ahead of Columbia Pictures, Miles Laboratories, Bally Manufacturing, *The Washington Post*, and Macmillan Publishing.

Atari, Inc. manufactured more than 70,000 of the machines, with more than 60,000 placed in the United States, breaking the old record of about 60,000 set by Space Invaders. Machines are also found in Canada, Great Britain, the People's Republic of China, Brazil, and throughout France and Western Europe and Japan and the Far East.

But the greatness of Asteroids cannot be measured only by statistics. The game has a certain combination of simplicity and challenge matched by no other machine in video history. It has an uncluttered screen with ultrasharp images. The controls work responsively and reliably and allow the skilled player to do any-

thing necessary as well as to rocket his spaceship through twists and dives that are utterly breathtaking. A novice can grasp the essence of the game, but a talented veteran, required to make dazzling moves and split-second decisions, can still find the machine exciting after thousands of tries.

The Asteroids concept was invented in 1978 by Atari engineer Lyle Rains, then 27, a tall serious man who wears teardrop, metal frame glasses. Rains had an idea for a game in which the player would pilot a ship through a field of moving space rocks. The concept was brilliantly simple, but the concept was not enough.

What was enough was the fusion of Rains's basic vision with the further creativity and programming skill of Ed Logg, yet another youthful, bespectacled engineer at Atari. Logg added two enemy saucers, borrowed the animated explosion of the player's ship from the Atari game Lunar Lander, and took from the Cinematronics game Space Wars the concept of Hyperspace, an off-screen area of the universe to which the player can temporarily disappear to avoid an otherwise fatal attack. In addition, Logg produced the long, complex computer program that put the Rains/Logg design on the screen. After extensive testing and refinement, the game was unleashed in October 1979. It was a sensation from the start.

The original, classic Asteroids has now been joined by the coin-operated Asteroids Deluxe, which might be called Son of Asteroids if it were not so much more vicious than its parent. Call it Mutant Offspring of Asteroids. In addition to the coin-op editions Atari has also produced a home version. Both of these variations will be covered in this book. But first let's deal with the game that started it all.

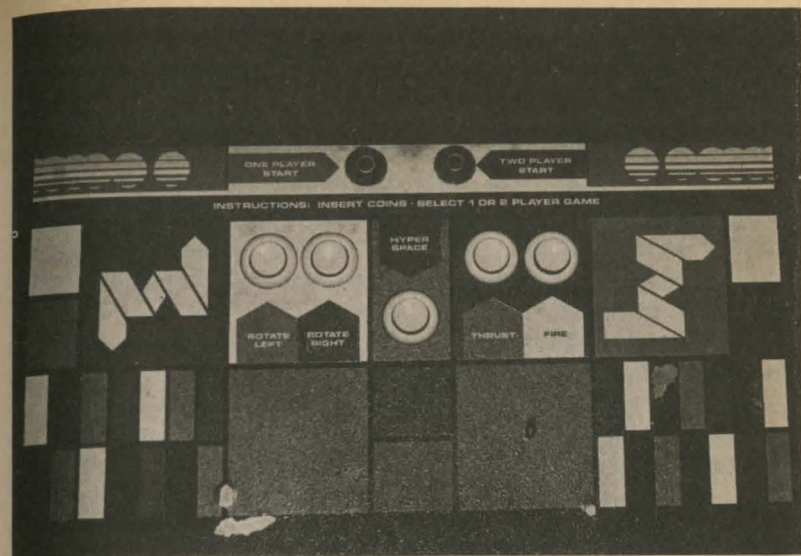
For the novice, this chapter will explain the basics of Asteroids. For veteran players, it will describe details, some previously unknown even to most experts.

Put the quarter in the machine's slot. (Veterans: you need not read the previous sentence.) This will cause a little red button on the control panel to blink on and off. If you have the nerve, push the button. The game of Asteroids has begun.

You control the bright white triangular ship in the center of the black screen. You get three ships at the start, one at a time. When your first one is blown up, your next one appears. With each 10,000 points you score, you get another ship.

There are five buttons on your control panel, and each one is critical.

14 *Rotate Left and Rotate Right:* These buttons steer your ship,



Asteroids

making it revolve in the direction indicated. You rotate (and often thrust at the same time) in order to position your ship so it can fire at an asteroid or enemy saucer or so it can evade an asteroid or a saucer's laser fire.

Thrust: This is your accelerator pedal. Pressing Thrust moves your ship in the direction the ship is pointed. Pressing for just an instant moves the ship a long way. Once you stop thrusting, your ship will float awhile in the direction it has been moving. To stop floating, rotate your ship 180 degrees and thrust very briefly. Mastery of the Thrust button is the principal mark of the Asteroids ace.

Fire: This is your trigger. Hitting the Fire button shoots a single laser shot. Obviously, to get off a lot of shots you must hit the Fire button repeatedly. If you are firing while in flight, your ship's momentum will make your shots go faster and farther than usual. If, on the other hand, you have just thrusted in one direction and then have rotated your ship so it is floating backward, and then fire, like in a basketball fall-away jumper, your shots will move slower and fall shorter than usual.

Hyperspace: This is your panic button. Hitting it makes your ship disappear. Sometimes you will come back in a safe place. Sometimes you will reappear in a spot where an onrushing asteroid will strike you before you can blast or thrust your way to safe-

ty. Sometimes you will blow up on reentry to the screen. This happens randomly in about one fourth of all trips back from Hyperspace.

Once the game has begun, four large asteroids, also known as rocks or boulders, will start floating across the screen in various directions. You must try to avoid being hit by these space rocks, because if an asteroid (or anything else) strikes your ship, your ship will be destroyed. You avoid collision either by evading rocks (by rotating, thrusting, or Hyperspacing) or by shooting them with your laser.

When you shoot the big asteroids, they break into two medium ones. When you shoot the medium asteroids, they break into two little ones. When you shoot the little ones, they disappear.

Unknown to most players is the fact that the Asteroids computer can handle only twenty-seven rocks at a time. If there are twenty-seven on the screen and you hit a large or middle-size rock, it won't break in two—it'll disappear!

When your laser fire hits an asteroid, the smaller rocks into which it breaks will move in various directions and at various speeds, both largely determined by where you hit the parent rock.

No more than four of your shots can appear on the screen at one time. Shots disappear once they hit something. So if you fire four shots (press Fire four times) and the shots are still onscreen and you try to fire again, your laser will not function. This can be hazardous to your ship's health if an oncoming rock is about to smash into it.

You get 20 points for shooting a big asteroid, 50 for blowing apart a medium one, and 100 for destroying a little one. For wiping out a big alien saucer, 200 points are scored, and when you liquidate a small enemy saucer, you get 1,000. If your ship runs into a rock or saucer, you get the points you would have received if you had hit the object with laser fire, but it's a bad deal: You lose your ship.

After a while, when you've run up 1,000 or 1,500 points by shooting rocks, an alien saucer will fly out from the side of the screen. It will make a high, warbly sound and will shoot randomly. In a reference to the classic T.V. series *Leave It to Beaver*, some players call this saucer Wally. Wally is bigger than another alien ship that will come out later.

Just because the big ship shoots randomly, instead of trying to get you, doesn't mean you should take it lightly. Many of those random shots have brought agony to Asteroids players from Bos-

ton to San Diego. Also, Wally can shoot off the screen (say to the left) with his shots coming back on the other side (say the right), so he can annihilate you from an unexpected direction. The boys at Atari call these shots *wraparound* shots.

You must evade or destroy the big ships. When firing on Wally, it has been found useful to yell, "Die, Fat Boy!" This is believed to psych out the big ship or psych up the player. These overweight saucers will fly out and fire many times as the game proceeds.

Once your ship or enemy saucers have destroyed all the rocks in the asteroids field, a new field (or *rack* or *wave*) will appear on the screen. The first rack has four big asteroids, the second six, the third eight, and the fourth and all succeeding racks ten.

Out around 2,400 points in the first wave if you haven't quickly wiped it out, or out around 4,000 or 5,000 in the second wave if you've rapidly moved on to it, you will meet your first big challenge. This will ordinarily happen when there aren't more than a half-dozen rocks on the screen and when the thump of the sound effects has become ominously fast. At this point the first small saucer will come out. It will make a higher, faster warbling sound than the big ship, something like the war whoop of a 1950s TV Indian overdosed on diet pills. The players who call the big ship Wally call the little one Beaver.

If you are an Asteroids novice, when the first little ship comes out you will be in extremely deep trouble. It will be like a mediocre six-year-old girl tennis player trying to return serve against John McEnroe. You are not John McEnroe; you are the little girl.

The small ships are very, very unfriendly. All of these suckers are equipped with heat-seeking lasers that aim, with amazing accuracy, at your ship. As a janitor at the University of California, Davis, remarked, "Those spaceships have eyes!" If the machine you are playing has been souped up with a particularly savage circuit board, the little ship not only will fire with terrifying accuracy but will also be able to *aim* wraparound shots. With the standard silicon chips, if you are out of Beaver's range, he will keep firing across the screen at you even though his shots all fall short. His only wraparounds will occur when you are near the edge of the screen and he overshoots you. With the souped-up program, however, Beaver will be on one side of the screen (say the left) with you on the other (say the right), and instead of futilely firing to the right, Beaver will fire *left*, with his shots zipping off the left edge of the screen and coming back on the right. This means not only can you be ambushed by a Beaver whose shots you are ex-

pecting to come from another direction, but also that you are *always* within range of this twisted killer.

As with Wally, you must either evade or shoot Beaver. Good luck.

If your ship is struck by an asteroid, a saucer, or fire from a saucer, it will slowly, agonizingly break up and disappear. If it is just grazed by a rock or ship—if the nose or a rear tip is barely touched—it will remain intact. If your ship is blown up, a new one (if you have any left) will appear in the center of the screen, once the machine thinks it's safe: when no asteroid would knock into it before you can protect yourself. Sometimes the machine plays a funny little joke on you, giving you a mere fraction of a second to rotate and fire on an onrushing rock.

The game keeps on getting harder. Though various machines are faster or slower, all except deformed units gradually seem to speed up until the player has accumulated about 50,000 points. According to Atari, the objects on the screen don't move faster, but an illusion of speed is created by a growing number of rocks and the fact that Beaver comes out more and more frequently. Wally shows up occasionally up to 30,000 points and then disappears until the player hits 100,000, at which point Wally appears occasionally up to 130,000 points, and so on. Beaver suddenly becomes at least twice as accurate at 35,000 points, goes back to his original accuracy level at 100,000, then improves his aim again at 135,000, etc. At least through the first six racks, Wally and Beaver come out when there are progressively more rocks on the screen. For instance, in rack one, unless the player is taking a long time to destroy rocks, Wally won't come out if there are more than four asteroids; in rack six he'll show up even if there are nine.

One consoling thought: If you're new to the game, you needn't worry about the game getting more and more difficult. You'll get blown away so fast, you won't get to the point where the game becomes hyper-hard.

No matter how well you do, you will lose. There is no replay or "match" like in the warmer, more human world of pinball. But if you study this book hard, drop out of school or quit your job, practice-practice-practice, eat right, get plenty of rest, and take Geritol, you will get a lot better.

If your score is one of the top ten since the machine was last unplugged (usually the previous night) you get to put three initials on the "board," the list of the top ten players. The machine's screen tells you how to do this by pressing the Rotate and Hyper-

space buttons. Players enjoy using obscene or humorous initials. When you have hit one of the top ten scores but nevertheless are ashamed of your effort, anonymity can be maintained by selecting false initials. For all scores under 50,000, the author uses "ATC," for Annie the Cat, a friend from the animal kingdom. If you take over enough slots on the board, you can leave little messages for your friends, such as:

HIGH SCORES

1. 99990 PGJ
2. 99980 ISA
3. 99970 NRD

or

HIGH SCORES

1. 74360 DAV
2. 72890I
3. 72700 HAD
4. 69080 TO
5. 68510 GO
6. 65390 KEN

The machine will not record scores past five digits. So a game 1,000 points higher than 99,950 registers as 950. This explains why expert players often stop at or just below 99,990: they do it to ensure a high place on the board.

What's a good score? *First game*: 500. *After \$10* (40 games at usual rates): 20,000. *Serious addiction* (has played three or more times a week for two or more months): 50,000. *Intensive care addiction* (often plays every day for a week or more, cannot within \$20 reliably estimate total lifetime expenditure on Asteroids, gets no kick from passing 10,000): 100,000. *Terminal addiction* (must play every day or suffers withdrawal symptoms such as twitchy fingers and "hearing" small ships while in quiet rooms, hardly cares how much money he spends, thinks Asteroids is the principal test of a human being's character): 1,000,000. Yes, it has been done, many times. On September 5–7, 1981 Lonnie J. Cancienne, nineteen, playing at the Mr. Ice Cream Parlor in Westwego, Louisiana, hit 30,000,000 points in 52 hours, 1 minute.

Strategy and Technique

Most of the keys to professional-quality Asteroids play are pretty simple ideas. The same, however, can be said for the keys to being a star forward in the NBA. The hard things are to *discover* those ideas, learn them well, be able to keep them in mind under the life-and-death pressure of an Asteroids game, and be able to *execute* those ideas: be able to do what you're supposed to. This

takes practice and, in some cases, pizza. What this means is that your energy level must be high enough for fast reactions and aggressive play; the author has often played a lot better after eating pizza than while waiting for his pizza to be served. (Listen, you paid good money for this book; you deserve the inside tips.)

The keys to Asteroids are not only simple; they are so simple that each can be described in a single phrase or sentence. That's the way they will be set out in the pages that follow: one basic sentence or phrase for each key strategy or technique, with explanation afterward. These keys are so simple, so describable in a few words, and so critical to mankind that, with no respect to God (who would be one hell of an Asteroids player—pardon—one heavenly Asteroids player, if He or She had time to try it), it may be appropriate to call these essential rules the Fifteen Commandments of Asteroids. (Ten would have been nice, but let's face it, Asteroids is more complex than life.)

There are, of course, other lessons to learn about Asteroids. But the rest are obvious, not essential to success, or only for the accomplished player. (Tips for the expert follow the commandments.)

The Fifteen Commandments are derived partly from the author's experience as a player (257,920 regular machine, 145,500 fast machine), partly from several players with scores over a million, partly from programmers at Atari, and partly from advice from the amazing KQB, the Asteroids master who is the technical adviser on this book.

Ready?

THE FIRST THROUGH EIGHTH COMMANDMENTS: (See Bylaws of the Awesome Player Society)

Be Cool.

Defense! Defense!

Fire Furiously but Not Foolishly.

Pig Out When the Slop Is Handy.

Not Too Much or Too Little, but Just Right.

Be Ship-Centric.

Practice Makes Less Imperfect.

Keep Your Mind in Mind.

THE NINTH COMMANDMENT: Hit Rocks in the Heart.

One of the fastest ways for a novice to improve several thousand points is to follow this commandment. Asteroids, when struck by

laser fire, break up in various ways. Sometimes the fragments move toward your ship, sometimes they move away; sometimes the fragments are fast, sometimes they are slow. What you want are fragments that move slowly and away from you. The way to make this happen is to hit the parent rock when it is moving toward you and to strike it close to its center. This technique is effective especially in dealing with fast-moving rocks. When they're rushing at you, hit them near the center and the fragments will actually move slower than the parent did.

THE TENTH COMMANDMENT: Seek the Center. A mark of the inexperienced Asteroids competitor is a tendency, when rocks get too close, to thrust too near the edge of the screen and then stay there. This is very dangerous, particularly for the non-veteran (who has undeveloped Asteroids reactions), because a rock or saucer can, with almost no warning, zip out from the edge and collide with the player's ship.

If you're farther away from the edge, you have more time to react. So, as soon as it's safe, thrust back to near the center of the screen. That is, unless you're hunting Beaver. (See the Thirteenth Commandment.)

THE ELEVENTH COMMANDMENT: Kill Fat Boys Fast. Fat Boys, of course, are large enemy saucers. As mentioned, some players call the big ship Wally. Wally is the darkhorse of Asteroids. He is the assassin who shows up on the front page of the newspaper after years of everybody thinking he was a "nice, quiet guy." Players at all levels underrate him. Players at all levels also have games ruined by this unsung villain.

These overweight executioners sneakily give the impression they are harmless because, unlike the little ships, they have no heat-seeking lasers: they just shoot randomly. But these obese oddballs fire a lot of shots in a short time and they can stay on the screen for a long time. Also, they fire offscreen wraparound shots. In other words, there are plenty of chances for these bloated creeps to get you. So, unless you are locked in point-blank combat with rocks that are about to run you over, blow away Fat Boys as fast as you can.

Remember that as you approach Wally (or Beaver) you take up a larger and larger area of his firing angle and so become easier and easier to hit. So shoot him from as far away as possible. Also remember that, when firing at these pudgy pests, it helps to yell, "Die, Fat Boy!"

THE TWELFTH COMMANDMENT: Collect Snails. You may think asteroids are your enemy. Most of them are. They'll run you over with all the conscience of a Kenilworth eighteen-wheeler colliding with a gnat. Some, however, are your friends. These are the very slow-moving rocks, the ones you might call snails. These are the ones that enable you to hunt Beaver, which you must do to run up a high score. So if you are in the midst of blasting away at rocks and occasional enemy ships, mentally tag at least one or two slow rocks for preservation. Skilled players save as many as a half-dozen rocks as insurance against some of these slothful buddies getting wiped out by Beav or Wally.

The best snails to save are the biggest. A big rock is easy to see, so you're unlikely to have it run into you without warning. Also, if it is your last rock but is struck by Beav or Wally or by laser fire from one of these saucers, it will not vanish and leave you facing a whole new rock rack; rather, it will break into two rocks that you can preserve while hunting more ships.

Try also to save snails that are moving in a highly vertical direction. These will endanger your ship much less often than snails floating horizontally.

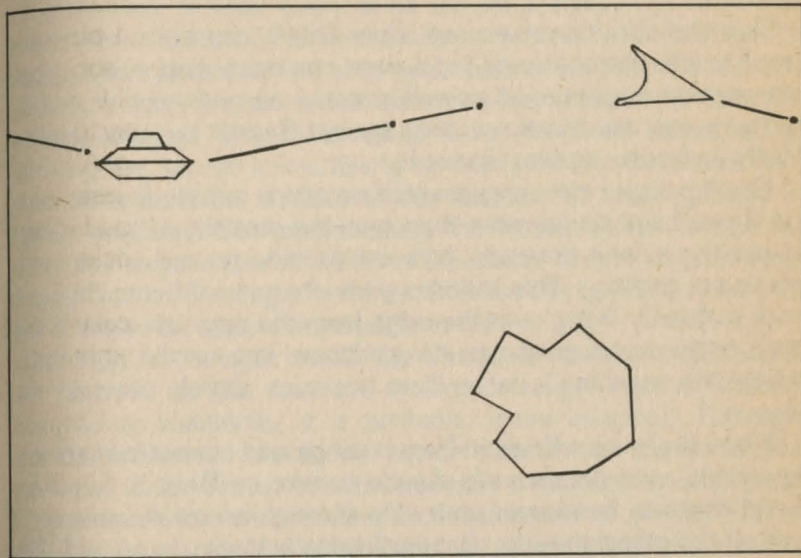
THIRTEENTH COMMANDMENT. Hunt Beaver. A key mark of the serious Asteroids player is the hunting of Beaver. This is the way to big points but also to big risk. Big points because you rack up 1,000 for every small ship you destroy. Big risk because when you hunt ships the ships fly out frequently and there are few asteroids to screen you from the ships' lethal laser fire.

You hunt Beaver—and Wally, on the occasions he comes out—by leaving some rocks on the screen, with slow ones strongly preferred. You need rocks out there because if you blow all of them away a whole new field of them will cruise out and you won't be able to hunt ships with maximum effectiveness.

To hunt Beaver, you float near the left or right edge of the screen. Most players prefer to lurk about three inches down and about two inches in. This takes into account that Beav comes out from the top half of the screen much more often than from the bottom half. You wait in this area in order to be very near to or very far from Beav when he shows up.

If you are very *near* him (for instance if you are lurking near the right edge and he jets out on that side), you will usually have four immediate rapid-fire shots at him before he can figure out where you are and commence firing. If you are very *far* from Beav (for

instance if you are hanging out near the right edge but he bolts out from the left), you cannot readily be hit by him because he can shoot only about three fifths the width of the screen (unless you are playing a machine souped up to allow Beav to fire aimed wraparound shots). Though you are out of Beav's range, *Beav is within your range*. You can't shoot any farther than he can, but you can aim and fire wraparounds.



Hunting Beaver: Preserve one or two rocks; stay out of Beav's range; fire wraparound shots at him. (Objects are enlarged to increase clarity.)

Staying out of Beaver's range and firing at him with wrap-around shots is the key to awesome Asteroids play. And staying out of Beav's range is the key to the key: anyone who has played for a while can occasionally hit Beaver, with a direct or wrap-around shot, but only the advanced player can stay out of range and escape dozens of flights of this brutal assailant.

There are two ways to stay out of Beav's range. If Beav steps out on your side of the screen, fire four fast shots, and if at first you don't succeed, get the hell out of there. Your fastest way out of range is to thrust off the edge of the screen, coming back on the other side. Press the Thrust button gingerly, so that you reappear just in from the edge on the other side, as far from Beav as possible. Once Beav has flown far enough across the screen that you are again within his range, carefully but quickly thrust back across the nearby edge to the side where you started.

The second way to stay away from Beaver is used when Beav streaks out from the side of the screen opposite from where you are waiting. When this happens, stay where you are until he gets too close for comfort, then thrust off the screen, reappearing on the side from which he came.

Regardless of which of the two ways you use to stay out of range, fire wraparound shots at Beav whenever you are safely situated.

Two tips about wraparound shots: Don't forget you can shoot north-south wraparounds (and even corner to diagonally opposite corner wraparounds) as well as east-west ones, and don't forget you can use them not only against Beaver but also against Wally and even against asteroids.

One tip about choosing the side on which to lurk: If your rock, or, if you have saved more than one, the majority of your rocks, is moving in one direction, lurk on the side toward which your rocks are moving. This reduces your chances of being hit by a rock suddenly flying over the edge from the opposite side. If the path of the rocks gives you no guidance, lurk on the right side, where the machine's decor does not even slightly obstruct the screen.

If you find yourself within Beav's range and cannot immediately escape, or if you bravely decide to take on Beav in hand-to-hand combat, maneuver your ship through an erratic course: If you speed straight at him, Beav will usually track you so well that he'll blow you to pieces before you get to him.

In the souped-up version of Asteroids everything moves faster than in the standard edition. More important, Beaver not only fires as soon as he appears onscreen but also fires aimed wrap-around shots. Even most top players find that on the tougher machine they cannot effectively hunt Beaver. Instead, they concentrate on rocks: When there are only a few asteroids on the screen, they no longer save them. Rather, they wipe them out and move on to the next rack.

THE FOURTEENTH COMMANDMENT: Consider the Circus-Circus Option. The overwhelming majority of ace Asteroids enthusiasts hunt Beaver in the way described in the previous commandment. A healthy number, however, employ an effective alternative. Here it is called the Circus-Circus option, because the author first realized its strength when observing a player destroying an Asteroids machine in the arcade at the colossal, plush Circus-Circus Casino in Reno. This player wasted Beaver

over and over with the greatest of style and ease. The player passed 100,000, then 200,000, and kept going.

Of course, many players can do that. But this player was a ten-year-old girl. She refused to divulge her exact identity but said she was of Philippine descent and lived in San Jose. Her personal record was 370,540. She used the Asteroids handle of ANA.

Her strategy was to save a rock or two and fly near the middle of the screen at high speed in an almost perfectly upward direction. When Beav or Wally would appear, she would turn her ship toward the saucer as her ship approached the saucer's altitude. Then, in rapid fire, she would bang out four shots in the direction of the attacker. The shots would hang like aerial mines, either striking the saucer immediately or being hit by the saucer as it moved toward the middle of the screen. (Or missing Beav or Wally entirely.) The player using the Circus-Circus option will miss the target more often than the player employing the traditional Beaver-hunting procedure. But the Circus-Circus competitor will also be almost impossible to hit.

Clearly, in the right hands, the Circus-Circus option can be just as effective as the standard lurking strategy. Against speedy, souped-up machines, it is probably *more* effective. The right hands, however, should be hands resistant to stress: all that pressing of the Thrust button can cause a debilitating ache as the player races into the hundreds of thousands of points. Still, as ANA pointed out, the player can occasionally alternate lurking with the C-C option to give the hands (and the mind) a rest. ANA herself follows this policy.

The Circus-Circus girl, by the way, has a brother, CNA. He also alternates between C-C and lurking. CNA has scored 3,099,990 points, leaving a game in progress with 15 to 20 surplus ships on the screen. But heck, he was *twelve* when he did that.

THE FIFTEENTH COMMANDMENT: Use Hyperspace Only in Dire Emergencies. The use of Hyperspace is a great crowd-pleaser. The unsophisticated video spectator loves to see ships suddenly disappear and reappear, and the Asteroids connoisseur appreciates the exquisite precision of the advanced player who hits the Hyperspace button in the last split second before disaster.

Still, Hyperspace must not be used cavalierly. This is because your ship will sometimes explode on reentry to the screen after being in Hyperspace. Atari's Ed Logg says the reentry explosions

occur once in every three to four trips back from Hyperspace.

Another fact useful to know about Hyperspace is that when your ship reappears on the screen it will be oriented in exactly the same direction as when it vanished. If it was pointing north-northeast before Hyperspacing, it will point north-northeast on reentry—if it doesn't explode.

Tips for the Expert

Even star Asteroids players should study the Fifteen Commandments. But for space athletes who have mastered most of those, here is some brief advice that will squeeze points out of even the advanced player's game.

Fire in Hyperspace After you've hit the Hyperspace button, immediately begin pounding the Fire button. This will enable you, as soon as your ship reappears on the screen, to have a chance to shoot a rock that otherwise would collide with you. More important, the stream of shots from your ship will show you as soon as possible where you are on the screen so you can get right back into action without frantically hunting for your ship.

Draw Fire to Save Snails As noted, it is crucial in the strategy of hunting Beaver for you to preserve one or more slow rocks. Often, however, Beav, in his attempt to shoot you, will shoot a snail rock positioned between him and you. Some top players therefore draw fire away from snails by positioning their ship so the slow rock won't be in the line of fire.

Unboxing Lesson On occasion you'll find yourself in a box: there will be asteroids on all sides and no room to thrust to safety. In this case, instead of rolling the Hyperspace dice, fire repeatedly in one direction to clear rocks out of the way and simultaneously thrust through the hole you are creating.

Three Plus One When firing at Beaver, especially when he zips out from your side of the screen, and when firing at dangerous rocks, it is wise to shoot three times right at the target and then once just ahead of it. That way, if your first three shots miss, the object may still run into your fourth one. *Remember, only four shots can appear on the screen at once.*

A variation on the rule of Three Plus One is to fire three shots—three right at the target, or two at it and one ahead—and

to hold the fourth in reserve for emergencies. Employ this variation only when you are in danger, when that stored shot may be urgently needed.

Avoid the Edge's Razor As soon as the last rock is destroyed, a new rack of rocks will begin floating across the screen. In hunting Beaver, you will likely be near one edge of the screen when the last rock is blown up. As soon as you know the last rock will be hit, thrust far enough from the edge that you will not be overrun by a rock from the new rack.

Fire Forward When thrusting into dangerous or unknown areas of the screen—for instance, when thrusting offscreen into what may be heavy asteroid traffic on the other side—fire aggressively ahead of you to clear a path.

Keep Your Eye on the Future The more you learn from this book and the more you play Asteroids, the better you will be able to predict what will happen next during a game. Realize that when your ship has been destroyed and your new ship is about to appear it will not only show up in the center of the screen but will also be oriented in exactly the same direction as its predecessor ship was pointed when it was destroyed. This will help you plan how to rotate and thrust to avoid rocks flying toward the new ship.

Notice which rocks are about to cross the edge of the screen and approach your ship and calculate which ones will be a threat to you. Maneuver out of the way before it's too late.

When you have time, watch the point score, keep track of how many rocks are left on the screen, and listen to the beat of the sound effects. All these factors will help you to predict when Beaver or Wally will be coming out and to predict whether Beaver will be firing with original accuracy or the improved accuracy he gains at 35,000 points. Eventually you may learn so much and play so well that Beaver fears you more than you fear him.

• ASTEROIDS DELUXE

The engineers at Atari don't give up.

Although Asteroids is an unusually challenging game, many players have conquered it. As player after player thrust and

fired his way past 100,000 points and then past a million, did the men of Atari break into tears and slink away to some dark cave out of the sun of Sunnyvale?

No. They sought revenge. And they got it, they got it. Their revenge is a humiliatingly difficult machine actually *designed* to beat the very players who mastered the original. This vengeful second-generation monster, introduced in March 1981, is Asteroids Deluxe.

You want the good news or the bad? The good news is that Asteroids Deluxe requires for the most part the same skills as its parent. After a few orientation games the Asteroids ace will play pretty good Deluxe. After spending a little more time learning the differences between the games and refining his technique, the Asteroids whiz can show off on the newer game too.

The bad news is that although the same skills are critical in each game, Deluxe is much harder. Even after several serious workouts on the newer edition, the player who scored 200,000 on Asteroids will have trouble topping 40,000 on its mutant offspring.

Besides the basic difficulty of the game, the player is faced with one problem Atari didn't plan. Asteroids Deluxe uses mirrors and ultraviolet light to produce an intriguing 3-D effect. Unfortunately, however, except in dark rooms, the ultraviolet light and the angle of the Plexiglas protecting the screen combine to cause a glare that reduces the visibility of screen objects. Some players deal with this by pushing their faces as close to the machine as possible; this makes objects easier to see.

In fact, the program plus the glare made Asteroids Deluxe so hard that shortly after Atari introduced the machine it offered operators an internal components package to make it easier. Since this package was first used in Europe, the easier AD edition is often called the European version. Despite its nickname, it has become the dominant version of Asteroids Deluxe in America.

This chapter will tell you the differences between Asteroids and Asteroids Deluxe and what to do about them.

Shields

Asteroids Deluxe replaces the classic Hyperspace defense system with something called *Shields*. This is the first difference to master for the Asteroids player who wants to quickly apply his skills to the newer game.

The Shields button is right where the old Hyperspace was. You

use it in similar situations: when nothing else will save you. Instead of making your ship vanish, the button now projects a bright, round barrier around your ship. When an enemy shot hits the Shield, it causes no harm. When an enemy vehicle such as Beaver collides with it, the enemy blows up. When an asteroid runs into the Shield, the rock bounces you and the Shield in the direction the asteroid was going. One bounce can lead to others, as your shielded ship collides with one rock after another.

Your shield has an approximate life expectancy of seventeen seconds. That's seventeen seconds if no rock runs into the Shield and makes it bounce. Each bounce takes away one third of the Shield's original life, or about six seconds. So if you're already down to seven seconds and you bounce off a rock, you suddenly have one second left. If a saucer crashes into your Shield, you lose one half your original Shield life, or about eight seconds. If a rock or saucer collides with the Shield and you don't have one third or one half of your Shield life left, you blow up. Once your Shield is gone, it cannot be recharged through rest. All these factors add up to a single loud message: *Use your Shields as little as you can*. When you lose a ship, the new one comes with a bright new Shield. This is standard, factory equipment, just like the nose and the tail fins. If you want FM radio, that's extra.

Dave Shepperd, Atari's chief programmer on Asteroids Deluxe (he revised and added to Ed Logg's Asteroids work) says Shields are "infinitely more functional" than Hyperspace: "Hyperspace was a panic button; Shields you use to your advantage—you can calculate the effects Shields should have, within reason." Still, in a congested area, Shepperd admits, "Neither is any good." In such a place, he says, you should shoot your way to safety if you can.

Many players prefer Hyperspace. They like the fact that they will probably enjoy a safe escape and they don't like the unpredictability of bouncing from one rock to another. But like it or not, Hyperspace has Hyperspaced, and you now must use Shields. You must learn that the single biggest difference in the use of the button that formerly was labeled Hyperspace is that now you must hold it in as long as you need the escape mode it provides.

Each time you use your Shield, keep an eye on its brightness. As it wears out, it fades. If you're not sure how much Shield time you have left, press the button as briefly as you can just to test the Shield's brightness.

Even if you prefer Hyperspace, you'll be cheered by some

techniques you can use with Shields. You can rotate and thrust your ship even with the Shield on. This lets you maneuver out of danger—while still protected by the Shield—instead of uncontrollably bouncing. You cannot, however, fire through your Shield.

What you *can* do—a very useful little strategy—is, when under attack by Beaver or some other video terrorist, rotate safely within your Shield until you are aiming right at the attacker. Then let go of your Shield and pop the savage weirdo before he knows what's happening.

Killsat

See that pretty snowflake on the screen? The one that floats out from the side with a slightly ominous fanfare? That's no snowflake. That's what Atari calls the Killer Satellite, Killsat. It shows up at the end of the second rack of rocks once there are three or fewer rocks on the screen. In the European version the Killsat comes out at the end of the *first* wave, but it and its offspring move more slowly, making easy targets for even the moderately skilled player.

The Killsat is no more harmful than a snowflake as long as nobody messes with it. But once you or an enemy saucer shoots it or runs into it, it breaks into three deadly Diamonds, each of which will chase your ship like a heat-seeking missile. You try to evade them by thrusting upward, they thrust upward; you move left, so do they. Sometimes they break into two pursuit units, as one Diamond chases you from one direction and two follow you from another.

When you take aim at a Diamond, be prepared for what happens next. Not only does every Killsat break into three Diamonds; each Diamond fragments into two bloodthirsty Sharks. Each one of these is a triangular heat-seeking missile that looks like a shark's tail cruising through the water in *Jaws*.

So You take a risk every time you shoot a Killsat or Diamond: you may kill one enemy assassin, but two or three new ones will hunt you for each one you destroy. To avoid death at the hands of the Killsat clan, shoot your attackers at a distance great enough to allow you to escape.

A proven strategy for safely shooting Diamonds and Sharks is to thrust just ahead of them, briefly take your hand off the Thrust button, and at the same time use a Rotate control to run your ship through a quick little loop, cracking off four shots at your en-

emies when your ship points in their direction. At the end of your loop, floor the Thrust button again and continue ahead of your pursuers.

The Diamonds and Sharks are single-mindedly bent on your destruction. Still, don't let them intimidate you. A good player can stand in against two to three Diamonds and their resultant Sharks and pick off all of them before one smashes into his ship. In fact, as the player improves, he will almost welcome the appearance of the Killsat as a source of relatively easy points—easier than dealing with Deluxe's souped-up Beaver, anyway. Some players hunt Killsats in Deluxe, just like they used to hunt Beaver in Asteroids.

Points in Asteroids Deluxe are the same as in the parent game, except for the following points awarded for the new Killer Satellite and its descendants:

Beaver	1,000
Wally	200
Shark	200
Large rock	20
Diamond	100
Medium rock	50
Killer Satellite	50
Small rock	100

But more bad news: at 60,000 points Diamonds and Sharks get, in programmer Shepperd's words, "really nasty": smarter (better at following) and faster. Unfortunately, Beav and Wally also play rougher starting at the same score.

More Subtle Differences

There are still other key distinctions between Asteroids and Asteroids Deluxe, though none as dramatic as the new button and the new enemies.

Wally and Beav are both more deadly than before. In Asteroids, Wally shoots randomly. In Deluxe, 75 percent of the time he shoots at rocks and 25 percent of the time he shoots in the general direction of the player's ship. If there are no rocks near him, Wally will shoot only in the general direction of your ship.

Beav now shoots at rocks one third of the time and in the player's direction two thirds of the time, and he shoots as soon as he comes on the screen. Also—a critical difference from his behavior

in the unmodified Asteroids machine—he shoots aimed wrap-around shots. Once the player achieves 60,000 points, both Beav and Wally shoot with doubled accuracy. In Deluxe, both Beav and Wally shoot faster and farther than in Asteroids when firing in the direction they are moving or in the direction the player's ship is moving.

Atari's Shepperd says the best way to avoid the new, improved Beav and Wally is to thrust and rotate erratically: "It's good to change direction constantly," he says. Speed alone isn't enough. "The saucers can track well at the player's highest speed," Shepperd explains. He ought to know, the sadist.

The new power of Beav and Wally, plus the fact that they shoot at rocks, plus the new Killsat and its heat-seeking offspring add up to this shocking conclusion: the player must forget the key strategy used to conquer the original Asteroids. In other words—are you sitting down?—*the strategy of hunting Beaver is dead*. Remember, this chapter began by warning that Asteroids Deluxe was designed to beat the very players who mastered the original machine.

To partially counter the new difficulties of Deluxe, the player does get one major advantage over the earlier Asteroids: His spaceship is faster and more maneuverable. Its top velocity is the same as in Asteroids, but it hits top speed *twice* as fast. And its rotational speed is about one fourth faster. If, on the other hand, the Deluxe player is employing his Shield and is thrusting at the same time, his rate of acceleration will be only as fast as in the original game.

A less important advantage is that the Deluxe laser is an *automatic* weapon, unlike the semiautomatic of Asteroids. In Asteroids, you must hit the Fire button every time you want to shoot. In Deluxe, however, if you hold the button down, evenly spaced shots will keep streaking out until there are four on the screen. This is useful to know especially when your firing finger gets tired.

Although your ship may look bigger than its Asteroids predecessor, it represents exactly the same target area. Atari generously added a couple of tail fins but reduced the width of the basic ship body; the result is that the total ship area is about the same.

But to tell the truth, the ship's size has little to do with its area as a target. In the machine's computer mind there are no such things as ships, or, for that matter, rocks or saucers or Killsats. Instead, there are "collision hexagons." Each hexagon covers the approximate area of each moving object on the screen.

32 When you shoot at a saucer and barely miss it but hit the hexa-

gon attached to it, you blow up the saucer. Similarly, if a saucer shoots at your ship and seems to hit it but in fact strikes an area outside the hexagon, you escape. This explains why in both Asteroids and Deluxe a shot grazing the nose or tips of the spaceship will do no harm.

Speaking of hexagons, the Deluxe ship's collision hexagon is bigger when it has a Shield on. So where a ship alone would have been able to squeeze past two rocks, a shielded ship may collide with them.

• DEFENDER

If you'd like to be locked in a closet with a swarm of killer bees, you'll love Defender. The player is simultaneously harrassed by more enemies in Defender than in any other video game in history (except Stargate, the Defender sequel introduced in October 1981). There are Landers, Mutants, Baiters, Bombers, Pods, and Swarmers. They persecute the player by firing shots, tossing out aerial mines, and simply barrelling into the player's ship. These vicious video villains make Defender so frustratingly hard that this book's technical adviser, KQB, says, "If you haven't reached 10,000 on Asteroids, don't even *try* this game."

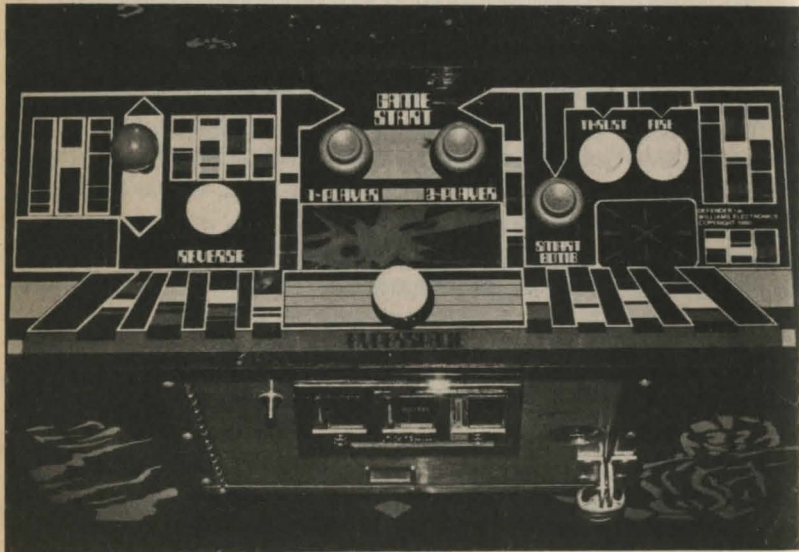
If you want to evaluate the quality of Defender and you know anything about pinball, all that must be said is that this game is produced by Williams. Williams competes with Bally for the title of the world's largest maker of pinball machines, but the company's greatness does not lie in its size. It resides in the innovation and creativity of the Williams machines. A list of some Williams pinball games of recent years will remind the video/pinball player of the awesome contributions of this Chicago company: Flash, Gorgar, Firepower, Blackout, Black Knight. Except for Blackout, each of these games captured first place in *Play Meter* magazine's earnings poll; Blackout made it to number two, but behind only its Williams stablemate Firepower. Every one of these machines blazed an important new path in the pinball wilderness.

So when Williams designed its first video game since 1977, the company had a reputation to maintain. It not only maintained its standing; it enhanced it. It created Defender.

The first Defender machines hit Europe in December 1980, and US locations began to receive the game in February 1981. By May Defender had rocketed to number one in *RePlay* maga-

zine. In *Play Meter* it topped the list in the August 15 issue. In each magazine it held the top slot for more months of 1981 than any other video game. Demand so overwhelmed supply that Williams was forced to add massive new manufacturing facilities. The company eventually manufactured 55,000 of the machines, almost all for the U.S. market.

In the December 1980 press release introducing *Defender*, the company called it "the most advanced video game ever created." "Advanced" means many things to many people, so the claim is subject to debate. But in all probability *Defender* was the most *complex* game ever, at least in terms of stored information: Its memory contains 26 kilobytes of computer-coded data (a kilobyte is 1,000 bytes; (one byte is made up of 8 bits; a bit is the smallest unit of information), about 10 kilobytes more than other popular games.



Defender

In *Defender* you control the white and pink-purple spaceship that appears near the center of the screen and looks like a rocket-powered drag racer. You control it with a red lever, which moves the ship up and down, and with a white Thrust button, which propels it forward. To reverse its direction, you hit the Reverse button. You get three ships to start, one at a time.

Unlike most games, where you get one weapon, here you get two. On your ship you get a Laser, which you fire by hitting the button labeled Fire. You also get all-powerful Smart Bombs, which blow up all enemy vehicles on the main screen. These are detonated by the button marked Smart Bomb.

You'll need all the brilliance you can muster to master *Defender*. You will also require both your weapons—the Laser and the Smart Bomb. In addition you'll need the combined New York and Los Angeles police departments, the Israeli Air Force, and every one of *Star Wars*'s Jedi Knights. Unfortunately for you, all are busy elsewhere.

You get one more control in *Defender*, the Hyperspace button. You've seen this before, in *Asteroids* and other games. It does the usual trick here: removes you from a dangerous part of the screen and sets you down somewhere else. Like *Asteroids*, *Defender* will often cause you to explode on reentry to the screen. Also, you may very well return from Hyperspace into an area teeming with as many horrifying enemies as the spot you left. In addition, this incredibly advanced video machine has somehow failed to locate the Hyperspace button close enough to the player's hand to be as useful as in other games.

Defender is advanced in providing a radar screen, called a Scanner, that lets you see what's going on in areas of the planet's atmosphere not visible on your main screen, which shows only one eighth of a planet's sky. Using your Scanner is very important to success. On this radar display, your ship is a big white diamond. Shots and mines don't show up. Everything else looks more or less like a miniaturized version of how it looks on the main screen.

Mission Improbable

Your mission, Jim, should you decide to accept it, is to protect your ten Humanoid buddies from abduction by the enemy forces. These Humanoids, or men, are stranded on some planet supposedly other than Earth. They have no weapons to protect themselves, but they do slowly walk around in a feeble attempt to escape.

Escape what? The Landers, of course. The Landers are green and yellow aliens who look like airborne diving bells. Most of the time they just float around getting in your ship's way and shooting at it. Sometimes, however, they suddenly descend, fire more frequently at your ship if you are nearby, and latch onto one of

your Humanoids. Then they ascend rapidly to the top of the screen, firing at you as they rise. You'd better shoot them before they get to the top, because when they get there, they eat the Humanoids.

Once the Lander has, in a single giant bite, swallowed the Humanoid, the Lander *mutates* into a *Mutant*. Williams, the manufacturer, says the *Humanoid*, rather than the Lander, mutates, but a Mutant looks just like a Lander would if it ate a Humanoid and got extremely sick to its stomach. It turns green and purple and starts flashing. You can even see the poor Humanoid *inside* the Mutant. It's *disgusting*. Listen, this is no game for wimps or sissies: If you have a weak stomach, stop reading this section and move on to some sweet, pacifistic game like Pac-Man. (Also cancel biology class for next semester: You won't like that either.)

Not only does the Lander become a revolting-looking Mutant, it also becomes much more powerful. It's just like in *The Incredible Hulk* when that nice Dr. Banner gets angry and turns into the grotesque, super-muscular Hulk himself. The Mutant flies rapidly toward the player's ship, jerking back and forth as though it's dancing to "Shake Your Groove Thing" being played at 200 rpm. Wherever the player goes, the Mutant follows, like a nauseated heat-seeking missile. It does its best to run into your ship. It also fires shots, more frequently than the Lander did. Fortunately, if there isn't too much else happening on the screen, you can outrace the Mutant. Often, however, there is too much going on, or a whole gang of ugly Mutants is after you at once.

So it's a good idea to keep the Lander from kidnapping your little buddies and consuming them. And there's more bad news: When all your men have been consumed or destroyed, your whole *world* blows up. More on that later. The game isn't over yet, but unless you're an unusually skilled player, it soon will be.

So what you do is wipe out as many Landers as possible before they grab your Humanoids. If a Lander does abduct one of your tiny friends, you'll hear a terrified squeak coming from the Humanoid and on your Scanner you'll spot a little green dot towing a little white dot to the top. If you can, drop everything, speed toward the kidnapper, and try to rescue the kidnappee. To do this, shoot at the Lander, keeping your shots a little on the high side so as not to kill your man. One safe, but slow, way to do this is to fly to the side of and above the two, then shoot rapidly until the Lander rises into your line of fire.

Once you've wiped out the Lander, your man will fall slowly back toward the ground. Do your best to rescue him before he

hits the surface. He apparently is wearing shock-absorbing running shoes, because if he falls from a low altitude he will survive and you will get 250 points. But he has no parachute, and if he hits the surface after a fall from even moderate height, he will break into pieces and disappear, leaving you one man closer to the end of the world.

To make rescue easier, some players shoot at the Lander while making their ship descend. If they hit the Lander, they will be moving in the same direction as the freed Humanoid—down—and will be more likely to make a rescue.

To rescue your man, you run into him with your ship. If you want to pretend you're gently picking him up, you can just touch the top of his head with the bottom of your ship, but crashing into him at maximum speed will do the job just as well. When you run into your man, he will begin hanging from your ship like a gigantic and tasteless earring. The screen, using a different color for each digit, will cheerfully announce you have gained 500 points.

You can choose to hang onto your Humanoid or you can decide to replace him onto the surface. Carrying him along is a good idea if he is your last man (remember, if your last man is eaten, the world blows up). Also, carrying him avoids spending time to set him down. Hanging onto your Humanoid has little hazard: He doesn't slow you down and he doesn't increase your size as a target: If he is struck and you aren't, nothing happens. The biggest problem with carrying your man is that if you are hit and destroyed, the man will survive but will be on the surface when the game resumes. This is bad because if you had set the man down you would have received 500 more points. The other danger of carrying your man is that as you use the lever to move up and down on the screen, you will likely descend far enough that your man will hit the surface (safely), and although you will get the 500 points, you won't set him down where you want to.

If you decide to hang onto your man, remember that you can at one time haul any number of your men, even all ten. If you're carrying one Humanoid and you run into another, you'll gain another 500 points and will carry him too, though it'll look like you're carrying only one man (one must suppose the second man is directly behind the first and you just can't see him). If you're carrying multiple men and you descend to the surface, all the men you were hauling will be safely replaced on the planet and you will get 500 points for each one. The more men you are carrying, the more points you will fail to gain if you do not set them down before the end of the attack wave.

If you decide to unload the men you've rescued, set them down on as low a place as possible: A Humanoid placed in a valley will take longer for a Lander to haul to the top of the screen than will a Humanoid perched on a mountaintop. Also try to unload them in the same general area so you can guard several at once.

Armageddon

Now let's get back to the world blowing up, also known as the planet exploding. This happens when your last man has been consumed by a Lander. It also occurs if you destroy your own last man by letting him drop to the surface from even a moderate altitude or by mistakenly shooting him.

How do you know when your planet has blown up? Oh, you will know, you will know. Have you ever been in a head-on crash at eighty miles per hour? Did you know you had been in a collision? Okay.

In Defender, when the world blows up, the screen makes it look like a hydrogen bomb has just exploded in a confetti factory. Dozens of shreds—red, orange, white, blue, purple—flash into view. At the same time the screen is suddenly splashed with thick pea soup in three successive shades of spoilage: green, blue, and purple. While all this is going on, there is a dangerous-sounding series of sizzles and pops, as though the entire population of Philadelphia has simultaneously stuck their index fingers into a light socket.

You may be able to take the audio and video effects, but unless you were the most decorated fighter pilot in a recent war you're unlikely to be able to handle what comes next. What happens is that the Landers and the planet surface itself disappear and the screen becomes filled with zillions of twisting, flashing Mutants (after the end of the world, every Lander becomes a mutant). There are often eight or ten of these shaking perverts—each with more energy than before—just in your section of the atmosphere, with many more on their way. In addition to Mutants, there are plenty of other enemies, all of which survived the world's explosion: Baiters, and in the second and later waves, Bombers, Pods, and Swarmers. Have a nice day.

Now are you convinced you should keep the planet from exploding? Now do you understand why you should save your men? Still, because every player eventually experiences a planet explosion, this chapter will tell you what to do when you come to

that horrible point in your life. First, however, now that you understand the principal object of the game—to save your Humanoids and thereby prevent the world from blowing up—let's start from the beginning of the game and explain what to do. You already know how to save your men, but that's just part of the story.

From the Top

Feed the machine a quarter. This will cause it to emit a low, weird, electronic belch, as though it has eaten too many quarters lately (which, given the success of this machine, is very likely). Then push the button that selects the one-player game or the two-player variety. Now the machine lets out an even louder electro-burp. The game is under way.

For a moment, only your ship will appear on the screen and on the Scanner. Then, suddenly, lots of Landers and Humanoids will noisily materialize all over the place. The hunt is on.

Don't move until you get a look at the Scanner. Based on the blips you see, decide whether to move left or right. You can stay still, but Landers will grab your men and, if enough time elapses, the Baiters will come for you. You do not want this to happen. So get moving. Move mostly in one direction (going back and forth takes more time than it's worth).

Move in the direction that has the greater number of Landers. Thrust and fire alternately or, if you're a hot player, at the same time. Don't move too fast, or you'll run into things before you can destroy or evade them. If you collide with any enemy, you blow up. Generally, your first priority in each wave is to nail Landers, rather than other enemies that may seem more threatening or more attractive. And among Landers, your first priority is to get Landers that have kidnapped—or are about to kidnap—your men. Shoot the Landers before they run into you and before they grab one of your men. Since they fire shots, shoot at the Landers from far enough away that you can evade their fire. (In fact, as the game progresses, shoot *all* enemies from a safe distance.)

Use the Scanner to help determine the proper altitude for your run at the attackers. When you approach an object you want to strike, fire as rapidly as possible while moving up and down within the small vertical range in which the target is flying. Remember that Landers and other target objects are in constant motion, either vertical, horizontal, or both.

Landers may be joined by Mutants and Baiters. Mutants, as described, are Landers that have reached the top of the screen with a kidnapped Humanoid. Baiters are the most terrifying enemy on the Defender screen, perhaps the most terrifying enemy in video game history. They are little spaceships that look like bodiless, two-eyed, green heads. They follow you at very high speed—faster than you can go—in a crazed attempt to run into you and kill themselves and your ship. They also fire at you. Their size and speed make them maddeningly elusive targets. During each wave Baiters show up if you do not *very* quickly knock off all the other enemies on the screen. You get 150 points for wiping out a Lander, 150 for a Mutant, and 200 for a Baiter.

If there are so many attackers on the screen that you can't evade or shoot all of them, you can Hyperspace to another—possibly safer—place in the atmosphere or you can Smart Bomb them. Using the Smart Bomb is extremely effective: It blows up every enemy on the main screen. (If, however, you detonate a Smart just as a shot is about to hit you, you will be destroyed by the shot as the Smart wipes out your opposition.) Unfortunately these awesome weapons are in short supply. You get one with each ship, so you start with just three. If you can escape by maneuvering, save the bombs for a rainy day. You can be sure you'll be in a torrential storm soon enough.

But a warning to inexperienced players: Save your Smart Bombs only if you probably will use them in the future. The most obvious mark of the Defender novice is a complete supply of Smarts still on the screen as it flashes GAME OVER. Each one of these bombs could have been used for easy points, could have been used to save the player from a lethal assault, but the player was too overwhelmed to remember to use them or was too confident that he would get to a stage of the game where he would need them more. A full set of unused Smart Bombs is perhaps the saddest sight in all of video games.

Once you have liquidated all Landers and Mutants, the first attack wave will end. The screen will award you 100 extra points for each Humanoid that remains on the surface. (In the second wave you get 200, on up to a maximum 500 in the fifth and following waves.) *You will start the second wave with the number of Humanoids that remain in the first.*

By now you will have about 3,000 points. Points have not been emphasized so far because points in themselves have little importance. You can be running up a high score and, because

you haven't paid attention to saving your men, the world can explode and the game for most players will nearly be over. Points are important in two respects: First, they earn you new ships and Smart Bombs. You get one more of each with every 10,000 points you score. You can earn up to 256, though only five stored ships and three stored Smarts show on the screen. Second, points allow you to compete with yourself and with others. But the player who successfully defends his ship and men will automatically get a lot of points, while the player who successfully goes after points alone may quickly be faced with a screen announcing the end of the game.

It Gets Worse?

If the first wave was the frying pan, the second wave is the fire. The Landers, Mutants, and Baiters of the first wave are joined by three Bombers and one Pod. A Bomber is a blue square with a purple square behind it and a flashing yellow one in front. A Pod is a square of blue and pink-purple with a flashing yellow one in front. There are three Bombers in the second wave and six in later ones, always traveling in loose formations of three. Bombers lob out little white X-shaped aerial mines, also called bombs. These briefly hang in the air, waiting for you to run into them. Then they disappear. If you shoot a Bomber, it will not only blow up and give you 250 points; it also will make the most satisfying sound in video games outside of the swallowing noise in Pac-Man: Hitting a Bomber sounds like slamming a door on a Rolls-Royce—*solid*. Bombers drop mines only *behind* them. You should therefore fire at them as they're approaching, not as they depart.

The similar-looking Pods are very different from the Bombers. They're worth 1,000 points, they're easy as pie to hit, and they always show up right near your ship at the start of every attack wave. So they're very tempting. Resist temptation; deal cautiously with Pods. Williams, in the company's original Defender brochure, used to call each Pod a Mother Ship, and this tells you why you should take care with these mothers. When you shoot a Pod, it blows up but simultaneously releases one to eight little red and yellow Swarmers. Each Swarmer is a murderous, heat-seeking missile, not quite as shifty as a Baiter but much quicker than a Mutant. Like its cousins, it fires shots. The biggest problem with Swarmers is not their mobility but their size: They're so tiny,

they're very hard to shoot before they crash into you. For each one you shoot you get 150 points.

There is one Pod in wave two, three in wave three, and four in the waves that follow. One way to deal with Pods is to evade them for as long as possible. Another is to shoot the Pod for 1,000 points, then Smart Bomb the Swarmers or streak away. You can also shoot the Pod and take on the Swarmers. A fourth strategy is to Smart Bomb the Pod, hoping the bomb will nail the Swarmers too.

Be Smart with Smart Bombs

The second wave is where even a skilled player must start thinking seriously about using one of his precious Smart Bombs. Sometimes even this early in the game there are simply too many savage enemies on the screen at once for you to shoot your way out, and Hyperspace is no sure route to safety. Also, it must be admitted, it's *fun* to Smart Bomb all these depraved weirdos who have been tormenting you. Not only do you get rid of them, but there is a loud machine-gun rattle and your ruthless pursuers are blown into dozens of colorful bits.

When you do elect to use a Smart Bomb, make it count. Wait until as many dangerous creatures as possible are on the screen at once: the more enemies, the greater threat you erase and the more points you get. Then hit the Smart Bomb button and for a fleeting moment enjoy yourself. If you're skilled or lucky, you can run up a lot of points this way. Even at the start of just the third wave it is possible to grab 5,700 points by wiping out three Pods (3,000) and 18 Swarmers released by them (2,700) with just one well-timed press of a button (plus a few more points for any other enemies on the screen). That many points, of course, can mean the difference between a good game and a bad one, especially because 5,700 points often will lift a player to a multiple of 10,000 and earn him another ship and Smart Bomb.

Resurrecting the World

Now you know the basic actors on the space stage of Defender, and you know the two basic things you must do to survive attacks and rack up points: save your men and use your Smart Bombs sparingly and productively.

But you still don't know what to do when through mistake or

due to an overwhelming enemy onslaught your planet explodes. If you are a lawyer, you can let the Mutants take over the screen, you can get some witnesses, and you can sue Williams for the unconstitutional act of cruel and unusual punishment. If you are not a member of the bar, you can try to survive.

The chief way to do this is to use the same techniques you have employed all along: destroy and evade your attackers. But there are so many attackers and the attackers are so brutal and elusive that you will almost certainly have to use one or more Smart Bombs to stay alive. So one of the keys to survival *after* the planet explodes is to have played intelligently *before*: If you have used your Smart Bombs only when absolutely necessary, you may have enough now to have a chance.

But why survive? Won't you eventually be blown away because the planet will remain destroyed and because there won't be any sitting-duck Landers and instead there will be only Mutants and worse? Not exactly.

Beginners don't know this, and some stars don't either, but the planet is restored to good health every fifth wave. Both Humanoids and Landers make an encore appearance. Life becomes manageable again. Not the fifth wave after the world explodes, but the fifth wave since the game began. So the world comes back on the fifth, tenth, fifteenth wave, and so on. It remains intact until all the Humanoids are again lost.

Your problem is to survive until one of the magic waves. Again, a key to a successful present is a successful past. If you are well into the game when the planet explodes, you will have a shorter way to go until the wave when the planet is restored. So do your best to survive as long as possible before the world is destroyed and do your best to save your Smart Bombs, and you will have a chance even against a frighteningly mutated world.

Good scores? First game: 1,000. After \$10: 20,000. Star: 500,000. Astonishingly, this is yet another game where some video pilots have rocketed past a million points.

If you have a great game, you can gloat about it for months: Defender doesn't just record the top eight scores of the *day* (under "Today's Greatest"). It also stores eight sets of initials in a battery-powered memory that is retained *even when the machine is unplugged*. It glorifies these eight under the modest title "All-Time Greatest." Even if you just make the "Today's Greatest" chart, the machine feels so desperately humiliated that it actually plays a brief funeral dirge for itself.

Notes for Novices

There are several ways that unripened Defender players wreck their games and expose their inexperience. Here are a few hints to keep you from making a fool of yourself.

- *Don't shoot your own men.*
- *ABSOLUTELY don't shoot your Last man.* (If you do this, leave the arcade immediately and move to another state.)
- *Don't run into enemies.*
- *Use your Smart Bombs.*

Hot Tips for Hot Players

As in other video games, some of the most sacred rules can be profitably violated by expert players. Here are some violations of those rules as well as some other proposals that the Defender master should consider when he is not busy with an important international tournament or with starring in a Lite Beer commercial.

- *Let the Landers grab your men.* Your chief priority, of course, is to save your planet by saving your men. So don't let a Lander snatch a Humanoid if you're not confident you can rescue him. But if you can perform a rescue, you get 500 points when you latch onto your man and 500 more when you set him back on the surface. That's a useful 1,000 points per save. Sometimes you can even rescue the same man more than once in a single wave.

- *Shoot your own men.* What? Yes. Mark Cerny, a University of California student who was the first known Defender player to reach a million points (in early 1981), starts each wave by shooting all but one of the Humanoids. This keeps them from being turned into vicious Mutants, but it also means the planet will explode if the player loses only one more man. So attempt this strategy only if you're a terrific Defender defender.

- *Pulverize Pods promptly.* In the third and succeeding waves, as noted, there are three or more Pods. If you are willing to deal with the Swarmers they will release when destroyed (these Swarmers may escape a Smart Bomb explosion), Smart Bomb them at the beginning of the wave, when often all are on the screen at once: This way you get maximum bang for your bang.

- *Surprise the Mutants.* When Mutants are after you, wait until

one is directly behind you. Then suddenly hit the Reverse button and nail it before it can run into you.

- *Cross the International Date Line.* The International Date Line is an invisible line on the Earth that runs from the North Pole to the South Pole, west of Hawaii. On the east side of it, it's one day; on the west side, it's a day later. In Defender, there's also what might be called an International Date Line: a line that separates two very different situations. In the game it's near the tallest mountain on the planet (it also exists when the world has exploded, but at that point in the game there is no landmark to help you find it). When you are on the left of the line, Mutants will pursue you by as short a path as possible. When you slip over to the right side, however, their defective computer minds will make them think that the quickest way to you is to the left: the longest possible way. So if too many Mutants are on your tail, thrust to the right, just over the line, to get a brief breather, then move back across the line to nail as many Mutants as you can without getting wasted yourself, then escape again, continuing until you've cleared out all of these shaking creeps.

- *Learn how to shoot Baiters and Swarmers.* To attain high scores in Defender, you must learn to effectively fire at Baiters and Swarmers. If you use Smart Bombs on these evasive enemies, you won't have enough of the precious weapons left when you need them for even more important purposes.

When one or more Baiters are after you, do not panic. Though Baiters are very frightening for players with only moderate Defender experience, they can be beaten. Mark Cerny, the Defender wizard from Berkeley, once hit forty-two in a row. Take on one at a time if at all possible. If more than one Baiter is after you, thrust or Hyperspace until only one poses an immediate threat. Then calmly and smoothly line up on its exact level and fire on it at close range. If you are after another enemy at the same time you're after a Baiter, nail the Baiter first: It's very hard to deal with a Baiter if your full attention isn't on it.

Swarmers fire at you only as they approach you. So evade them as they streak toward you and fire on them as they move away, before they turn around and come back firing. When they are approaching, you can often very rapidly get rid of several of them by moving to their approximate altitude, then firing continuously in a single line: As the Swarmers home in on you, many will rise or descend to that exact—and lethal—level.

- *Last man strategy: what to do when all but one of your Humanoids have been mutated or destroyed.*

(1) The simplest, most common course to take is to wipe out all Landers before one can grab your last man. If this isn't possible, try step two, three, four, or five.

(2) Guard your last man by floating near him. The bad guys will come to you and you can knock them off. Try to fire with your back to your man so you don't accidentally shoot him.

(3) Thrust to near your man, let a Lander grab him, then shoot the Lander and latch onto your man. This lets you avoid sitting in one place to guard your man and allows you to speed anywhere on the screen to attack enemies.

(4) If you are far from your last Humanoid as a Lander steals him and rapidly rises toward the top of the screen, floor your Thrust button until the Lander is in range and then shoot it. If you can get to the area of the atmosphere containing the Lander but can't shoot it in time, use your Smart Bomb and then catch your falling man. If you have no Smart Bomb but you have a backup ship, run into something with your ship: This will destroy your ship, but the man will return safely to the ground.

(5) If there isn't time to thrust to the area of the Lander before it reaches the top, repeatedly Hyperspace in hopes you will appear in the Lander's locale before he devours your man.

• *End of world strategy: what to do after your planet explodes.*

(1) If you can do so safely, wipe out all enemies on the screen by firing at them. As you waste one pack of attackers, ready yourself for more: Reinforcements will rapidly arrive. If you have a chance to thrust, thrust toward stray enemies, whom you can pick off easily, rather than gangs, which probably will overrun you. Shooting settles problems while evasion postpones them. Still, remember that with quick maneuvering you can temporarily elude many enemies. Sometimes the player can most readily escape a horrifying pack of approaching Mutants by thrusting right at them and then slipping through an opening in their midst.

(2) If you are overwhelmed by enemies, use your Smart Bomb. Before using it, wait until as many enemies as possible have been attracted to your area.

(3) If you are overwhelmed but also are out of Smarts, hit Hyperspace and come up firing as rapidly as you can. As soon as you are about to be destroyed, Hyperspace again and blast away where you next appear.

(4) When you're feeling overmatched by the insane Mutant world, it will do you no good to let the enemy know you've lost your confidence. These assassins can smell fear a mile away. Instead, act as brave as you can. Technical adviser KQB says there

comes a time in the life of every Defender player when he must stand up to the Mutant bullies. KQB says: "When your planet explodes, thrust full speed at the biggest pack of Mutants. When you reach them, scream, 'Let's go, suckers,' and fire as many shots as you can." But before you take this strategy to heart, remember that KQB loved the ending to *Butch Cassidy and the Sundance Kid*, where Newman and Redford, faced with certain death at the hands of a hundred Bolivian riflemen, sprint out of their hiding place, each blazing away with two pistols. All that survived of them were their names in the credits.

• PAC-MAN

Numero Uno

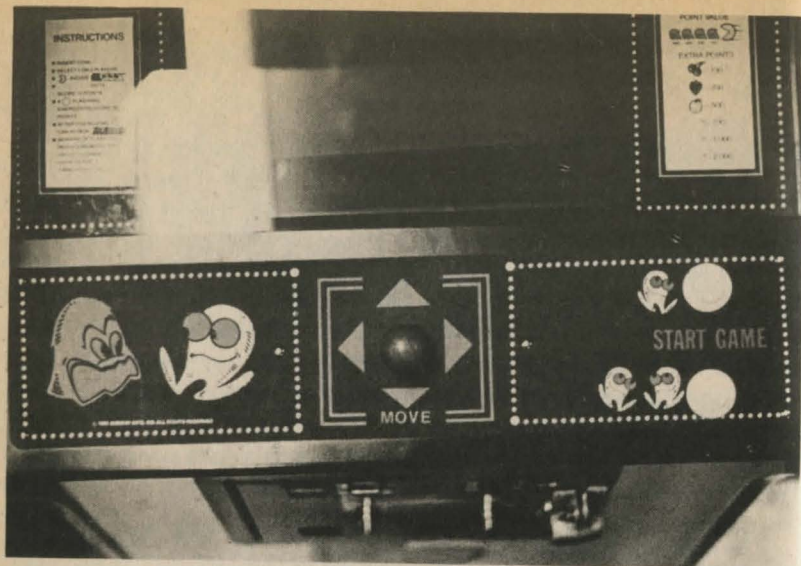
Pac-Man is number one in America. It's in first place in legal (and illegal) lifetime sales in the history of the United States. Midway, which licensed the game from Japan's Namco, has made about 100,000 Pac-Man machines, and illegal copiers may have produced a similar number. For much of 1981 Pac-Man was also number one in the *Play Meter* and *RePlay* surveys of top-earning US machines.

What explains this unique success story? It's a fun game, a game with clear and colorful pictures. But the keys to its unique sales success may be the two ways in which it's distinct from every other giant seller in US history. For one thing, it can be controlled by just one hand on just one lever. For another, Pac-Man, far more than any other video game in history, has strongly appealed to women. More men than women play it, but the machine has brought millions of women into the video game market who had never played the games before.

The Game

The theme and appearance of this game are also very distinctive. In Pac-Man the player is presented with a maze: deep blue lines against a black background. In the center of the maze, near the bottom, is a little, perfectly round, yellow face with a giant mouth. This is the Pac-Man, also known as the Chomper. With the lever the player controls the movement of this hungry little fellow: up, down, left, and right.

Also in the maze are 240 tiny white dots, four big white dots



Pac-Man

(Energy Dots), and four little Monsters. The Monsters are a red one called Shadow and nicknamed Blinky, a pink-lavender one called Speedy or Pinky, a blue-green one whose name is Bashful (alias Winky), and a yellow-orange one known as Pokey or Clyde.

Twice in each table (or rack or wave, if you prefer), a symbol appears at two different times in the center of the screen just below the middle. In the first table it's a cherry; later it's a strawberry, a peach, an apple, a pineapple, a Galaxian flagship (a refugee from another Namco game), a bell, and a key.

The object of Pac-Man is to munch unto others as you would NOT have them munch unto you. You get ten points for each tiny dot you eat and fifty for each Energy Dot. When you gulp an Energy Dot, it makes all the Monsters turn blue (for periods that generally lessen during the game, from about six seconds down to one), except late in the game, when they don't change color. When the Monsters are blue, you can eat them. When they are their usual colors, they can eat you and you must therefore flee them. When they're blue and you eat them, you get 200 points for eating the first one, 400 for the second, 800 for the third, and, if you're skilled enough to nail the last one, another 1,600 for the last Monster Meal and a total of 3,000 for the consumed quartet.

The points for swallowing the symbols increase during the game, from 100 for a cherry up to 5,000 for a key. Once you've eaten your way through a whole table of tiny dots (you need not eat Energy Dots or symbols or Monsters), the table/rack is over and another one is about to begin.

Of course it's not just you who's hungry. The four Monsters all have permanently unsatisfied appetites and a taste for nothing except your succulent yellow face. They chase you—one at a time up to four at a time. If they get you, your Chomper sadly and gradually shrinks away to nothing at all. You get three Pac-Men to start the game and another at 10,000 points. No more are awarded, even if you study this chapter carefully enough to go all the way to one or two million points. So, even more than in most video games, defense is more important than offense. Remember: *An eaten Pac-Man consumes no dots.* (When video games are awarded their rightful place in society, this motto will be carved over the marble portals of public buildings.)

In a world of machines featuring loud and deadly space battles, Pac-Man is a video game that is undeniably *cute*. The Pac-Man and the Monsters are all brightly colored itty-bitty fellas with faces that are amusing, endearing, or, at times, sheepish. The sounds are cute too: When the Pac-Man eats a tiny white dot, it makes a chomping noise; when it eats a Monster or piece of fruit or other symbol, it makes a deep swallowing sound that you can almost feel in your throat. Each game even starts with a light little melody played with electric-organ tones.

Absolutely the cutest part of this cutesy-pie machine is the cartoons, also known as halftime shows. At five different points—always between tables—the yellow Pac-Man and Shadow, the red Monster who is the most feared of all, put on a short skit. After the Strawberry table (the one in which the Pac-Man can earn a bonus by eating one or both strawberries that fleetingly appear) the little Pac-Man flees to the left, pursued closely by the red Monster. They disappear offscreen, only to come back immediately with the red Monster now speeding to the right, chased by the yellow Pac-Man, who has just been transformed into a giant facsimile of his former puny self. His now-gargantuan mouth is chomping away and he is gaining, gaining, gaining on Shadow, almost reaching him as the video vaudeville duo exits the stage. Other halftime shows are equally entertaining and even involve Shadow in poses employing frontal nudity. Not *exciting* frontal nudity—Shadow is, after all, a half-inch-high cartoon character

shaped like half a watermelon and possessing no known sex or sexual organs—but frontal nudity nonetheless.

The Glorious Get Brothers

What's a Davis? Now for secrets of how to plaster Pac-Man. These secrets come to you direct from the Pac-Man capital of the western United States and possibly of the world. Would you like to guess the town that is the Pac-Man center?

The Pac-Man capital isn't San Francisco or Los Angeles. Nor is it Seattle or Portland. It's Davis.

Davis? Davis. What is Davis? Where is Davis?

Davis is a town in California. In the Central Valley, twelve miles west of Sacramento, an hour east of the San Francisco Bay Area. Population 36,000. A combination college town (University of California, Davis) and suburb (but not attached to an urb). The typical Davis woman is a healthy, twenty-year-old, blond UCD junior holding her dress down with her left hand as she steers her Peugeot ten-speed with her right. The standard Davis man is an athletic, twenty-year-old, brown-haired UCD junior drinking a pitcher of beer with his buddies. Anyone over twenty-four is eligible for discounts as a senior citizen. The religion of this semi-progressive town is neither Christianity nor Judaism but solar energy.

So how come this little valley college town is the Pac-Man capital? Because Davis is the center of the lives of the three GET brothers.

The GET brothers invented the GET pattern, which is a near-perfect solution to all Pac-Man tables from the first Apple through the Eighth Key. (The GET brothers say it's best to devise your own patterns for the relatively easy pre-Apple tables: doing so will help you understand the game.) And one of the GET brothers created Bazo's Breaker, the near-perfect way to deal with all the tables from the Ninth Key to infinity.

Introducing the Brothers GET stands for George, Ed, and Tom. In the evolution of man, the amoeba came first. In the evolution of GET, it was Tom. Tom Fertado is the slender, thirty-six-year-old baker at the capital of the Pac-Man capital: the Fluffy Donut & Sandwich Shop in Davis. Fluffy's, a small store in a

mall, is open from 6:00 A.M. to 2:00 A.M. every day and for a long time has had one of the most constantly played Pac-Man cocktail tables on the planet.

Tom has slightly receded black hair specked with gray and sports a thin black mustache. Before he met George and Ed, Tom had already played a lot of Pac-Man and had come up with some effective patterns.

George Huang ("Hwong") and Ed Bazo ("Bosso") were friends before they met either Tom or Pac-Man. Asked to describe himself, George replies, "Normal Chinese guy with long black hair. A guy who always wears the most advanced watch available—this one has four video games on it.

"As a child I was a loner, I had few friends, I was not big or athletic. There were few hobbies or sports in which I could succeed, so I resorted to games that use the mind."

He's done all right at video games: "About two million on Pac-Man" (he lost at that point, he says, because "I don't get enough sleep so I'm always tired"), 85,000 on Space Invaders (an awesome performance not far from the best known), "almost nine million" on Asteroids (leaving the machine with "about 150" extra ships left), and, perhaps his best performance, 1,700 points on the 1977 sit-down version of Night Driver, with a top speed of 650 miles per hour (good players usually score around 200, with a top speed of about 250; the highest speed George has even heard of, other than his own, is about 520).

Then there's Ed. Ed is Ed Bazo, as in Bazo's Breaker. Like George, Bazo is twenty-two and a UCD math graduate. Now he's in the university's math Ph.D program and is taking physics courses on the side, but he says, "I don't spend much time studying."

Ed, wearing a Pac-Man T-shirt, talks about his friend and himself: "Both of us are extremely competitive, and that's a prerequisite with video games. In order to devote all the time and money to these games, you've got to have some kind of drive." He says their competitive instincts are aimed mostly at the machines: "We're never out to stomp each other into the ground."

Tom introduced Pac-Man to George, and shortly after that George explained it to Ed. This was at the beginning of 1981. Soon the three were playing almost nightly. Tom was ahead, then George and Ed caught up quickly and the three became "the best around"—the best in Davis and nearby cities. At Fluffy's, then operating twenty-four hours a day, they averaged

more than twenty hours a week of play and spectating. This cost them two or three dollars every night even though, as ace players, they played unusually long games on their quarters. Often they came in at seven or eight in the evening and didn't leave until a full workday later, around two or three. George, playing as well as studying, once was there for forty-eight hours straight. Sometimes twenty-five or thirty fans would crowd the narrow space near the Pac-Man table to watch the GET brothers in action.

George and Ed became better than their former coach (whose top score is about 350,000) and began to travel around California. They found that they could beat the players reputed to be the best in the Bay Area and the best in Los Angeles and Orange County. They've never even *heard* of anyone who sounds like he could match them.

Of the two, Ed is the stronger player. George, Ed, and Tom contributed about equally to the GET pattern, but Ed invented Bazo's Breaker on his own. He has been over two million on Pac-Man, and stopped playing not because his last yellow Chomper got eaten but because he had to leave: He had lost only one man and had three to go.

Ed is also a talented player of other video games: around 100,000 on Defender, Missile Command, and Galaxian, and an astronomical "five or six million" on Asteroids, which he quit with more ships than the screen can display (it can show sixty).

Not only have the patterns launched George and Ed to fantastic scores; they have also spread throughout California to rocket others to the higher ranges of the Pac-Man atmosphere. Perhaps most prominent of the GET disciples is Shyrle DeHaven. In July 1981 she qualified for the Guinness Book of World Records by sitting on a stool and playing an upright Pac-Man for twenty-eight straight hours at the Dairy Queen in—guess where—Davis. She therefore helped strengthen Davis's claim as possibly the Pac-Man capital of the entire planet. Though she used the GET pattern (and two patterns she created herself), she is not the player that George, Ed, or Tom is. In her marathon she did not play just a single game, but ran through many, with a top score around 162,950. Not bad for her age, though: She's over fifty.

Even though unusually intelligent and talented, both George and Ed are humble. To get either to provide the statistics that set them apart from the crowd—in intellect or video game ability—you must ask them questions.

52 Their humility stops, however, when they begin to talk about

their patterns, developed over so many hours, coffee cups, and Fluffy doughnuts. George explains: "Since the introduction of Bazo's Breaker, the machine Pac-Man has literally been beaten, because a person with sufficient skill can literally get millions of points. The only limit is your stamina."

Says Bazo concisely: "My pattern is infallible."

More Than Patterns Before getting to the patterns themselves, let's listen to Ed and George expound on Pac-Man technique and characteristics. George says the player must use the proper grasp on the lever. "Some hold it really hard," he says. "They don't get good control. When they are reversing, they don't get fast reactions. The good player uses a very soft touch so he can reverse or turn corners with precision and quickness."

Ed then talks about the four Pac-Man Monsters. "Boy, do they have personalities! The most hated monster is definitely the red one." The red one, Ed says, is nicknamed Shadow and, appropriately, follows the player whenever possible.

The pink-lavender one, Ed explains, "likes to cut you off from the direction you're going." It does so, he says, when you least expect it and so may be "the most vicious" of the Monsters.

The green-blue one has, Ed says, "no personality: It does whatever it wants."

Ed asserts that the yellow-orange one is "definitely cowardly. When you're near an Energy Dot, it'll always turn away from you, except when you're in the lower right corner."

What's this about corners, fellows? Ed explains: "All the Monsters have their corners. When the game has gone about twenty-five seconds, they'll split apart. The yellow will go to the lower left quadrant, the green to the lower right, the red to the upper right, and the pink to the upper left."

Each table, George adds, has a certain speed for the Pac-Man, a certain speed for the Monsters, and a certain period for which the Monsters turn blue (and are therefore edible) after you eat an Energy Dot. At the start, he explains, the Pac-Man is faster than the Monsters. In the Strawberry table (number two) the Monsters are faster than the Pac-Man. In both the Peach tables, the Pac-Man and the Monsters move at about equal pace. From the first Apple through the eighth Key, the Monsters are faster than the Pac-Man. In the ninth Key, the Pac-Man begins moving much more slowly than in the previous table, but the Monsters retain their previous high speed. In every respect all tables after the ninth Key table are identical to the ninth Key.

Ed has determined the time for which the Monsters turn blue:

Table Number	Symbol	Roughly estimated duration of edibility, in seconds
1	Cherry	6
2	Strawberry	6
3	Peach	3
4	Peach (#2)	3
5	Apple	2
6	Apple (#2)	5
7	Pineapple	2
8	Pineapple (# 2)	2
9	Galaxian	1
10	Galaxian (#2)	5
11	Bell	2
12	Bell (#2)	1
13	Key	1
14	Key (#2)	3
15	Key (#3)	1
16	Key (#4)	1
17	Key (#5)	0
18	Key (#6)	1
19	Key (#7)	0
20	Key (#8)	0
21	Key (#9)	0
22 etc.	Key (all following tables)	0

All of the discussion so far in this chapter describes the *unmodified* Pac-Man game. As players have more or less figured out the machine, however, operators have appeared at locations and severed a soldered connection, causing the later (and more difficult) tables to come earlier in the game. George and Ed now know of no Pac-Man machine that has not been modified. All the games they have seen have been changed in an identical way: the tables originally known as Cherry, first Peach, second Apple, and seventh and eight keys have been eliminated. This *does not* mean some of the symbols, from the Cherry through the seventh and eighth Keys, do not appear in their normal number of tables during a game. It *does* mean, for instance, that the first table on the revised machine has Cherries in it but is really the Strawberry (or second) table.

Here's a chart showing, on the left, the original tables, and, on the right, the symbols in the modified game.

Original game		Modified game	
Table number	Symbol	Table number	Symbol
1	Cherry	—	—
2	Strawberry	1	Cherry
3	Peach	—	—
4	Peach (#2)	2	Strawberry
5	Apple	3	Peach
6	Apple (#2)	—	—
7	Pineapple	4	Peach (#2)
8	Pineapple (#2)	5	Apple
9	Galaxian	6	Apple (#2)
10	Galaxian (#2)	7	Pineapple
11	Bell	8	Pineapple (#2)
12	Bell (#2)	9	Galaxian
13	Key	10	Galaxian (#2)
14	Key (#2)	11	Bell
15	Key (#3)	12	Bell (#2)
16	Key (#4)	13	Key
17	Key (#5)	14	Key (#2)
18	Key (#6)	15	Key (#3)
19	Key (#7)	—	—
20	Key (#8)	—	—
21	Key (#9)	16	Key (#4)
22 etc.	Key (all following tables)	17 etc.	Key (all following tables)

Incidentally, different players have different names for the symbols that turn up during each table. George and Ed and their friends and fans have their own terms: Pineapples, for example, are often referred to as Hand Grenades, Galaxian Flagships are Thunderbirds, and Bells are Beehives.

Patterns Unleashed

Now let's take a look at the GET pattern and Bazo's Breaker. Both these patterns have many characteristics to commend them. Both keep the player's Pac-Man far ahead of the Monsters.

More important—and this is a nuance known only to expert Pac-Man pattern makers—neither pattern, at any important

point, requires the player to eat Energy Dots or to double back. When a player must eat an Energy Dot or double back, George and Ed explain, one player will move or reverse his Chomper at a different split second than will another person. This leads to an inability of two different players to replicate the exact same pattern: After the Energy Dot consumption or doubling-back, one player will be at a different point in the maze than will the other player. A need to eat Energy Dots or double back, George and Ed say, is the flaw in the leading Bay Area and Los Angeles ninth-and-succeeding-Key patterns that make Bazo's Breaker superior.

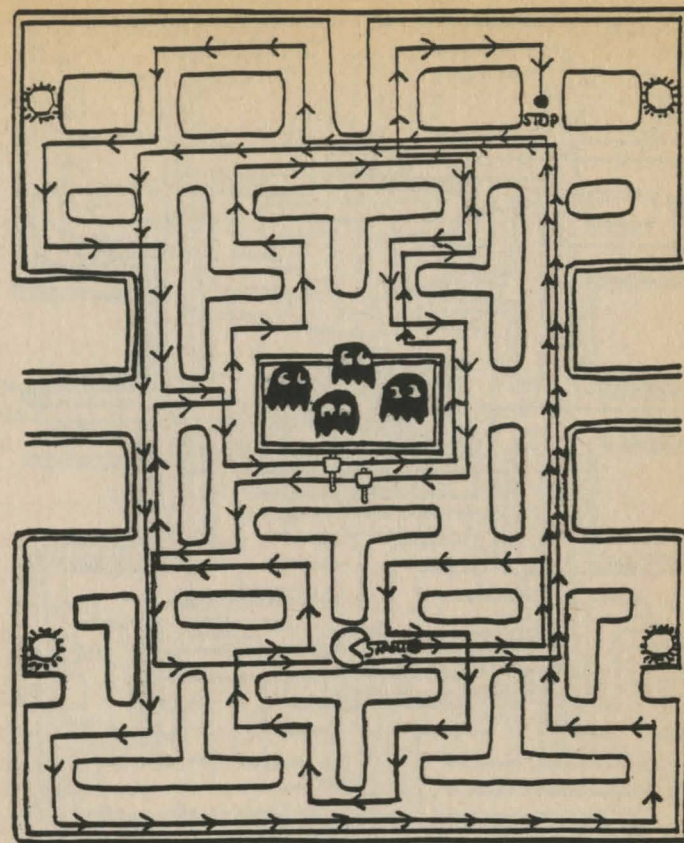
Instead of requiring the player to consume an Energy Dot or double back, the GET and B.B. patterns work best if the player simply moves as fast as possible in each required direction. In fact, Ed says, the problem with most players using the patterns for the first time is that they hesitate, especially as they turn corners.

Another strength of the Davis patterns is that they allow eating of all fruits and keys that appear. Also, both patterns are quick: Bazo's Breaker, for instance, takes just fifty-one seconds. A fast pattern, of course, enables a player to move on to the next table earlier than a slow pattern.

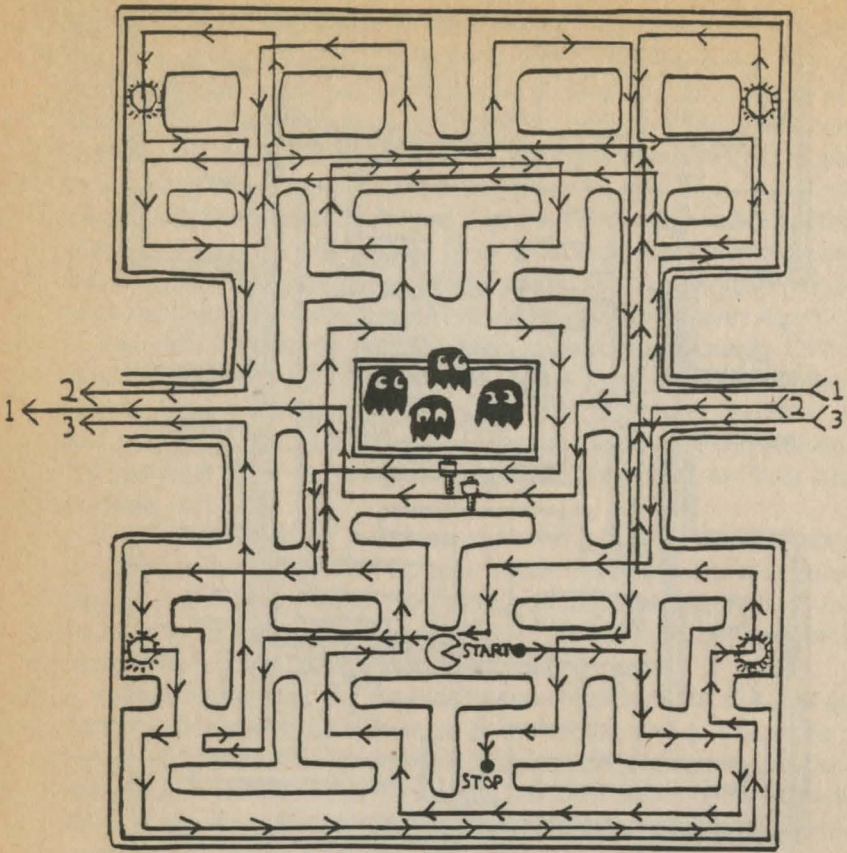
Intentionally, the GET pattern does not include the Energy Dots or the little white dots near them. At the end of this pattern, however, you are in a very strong and safe position to go back and eat the Energy Dots as well as the little dots in their vicinity. And, of course, after eating the Energy Dots—in all the tables except Key number five and Keys after six—you can gobble as many as 3,000 points worth of temporarily blue Monsters per Energy Dot.

Bazo explains a few techniques that will help you during your free-lance period at the end of the GET pattern. If you want to nearly stop your Pac-Man, he says, wiggle the stick back and forth quickly and continuously: This makes the Chomper move back and forth so fast he stays in about the same place. If you want to take a rest—this works only if the Monsters aren't right on your tail—park your man in the corner slightly to the right and just above the starting point: the Monsters will run all over the place but never find you, whether you buy a donut, go to Europe, or never come back at all. If you want to eat as many Monsters as possible (even amateurs know this one), wait until all the Monsters are near the Energy Dot before eating it.

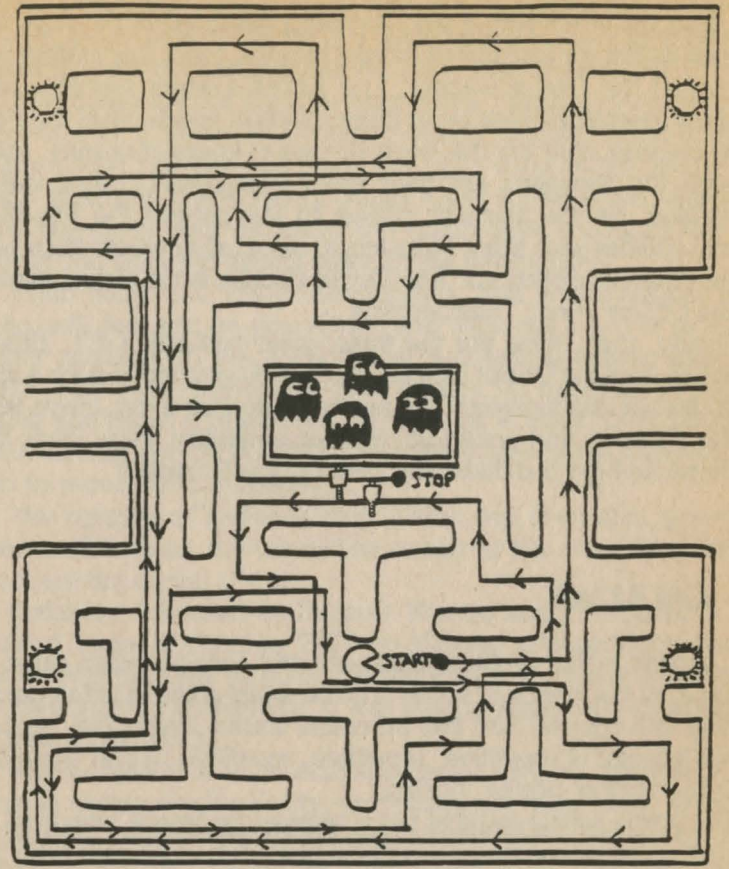
Ed has not only invented Bazo's Breaker. In his spare time he



"GET"



"Bazo's Breaker"



"Donut Dazzler"

has also come up with a very amusing pattern that he plays not for points but for fun and to delight his fans. Here this pattern will be called the Donut Dazzler. The Donut Dazzler frightens and amazes spectators because at three different points it has the Pac-Man chasing right on the heels of one or more Monsters, even though the Monsters are their usual, dangerous colors, rather than blue. At the dramatic climax of the pattern the Pac-Man nearly collides with three Monsters at once, all of whom then peel off in different directions. The Donut Dazzler is the video version of the US Air Force Thunderbirds.

Finally, then, here are the three great patterns: GET, Bazo's Breaker, and the Donut Dazzler. Each is diagramed in such a way as to be self-explanatory. Remember only one thing: Have faith in the patterns and speed on without hesitation. Now study the patterns and get out there and take on the Monsters!

• GALAXIAN

Galaxian is the worst highly successful coin-op video game of all time. In the minds of some, it is the worst coin-op video game, period. It's colorful and has attractive sound effects but, among other failings, is repetitive, repetitive, repetitive. It can therefore become boring, boring, boring.

The game seems to have been inspired by Space Invaders. As in that great pioneering game, you get a left-right ship (like the Space Invaders base) at the bottom of the screen and are attacked by a huge swarm of aliens that begins in formation near the top.

The formation, arrayed against a black sky with twinkling stars, moves left and right but never descends. There are six rows, or floors. The aliens in all but the top floor look like mooseheads that have two small antlers and that are propelled by wings stolen from some very large houseflies. On the first through third floors, there are ten green Mooseheads per floor, each with red eyes and blue wings. On the fourth floor, there are eight purple Mooseheads, again with red eyes and blue wings. There are six red Mooseheads on the fifth floor, and they have yellow eyes and gray wings.

Finally, in the exclusive penthouse of the Galaxian Arms, are two elite residents who look little like the rest. These are the Flag-

ships, which look like F-16 fighters during a nosedive. They are mostly bright yellow but have a blue outline around their curved, semidelta wing and have tails the color of burned butter.

The game begins with an impressive, realistic revving sound like that of a powerful propeller-driven aircraft. Soon a green Moosehead will peel off from the right edge of the formation. With a whistle like a falling bomb it will streak down, dropping two bombs in your direction and being quite willing to run into you if you're in the wrong place at the wrong time.

Then more and more Mooseheads, and an occasional Flagship, will descend on you. Once you wipe out a whole rack, another appears. In the second and succeeding waves, attackers each drop three, rather than two, bombs. As the game proceeds, more and more attackers will be in the air at once, until groups of five become common. After about thirty waves, the attackers begin to move more evasively.

You operate a "Defense Ship." After you fire a shot, you must wait until it clears the top of the screen or hits something before you can fire again.

Galaxian, invented by Japan's Namco and introduced in the United States in October 1979 by Midway, enjoyed long stretches as number two in both *RePlay* and *Play Meter* magazines. During most of its heyday, it was behind Asteroids but ahead of Missile Command.

What explains the unusual success of such an unoriginal and boring video machine? For one thing, it's very easy, even for folks who've never before played a video game, to run up hundreds of points. The author's daughter, while well-coordinated for her age, has little experience as a video game player. Still, the author encouraged her to try a game of Galaxian. He moved the left-right lever and she pressed the Fire button. She got 760 points on her first game. She was, at the time, ten months old. Two months later, in her second game, she ran up 870. That's how hard it is to score hundreds of points in Galaxian.

Another factor explaining the success of this undeserving hunk of metal is that it was manufactured in the United States by Midway. The company has always been one of the two leaders in the American video game market. Distributors—who buy the machines—were used to dealing with Midway and were more confident of quality play and reliable service help than they would have been if the same machine had been pushed by some little-known firm. Also, Midway was able to knock out a huge number

of units of the game in a short time and therefore could take advantage of the early popularity the machine enjoyed.

Third, Galaxian showed up when there were few hot new machines. In today's market of more and better games it's very unlikely Galaxian would make it to number five, much less number two, in any survey. It might not even crack the top ten.

Still, millions of players have played this game, and it's still in a large number of locations. So the machine must be covered in some detail. And there is strategy that can improve your game.

Strategy

Defense, not Offense As in other video games, defense is the key to success. Jon Delfatti, a college football flanker who has concentrated so hard on the screen of this game (instead of the cabinet) that he thinks the machine is called Galaxy but nevertheless has scored 240,000 points, says you should wipe out as many aliens as possible when they're in formation. They are generally worth only half as many points in formation as when they're attacking, but they're much harder to hit when they're curling down from above. He also says the key to Galaxian is to always leave a large area in which your ship can escape: Don't get caught in a corner and don't get caught between two attackers smashing down to either side of you. Sean Prenter, a nineteen-year-old with a top score above 100,000, concurs, adding, "There's always a hole [a safe hiding place] somewhere."

Protecting Against the Patterns Learn the predictable patterns of your Galaxian enemies.

The first attacker will always be a green Moosehead from the right edge. After that, which alien will swoop down will become less predictable, but still much more predictable than in most games. Almost always, it will come from the side—left or right—that has more space (in both senses of the word) beside it.

More important, even the path of the attacker is predictable. They all run S and C pass routes: dives that curve through patterns that look like S's and C's.

The lowly Greens just make C patterns, backward or forward. The Reds and Yellows take forward or backward S routes; their last turn, the one that makes their patterns S's instead of C's, however, comes just above the bottom of the screen, so the S isn't quite complete.

The Purples make very full S's and therefore are by far the most evasive of all the Mooseheads and Flagships. While the trick in shooting the other attackers is to memorize their patterns and to get your ship lined up with most any point in an alien's path, the trick in nailing a Purple is to move your ship so it can fire on the Purple just as the alien is reversing its direction in the middle of its S: Here it is at the same horizontal point for an unusually long time.

They Call Him Mellow Yellow The Flagships are not only the distinctive-looking, high-point elitists of the Galaxian Penthouse. They also hold special advantages for the player.

These are the only aliens who make you break the rule about preferring to shoot enemies while they're in formation. You shoot Flagships while they descend. Why? More points?

That's the less important of the two reasons. They are worth from 150 points (if unescorted) up to 800 (if accompanied by two Reds and you get them first). The chief reason is that when you destroy a Yellow when it is attacking (by shooting it or, less fortunately, by colliding with it), *all the aliens will suddenly become almost harmless*. Any aliens already in the air will not drop another bomb. More important, no other alien will begin an attack. This will go for anywhere from five to fifteen seconds, with the time apparently being random. It must be emphasized that this truce is *one-sided*: this is your big chance to nail a bunch of aliens in formation without exposing yourself to any risk at all.

Finally For many expert video gunners, Galaxian has never been more than a machine to play when the serious games aren't available. Now, at least, you have some new tricks to try with an old machine. And, as the strategies improve your game, you'll be able to play Galaxian for longer for each quarter. Whether this is an advantage or a disadvantage is a question each player must answer for himself.

• SPACE INVADERS

Space Invaders. Space Invaders. Space Invaders. It is the Muhammad Ali of video games. It is The Greatest. The biggest seller in the history of the world. The best game ever for the year it was introduced. The game that revitalized the video game industry

and changed it forever. The game that made the industry the monster it is today. The game that not only was an unprecedented success as a coin-op machine, but also the game that launched a home video version that became the biggest seller of all time.

Space Invaders drove an entire nation mad. You may think the last sentence refers to the United States: Space Invaders did outsell the previous US leader—Pong or Sea Wolf, take your pick—by six to one (60,000 to 10,000). But if the United States was an eight on a scale of video craziness, Japan was an *eleven*. Space Invaders created a national shortage of the hundred-yen coin. Coffee shops replaced all their tables with cocktail table versions of the game. One kind of business after another converted overnight to a Space Invaders arcade: first the arcades, then the Pachinko parlors, then the tearooms, then anything—vegetable stores, garages, you name it. And they didn't just become pinball and video arcades, or video arcades with a mix of machines. All they had were wall-to-wall Space Invaders, Space Invaders, Space Invaders. Outside they bolted speakers to the roofs and broadcast the seductive, addictive, heartbeat thump-thump-thump of the machines.

Otherwise responsible citizens played game after game and discussed their personal records like other people talked about their golf handicaps. According to the manufacturer, a hardly publicized strategy booklet sold "like hotcakes." The biggest seller in the history of the United States—Pac-Man—has sold about 100,000 units of the legal Midway version. That's in a country with a 1980 population of 226 million. Japan's 1980 population was about 117 million, or about half that of the United States. In Japan alone, approximately 350,000 Space Invaders machines were sold, about one for every 330 citizens!

The Game (or, Attack of the Wild Toasters)

Engineers and programmers at the Japanese company Taito took a giant group of weird, menacing aliens, added a color-overlay screen, and mixed in visual and sound effects that would make the coolest person you can think of—Mick Jagger, Stevie Nicks, yourself—into a nervous wreck during the first game played. The combination that was so successful in the original game in Japan in 1978 was also a knockout when Midway, under license, introduced the game into the United States in the

same year. And the game was so good, is so good, that it is competitive in quality with the more popular video games of 1982. And if you don't believe that, just go play a Space Invaders game for the first time in a while. Take a lot of quarters.

All right, what does the game look like? It starts with a screen filled with aliens. These fellows are fearsome not only because they're mean and ugly, but because there are so damn many of them and because they just don't leave you alone. These suckers are relentless. Like a whole mess of bloodthirsty IRS agents or an office full of insurance salesmen bent on making the Million Dollar Roundtable. They just keep coming and coming and coming, and they get faster and faster and therefore harder to blow away.

The object of the game is to avoid bombs dropped by the aliens and to run up points by using your Laser Base to shoot aliens and to shoot a Mystery Ship that floats across the top of the screen every once in a while. Your Laser Base is down at the bottom of the screen. The base is green and looks like the US Capitol with a squished dome. With the buttons (or lever) on the left side of the control panel you move this base left and right to elude bombs or aim your laser. You fire with the Fire button on the right.

If an invader drops a bomb that hits your base, there is an explosion: an echoing clatter that sounds like a hand grenade detonating in a garbage can. Since it makes you feel like you're in the garbage can, it's very unpleasant. The explosion destroys your Laser Base. You get two more, and an additional one at 1,000 points.

Just above you, between you and the invaders, are four green, bulky, protective bunkers. They look sort of like the legs of a 600-pound woman who has just put on a pair of bright green panty hose that is eight sizes too small.

Now let's talk about those disgusting perverts that are attacking you and that you must wipe out. There are *fifty-five* of these space outlaws waiting to blow you away. They are eleven columns across, with five creeps per column. All the invaders are white.

The monsters in the bottom two rows look like fat skulls walking sideways on stunted legs. Real inviting-looking fellas. You get ten points each time you zap one of these fine young examples of alien manhood.

In the next two rows there is a hoard of weirdos who look like seriously diseased electric toasters, each with two eyes and with

handles on the sides that go up and down. Every time you nail one of these pleasant and intelligent citizens you get twenty points.

Up at the top, in the penthouse row, there are yet eleven more invaders. These aliens look like a bunch of pointy-headed clones of Dan Aykroyd in his most famous role from the old *Saturday Night Live* show. These cultured diplomats are thirty points each.

Well, that's all fifty-five invaders. Fat Skulls, electric Toasters with eyes, and pointy-headed Aykroyds. Sounds like a nice group, huh? Get them to join the church. Hope one of them will ask the daughter to the prom. Maybe they'll all get together and rent the house next door.

What's that? You want to spray the Space Invaders cabinet with Black Flag? You want to get your uncle's 30-06 shotgun and blow all them suckers away at once?

Okay. If you insist, here's how to battle the invaders.

More Basic Briefing

Sure, you want to get down to killing these monsters right away. But don't get too itchy. First listen to a little more about the basics of the game.

The big problem is that the invaders keep moving down. First they slowly, persistently move to the right. When they've gone all the way to the right, they move down, half the distance between the bottom of one row and the bottom of another. Then they slowly, persistently move to the left. When they get all the way to the left, they move down another notch. And so on and so on.

The screen in almost all Space Invaders games is not a real color monitor (picture tube), but a black and white with a plastic color overlay on it. It's yellow at the top, white in the middle, and green at the bottom. So any invader who gets near the bottom becomes green.

When they're that low, they're very near you and your bunkers, so you are getting in hotter and hotter water. The closer they are, the faster their bombs reach the Earth and so the less time you have to evade their falling explosives.

As they get as low as your bunkers, they march right through them, munching away every bunker particle in their way. If even one of the invaders gets to the last level they reach—low enough that it would touch you if you were directly beneath it—there is an explosion and the game has ended, even if you had other bases in reserve. You have been overrun.

The more invaders you waste, the faster the rest move. When there are just eight remaining, they suddenly speed up at a faster rate than before. When there are only two or three left, they move so fast that new video players have a lot of trouble shooting them. And when there's just one left—usually a pointy-head who started at the top—it is moving so fast and is so small that even experienced video players have trouble hitting it. To hit the last invader you must of course "lead" him: fire ahead of him. A little-known fact that is useful here is that the last alien moves faster left to right than right to left.

Once you have wiped out an entire rack, a new one will appear on the screen. It has the same charming population as the first, but it starts a full row lower. This of course makes everything harder; this is a good reason to ring up as many points as possible in the easiest rack, the first. The third rack starts yet another level lower. One level farther down is where the fourth, fifth, and sixth waves begin. The seventh through ninth start *four* notches below the first one. The tenth rack returns the invaders to their rack-one altitude.

Not only are there three kinds of invaders, but there's also the yellow Mystery Ship, which zips from left to right or right to left. This ship, thankfully, is no threat. It doesn't fire shots or drop bombs or make a sound like fingernails on a blackboard or anything. It is worth points. In fact, *shooting the Mystery Ship is the key to huge scores in Space Invaders.*

Strategy

Okay, you've made your decision. You're going to wade in against all those evil-looking interplanetary pukeheads. Now you want to know how to wipe them out before they do the same to you.

The Mystery of the Mystery Ship To use the Mystery Ship in order to pick up tons of points, you must be able to count. If you can count and can move and shoot with only moderate skill, you can run up three times the points of a highly talented electro-athlete who doesn't know about counting.

You count your *shots*. Each time you fire off a laser shot (not just hit the Fire button but actually cause a shot to be fired), you count. When you have counted to 22, don't fire again until the Mystery Ship comes out. If you hit the Mystery Ship with your twenty-third shot, you'll get the maximum points possible for

shooting the ship: a big 300. If you hit it some other time, you'll get only 50, 100, or 150.

Then keep counting, remembering that the shot that got you the 300 was number 23. When you have counted 14 after that twenty-third shot (or counted 37 overall), wait again. If you hit the ship with your fifteenth shot, it's another 300 points. Then it's every 15 thereafter, until you've wiped out the first rack of 55 aliens and the next rack appears on the screen. Then it's back to 23, then 15, 15, 15 . . .

One way to conquer aiming problems is to wait in ambush just to the right of the far left bunker or just to the left of the far right one. If the Mystery Ship comes out from the side you're on, fire as soon as you see the ship: Your shot will reach the path of the ship right as it crosses the line of your shot.

The Mystery Ships show up at about twenty-five-second intervals and then stop their appearances once there are fewer than nine invaders left on the screen.

Dealing with the Invaders Shooting and Evading: Shooting the Mystery Ship is more important to gaining high scores than shooting the invaders. A whole rack of invaders is worth only 990 points, while just four Mystery Ships will give you 1,200. In fact, top players can routinely knock off eight or more Mystery Ships in the first wave alone, for 2,400 or more Mystery Ship points and a first rack total of at least 3,390. (That requires more strategy, to be explained below.)

But shooting the invaders is very important too. The 990 points are nothing to ignore. More important, if you don't wipe out the invaders, the invaders will wipe out you. And if you don't exist, you can't shoot Mystery Ships or anything else.

The general shooting strategy is simple: Shoot whole columns at a time, not whole rows. And remain stationary, shooting columns as they approach you, rather than moving under columns to shoot at them. But there's more to it.

When any invader has descended so low that his bombs may fall on you faster than you can get out of the way, you must begin to play very defensively. Whenever you are about to find yourself under a dangerously low invader, you must get ready to move away even before you see a bomb being dropped. So as soon as you are located under an invader—either because the invader has moved over you or you have moved under him—start moving away.

68 Often you will have to move under a column of invaders. A

good player will get into a rhythm of moving in one direction to get under an invader, then immediately moving in the opposite direction to get back out of the way. You go right, fire, left; right, fire, left; right, fire, left: back and forth and back and forth. This is what Muhammad Ali calls "stick and move." You don't slug your opponent and hang around for his retaliation. As teen-age boys write in high school yearbooks, "Do unto others, then split."

To even further minimize your exposure to bombs, move only as far under an invader as absolutely necessary. All you have to do is strike any part of the alien to blow it up. So if, for example, you are coming from the left, move right only far enough to get a shot at the left edge of the invader. Then retreat to safety.

One way to take shots that are *totally* safe is to use your bunkers. Remember that the invaders drop bombs from their exact centers. So if you partly hide under one of your bunkers and fire right up its edge, you can wait for an invader's edge to appear just over the bunker's edge and you can blow the alien away before its dangerous center bomb bay makes it over the bunker's edge. Reassuring as this strategy is, you can't rely on it much because most shots must be taken from points other than just to the side of a bunker and because every time a bunker is struck by a bomb from above or a shot from below, a chunk of it is destroyed.

Don't Hunker Behind Your Bunker: Sure, bunkers are occasionally useful. For the beginning video player they can provide important protection and an important relief from attack during which the player can regain his wits. But for even the moderately experienced player, the bunkers are more trouble than they're worth. A decent player can easily evade most of the invaders' bombs, so he doesn't really need the bunkers. On the other hand, the bunkers take up so much horizontal space that they do more harm than good, by blocking what would be good shots at attackers.

So the best thing to do with your bunkers is to get rid of them. Not right away; first wipe out several columns of invaders (more on that later). Together with the bombs dropped from above, your shots can destroy almost every bit of every bunker in fairly short order.

Dictating the Invaders' Pace: Those space monsters are relentless. Although they seem to move slowly from left to right and seem to move down only a bit each time they descend, they will get too low too fast unless you slow their pace.

To slow the invasion, you must do more than simply blow away as many enemies as you can. In fact, one of the difficult

aspects of Space Invaders is that the more aliens you shoot, the faster their remaining comrades will move.

There are two ways to keep the invaders from descending too fast. One is to keep them from speeding up their pace; the other is actually to slow down their pace.

To keep them from speeding up, shoot as few as possible. But how are you going to score points if you don't shoot many invaders? By shooting the Mystery Ship for 300 a pop. And the slower the invaders come down, the longer the rack lasts and the more Mystery Ships float out from the edge for your scoring enjoyment. But of course you must blow the right kind of hole in the invader battalion so you can effectively shoot the Mystery Ship; more later on that.

To actually slow down the invaders, you don't slow down any individual alien's left-to-right speed. What you do is slow down the descent rate of the whole group by keeping it from reaching one edge or the other any faster than necessary. (Remember, once one invader touches the edge, the whole formation descends a notch.)

To slow down the aliens, you execute the best-known strategy about Space Invaders: You wipe out several columns on the left side or the right or both. Do not wipe out one column and leave another intact and then wipe out the next one: destroy at least three on one edge or two on one edge and one on the other, making the whole pack of invaders skinnier. This way it will take longer for any remaining invader to reach an edge.

Summary of Elementary Space Invaders Strategy Wipe out a limited number of selected invaders: about three columns, leaving a thinner group of invaders than at the start of the game. This will slow down the pace of the invaders and will increase your shooting window for wiping out Mystery Ships. Count your shots and shoot the Mystery Ships on the twenty-third and each succeeding fifteenth shot to get the maximum 300 points.

Advanced Strategy Three Keys: There are three golden keys hidden in the Space Invaders program. The first is the 23/15 count for the Mystery Ship. The second, a key method in the pursuit of giant scores, is the fact that when any invader reaches its next-to-lowest possible level—immediately above your level—it will not drop bombs on you. This is just before the level that, if reached, ends the game. If you don't move under the invaders

that are at the safe level, they will continue to drop bombs. This is just a bluff to scare you off and make you lose the game. Test this point: move under an invader at the safe level and keep moving with it so you're under it for an extended period. It will never blow you up.

Using this knowledge, you can run up all sorts of points by wiping out the Mystery Ship. What's the connection between low-level safe invaders and high-point Mystery Ships? They are related because to shoot a maximum number of Mystery Ships you must delay the end of the rack as long as possible so as many ships as possible will come out. But if you delay the rack for a long time, the invaders will eventually get so low that you generally can't get underneath them to fire on them without being struck by their bombs. The trick is to fire on the invaders when they are high up or at the low, safe level, but not in between.

Make a Window: But since you will be allowing the invaders to get to dangerously low altitudes, you must be able to avoid being right beneath them. This brings up another important aspect of strategy: making a window.

A window is a space between columns of invaders. If you stay beneath this space, you can both evade attackers and shoot Mystery Ships without aliens blocking your shots.

You create the window by first blowing away about three columns, as mentioned before. Let's say they're all on the left; that's probably best anyway. Once you have wasted columns one, two, and three, knock off all of column four except the top invader, the pointy-head. Then wipe out columns five and six (if you are talented enough to operate in a narrow window) or five, six, and seven (if you have more normal abilities). The area formerly occupied by columns five and six or five, six, and seven makes your window. If bunkers or bombs get in your way, you needn't construct the window in exactly the order just described; just wipe out what you're supposed to and do it fast.

The reason you leave one pointy-head in column four is to preserve the window. If you wiped out all of column four and left just columns seven or eight through eleven, you would have to keep moving left or right under that bulk of columns to avoid being bombed by the invaders within it. Once the bulk of columns got low, it would be next to impossible for you to flee under it without getting zapped as you zip. With the lone pointy-head holding the window open, you can move left and right as the window moves left and right and never be under the columns.

Okay, so now you have a window. Count your shots and gleefully knock off every Mystery Ship that ventures out, running up one 300-point score after another. Pretty easy, huh? Sure. But it gets hard, and it gets hard when the lowest invaders reach the safe level.

Now you must not miss. If one invader gets all the way to the edge opposite the side where it started, it will drop to the lowest level and the game will be over.

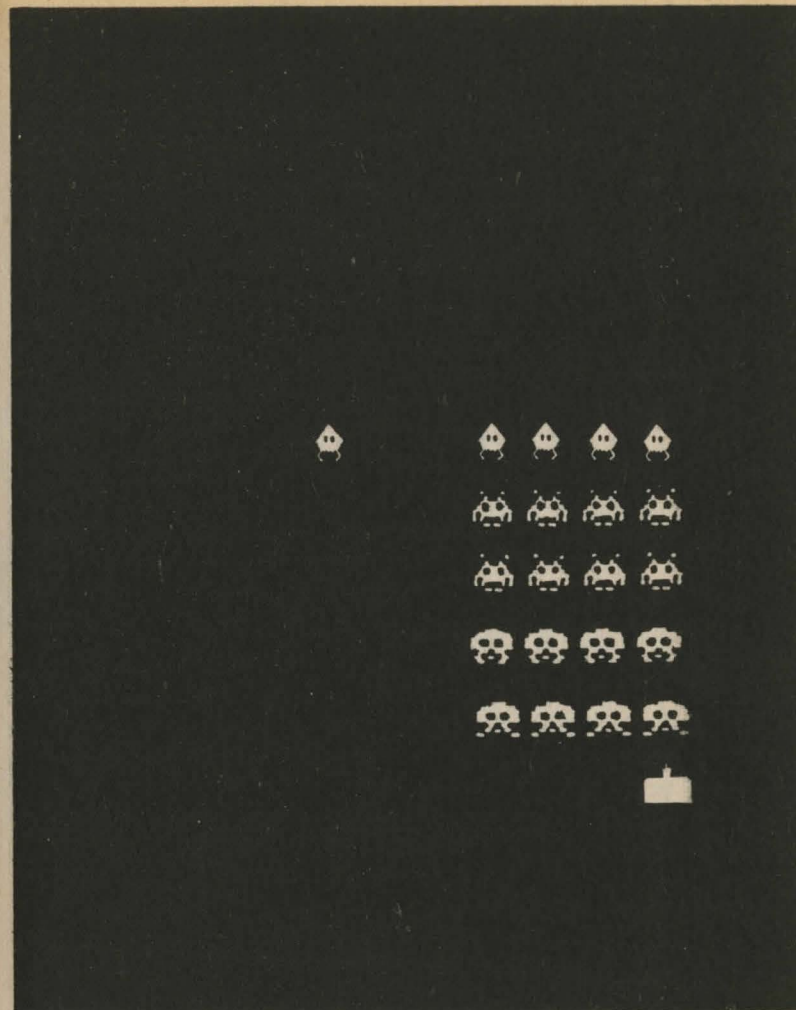
So move quickly under the low invader closest to the right edge and nail it before it gets to the edge. Then hit the low invader next to it and so on, until you've blown away every alien at the safe nonbombing altitude. Once you have knocked off every enemy on the safe level, the remaining invaders will hit the edge and come down one notch. One notch after that, and the lowest invaders of the remaining contingent will now be at the safe level and you will have to go after them.

In shooting safe-level invaders, you must not only be quick and precise, you must also get out of the way as soon as you shoot. If you wait even a fraction of a second after vaporizing a safe-level invader, the invader above him, from a very *unsafe* level, will blow you to bits. So stick and move, and move very fast.

If you are successful in knocking off the lowest four rows from columns seven or eight through eleven—the Skulls and Toasters—you will be left with about five little pointy-heads: four on the right and the one on the left who used to be your friend, the guy who kept your window open. Well, the honeymoon's over; your former buddy is now your worst enemy. Everytime you wipe out one of the remaining five invaders, the rest move faster.

The best approach to nailing the last row is to move to the right, then pick off each pointy-head as it appears just above you. Don't go after them; *let them come to you*. The last one, your friend-turned-enemy, will be moving so fast that even though he's right above you, you'll have to lead him. But do so only slightly, or you'll shoot too early. The safest procedure is to shoot just as his right edge appears above your laser.

If you correctly execute the safe-level strategy, you will usually have well over 3,000 points by the end of the first rack. Reasonable mastery of the safe-level strategy should lead to regular scores of 5,000 or more points, which demonstrate a high degree of mastery. Then you can think about the really astronomical scores, like those over 100,000 that have been recorded. And you can think about getting the icing on the cake.



Execution method: *When invaders are just above your Laser Base and therefore can't fire at you, first hit the lowest, farthest-right alien, then gradually shoot your way back to the window.*

The Icing on the Cake The icing on the cake is a special visual effect programmed into the game—the third golden key mentioned before. This effect is a little joke to be shared between the programmers at Taito and the player who gets good enough that he cannot only survive but can even show off.

What you have to do is to make the last invader you destroy one of the aliens from the bottom two rows (the Skulls). Sounds easy, huh? Well, try it. Almost no player can do it the first time. The problem is that it's very hard to shoot an invader in the top three rows (a Toaster or a pointy-head) without mistakenly shooting an invader right below him in the bottom two rows.

Still, it can be done. It's best to begin by narrowing the invaders down to a single column. Then, to hold up your part of the bargain with the humorous Japanese programmers, you must once again lead your enemy. You must shoot just ahead of the lower invaders, hoping the upper fellows will run into the line of the shot by the time the shot gets to their level.

Even that part, though difficult-sounding, is harder than it seems. This is because during most of the game, the aliens are moving so slowly that if your shot misses the lower guys it will miss their higher-altitude brothers as well. So you will be most likely to taste cake frosting if you seek it near the end of a rack, when the remaining invaders are racing around. Of course, while this makes it easier to lead your targets, your targets are moving so fast that in only a short time the rack will be over whether or not you wipe out all the invaders. The boys at Taito don't let just *anybody* in on their little jokes.

If you are successful in earning your right to see the show—if the last invader on the screen is a Skull—that last alien, before you nail it, will begin leaving a trail of vertical white (and then, as it descends, green) lines behind it after it hits the left edge of the screen. When it hits the right side, it will *erase* the trail it has made, then will make a new trail after reaching the left side again.

Amusing as this effect is (and astonishing as it is to most players and fans who have never even *heard* of it), there are two better Taito effects waiting for you. One is a slightly astounding “rainbow” that appears under certain conditions in the sequel to Space Invaders, Deluxe Space Invaders (more on that in the section on that game). The other is even more mysterious than anything else in video games. It is so mysterious that the author, after more than a year of video game research, has only heard about it without knowing what it is.

America, the US arm of the Japanese company that invented Space Invaders, there is an effect—sound, sight, something—waiting out there. Keith Egging, Creative Development Manager of the company, says, “It's a little hidden feature. It would take a combination of things or situations. It would be quite newsworthy if it happens, but chances are quite astronomical. It's intentionally programmed in.”

Here's the author's guess, probably utterly off the mark: Since the Taito boys seem to get excited by a player who knocks off one column (the last) in more or less the wrong order—Skull last—maybe they would get positively crazy over a player who could do more and do it more precisely. So the guess is that the Secret of Secrets awaits the player whose last eleven invaders to be wiped out are *all* the lowest Skulls from all eleven columns. Perhaps it will do to nail either Skull from each column. Either one is a pretty safe guess for the author. It would take a video player of Herculean abilities and monklike devotion to test this theory.

But there are other callings for the video ace. Though Space Invaders is the *greatest* game of all time—largely due to its gigantic sales and immense impact on the industry—it is not the *best* game (the game most enjoyable and challenging to play). In fact, even its lesser-known sequel, Deluxe Space Invaders, is superior. Read on.

• DELUXE SPACE INVADERS

Deluxe Space Invaders is a very strong, but very underrated, game. It was originated by Taito in 1979 and introduced in the United States by Midway late in the same year. Most players see it as simply a minor revision of the awesomely successful and important Space Invaders. But there's much more to it.

First of all, Deluxe is in a class by itself in one significant area. It is the best *sequel* game of all time. Many successful video games have spawned follow-ups by the original manufacturers. But not only are none of these as strong a sequel as Deluxe Space Invaders, some (such as Sea Wolf II and Asteroids Deluxe) are actually *inferior* to the games on which they were supposed to improve. Deluxe Space Invaders, on the other hand, is a better game than its more famous parent.

Though never dominating the market like the earlier version,

Deluxe—also called Space Invaders Part II—did enjoy commercial success. It made it as high as number four in *RePlay*'s earnings survey in April 1980.

The game's strength is that it did not tamper with the astonishingly powerful formula of its predecessor. Still, it did add sparingly to the original game and thereby enhanced it. But since the game is basically indeed a deluxe version of Space Invaders rather than a dramatically different game, only a little more must be said to describe it or tell how to play it.

Differences

A Colorful Change Contrasted to the original machine, Deluxe has a much more colorful overlay. It runs from red (at the top) down through orange, yellow, and green.

March Comes in Like a Lion In original Invaders the game starts with fifty-five astro-assassins suddenly showing up on the screen. In Deluxe, there are four seconds of suspense after the machine gulps your coin; then the colorful new forces appear way up at the top of the screen, then immediately and noisily march down to their attack position, sounding like a gang of overweight teen-agers sprinting over a wooden bridge. Their descent is ominously militaristic and is enough to scare a video novice away from the machine before he even *tries* to fend off these frightening space warriors.

The Game Itself *Spaceships*: Every once in a while, instead of the classic Mystery Ship, another spaceship, which here will be called the Flasher, floats across the top of the screen. The problem with this sucker is that it flashes on and off and, if you're going to hit it for points, must be shot when it's *on*. You still get a maximum of 300 for the regular Mystery Ship, which shows up more often, but you get only 200 for the Flasher, regardless of the number of the shot that hits it.

In the third and later racks, the Mystery Ship demonstrates a new trick learned somewhere in the labs of Japan. It begins to float across the screen, but instead of just continuing along as an inviting, high-point target, it suddenly stops and flings new pointy-head invaders into all top row slots that have become vacant. After dropping the reinforcements, the ship continues across the screen. This happens once per rack.

Migration of the pointy-heads and Birth of the Breathers: Beginning with the second rack, the classic Space Invaders configuration changes. No longer is it top row, pointy-heads; next two rows, Toasters; bottom two rows, Skulls.

The top floor is still the pointy-head Penthouse. But the original group of pointy-heads have been joined by identical relatives, who have kicked out the Toasters and made the fourth floor another level of wall-to-wall pointy-heads.

The third floor is where things really begin to get strange. This used to be just like the old fourth floor: a Toaster showroom. But no more. Now the eleven slots run like this: two pointy-heads, one space, two Toasters, one space, two Toasters, one space, and two more pointy-heads. Then, on the second floor (or, if you prefer, the mezzanine), instead of eleven Skulls, you now have four Skulls, then three Toasters stuck in the middle, then four more Skulls. One wonders how such a varied group is able to get along; maybe the Toasters make English muffins for the Skulls. The street floor of Space Invaders Towers remains the same: eleven studio apartments, each inhabited by a two-legged Skull.

But the population shift is less strange than the new behavior of the old invaders. The Skulls act as always. But some of the pointy-heads and Toasters have apparently been eating some very dangerous controlled substances. Starting with rack two, when you shoot anything in the middle five slots of floor four or three, the invader you struck doesn't cooperatively vaporize. Instead he breaks into twin invaders of a kind never seen before. Each of these fine young examples of space protoplasm has two little legs and very ugly six-sided heads that look like severely deformed kites. The Kitemen don't just move back and forth: They also violently and rhythmically expand and contract, like they're doing deep breathing exercises in some Space Invaders fitness salon. It is of course harder to shoot the Breathers when they have contracted than when they have expanded.

Cosmic Comedy: Deluxe brings you funny little skits starring invaders and Mystery Ships. As Pac-Man did later, this game amuses you between racks. What usually happens is that when you wipe out the last creep in a wave, a Mystery Ship appears, a pointy-head perched on its top. The ship zigzags to the top, radioing (in a readout on the screen), SOS!! SOS!! SOS!! SOS!! SOS!! This is not only amusing, it also lets you, the player, know you're tough stuff: tough enough to send a fearsome space hit-man fleeing into the night, crying for help. Of course help does come, at which point you don't feel so tough anymore.

A variation on the basic skit is for the assistance-seeking Mystery Ship to begin ascending to get help and then suddenly stall in mid-atmosphere. The screen reads out, ENGINE TROUBLE. Then the pointy-head who has been riding along on top of the ship flies upward himself and brings down the interplanetary reinforcements.

Best for Last: The most intriguing difference between the two types of Space Invader machines comes at the end of the rack. And at the end of this chapter.

Changes in Strategy

Outfoxing the Flasher The spaceship that flashes on and off is hard to hit when it's on. Take as many shots as possible at this evasive craft. If you don't hit it the first time, you will likely get it by the second or third try.

Blowing Away the Breathers Be ready for these weirdos to appear and be calm when they do. They provide little trouble if you're prepared for them, but if you're not, you may find yourself sitting stupidly under one's oncoming bomb because you were sure there would be nothing left after you shot the invader who previously occupied a Breather's space. And take care to nail these perverts in their centers: That way you'll destroy them whether they're inhaling or exhaling.

And Finally, the Great Rainbow

The most fun you can have in either original Space Invaders or Deluxe is "getting the Rainbow." Getting the what? The Rainbow. It's dazzling and it's worth a 500-point bonus.

You get it the same way you get the last invader in original Invaders to lay down a trail behind him: by making the last alien you hit one who had started out in one of the bottom two rows. In Deluxe, when you're down to the last invader, he'll leave a trail behind him, like in the original game. Then, when you hit him, the Rainbow appears.

The Rainbow is *impressive*. It's not as beautiful as a real rainbow, and it's just made up of segmented lines. But it does turn on the fans, especially those who didn't even know it was part of the game. It looks sort of like an old-style windup top: narrow and pointy at the bottom, then spreading out at the higher levels. It's green at the bottom, yellow in the middle, and orange at the top.

Since it's rarely seen or heard of and since it's hard to get, it's a memorable video event the first time you get it. John Tierney, writing in *The Washington Star*, said, "Few players have seen this happen, but those who have say that it qualifies as a deeply meaningful experience."



Other Stars

A NOTE

“Other Stars” is divided into two sections: “Older Stars” and “Stars of 1981–82.” The games in the first section are stars from the first year of video games, 1971, through 1980. The machines in the second section are ones that were introduced in 1981–82 or achieved their greatest popularity during those years.

Many of the Older Stars can still be found in many locations. About these machines and even those that are hard to find, one point is important to make: *All of these are good games even by today's standards.* If you've forgotten how strong these games are, visit an arcade and let them make an encore performance that will remind you why you liked them when they were new. If you've never played these games, give them a try: In most cases it'll be just like trying a dazzling up-to-the-second machine that you've never seen before.

OLDER STARS

• PONG (AND COMPUTER SPACE)

A whole book could be written on how a game called Pong changed history. Sure, maybe commercially successful coin-op video games would have been manufactured if Pong had never been invented, but maybe not, and certainly maybe not for decades. Sure, the technology existed, but the successful introduction of a radically new product takes more than technology.

Pong required the rare combination of an emerging technology with people having the skill to use it and, more important,

having the creativity to think the proposed product might succeed and the courage to take the risk that it might not. To make a long story short, Pong, and therefore the beginning of successful coin-op video games and all the impacts these games have had on the globe—from changes in the use of leisure time to lucrative new industries to jobs for tens of thousands of employees—took a fellow from Utah named Nolan Bushnell.

More on Bushnell is contained in the history chapter near the end of the book. You can read how he went from managing a penny arcade as an undergraduate to founding Atari at age twenty-nine and selling it for about \$30 million at age thirty-three. One thing the history doesn't emphasize, however, is as important as anything that it does. And that is that Bushnell and his associates had to have not just the drive and creativity to take the risk of failure: They had to have the drive and creativity to take that risk a second time, *after failing once*. Remember Bushnell and his friends the next time you don't at first succeed.

The first video game by Bushnell and his buddies, you see, was not Pong, which was introduced by Atari in November 1972 and sold some 10,000 units under the company's name as well as about 90,000 copies and revisions by other manufacturers. Their first game was Computer Space, produced in November 1971 by a company called Nutting Associates in Santa Clara, California. (Bushnell describes the game as “a cosmic dogfight between a spaceship and a flying saucer.” It was something like the 1977 hit Space Wars.) Nutting Associates is no longer in business. The game was, in Bushnell's own words, “a marginal flop.” Only 2,000 were made. You can look in 2,000 arcades today and not find a single Computer Space machine.

Despite its historical importance and its success, Pong is now only a little easier to locate than Computer Space. The main reason to provide strategic information on Pong is that many Americans do have access to a game very similar to the coin-op hit. These are the people who own the Atari Video Computer System and the separately purchased Video Olympics cartridge, as well as the smaller group of people who, before the advent of today's programmable home video sets, purchased a Pong-only game from Atari or a similar game from another manufacturer. A second reason to provide a little information on Pong play is to give readers some feel for this important game. Finally, strategy can provide a bit of help to players—at coin-op sites and at home—who play games that are in some respects similar to

Pong. Two older Atari coin-op games, Super Pong (which could also be called Souped-Up Pong) and Breakout, fall into this category, as do the Atari Breakout home cartridge and the Odyssey home cartridge called Blockout/Breakdown. To a lesser extent, so do the coin-op and home games featuring a clown bounced upward from a mobile seesaw (coin-op: Circus by Exidy, Clowns by Midway; home: Circus Atari by Atari).

Strategy

Pong has a black screen. Below it are two round knobs, one on the left and one on the right. This is a two-player game, and one player controls the left knob while his opponent uses the right. Each knob controls a single short, thick, vertical white line that can move up and down one or the other edge of the screen. Each of these little lines is called a paddle. You use the paddle to "hit" a tiny white dot as it comes across a vertical line in the center of the screen and continues on toward your edge of the screen.

What you really do is not so much *hit* the ball as allow it to rebound off your paddle and back to your opponent's side. You get a point each time your opponent misses the ball. The game is played until one player wins fifteen points.

You must estimate the speed of the ball, the distance it will travel, and the angle at which it is moving, and you must get your paddle to where it will be before it gets there. If the ball runs smack into the center of your paddle, it will bounce away at the same angle. If it hits your paddle other than in the center, however, it will depart from the laws of physics: The rebound angle becomes less and less as the ball hits more and more to the outside of the paddle. For instance, a ball rebounding off a point near the top of a paddle will fly more upward than outward. A ball striking the top or bottom line on the screen of the Pong game will bounce off the line at the same angle as that at which it approached.

One tip to inexperienced Pong players who might try a tempting technique that won't work: Even though if you spin your knob rapidly back and forth it will give the paddle the appearance of being all along your side at once, making an impermeable barrier for the ball, the machine will consider the paddle to be in only one paddle-length of space at once. That area, if you're spinning the knob like crazy, is very unlikely to be where you want.

• DRIVING GAMES

In many video games—in both the arcade and the home—the player drives a race car. There are first-person games, such as Night Driver, in which the player feels as if he's in a car, and all he sees in front of him is the course he must follow. There are at least two kinds of third-person games. One type, such as Monaco GP, shows the player's car and the part of the race route the car is driving at the moment. The other kind, such as at least five Atari games (Gran Trak; LeMans; Indy/Indy 4/Indy 800; Super Bug; and Sprint/Sprint 2/Sprint 4/Sprint 8 [with Indy 800 and Sprint 8, incidentally, being games for up to *eight* players at once]), shows the player's car and the entire race course it must negotiate.

Despite the variety of games, there are some strategies that can be applied to many or most driving games. Here are four of the most useful.

- *Speed Kills.* The chief mistake of the player trying a particular driving game for the first time is to go too fast. In your first game you should get used to the turns and narrowings of the course, the number and size and pace of other cars on the route, and the nature of the obstacles that partially block your path, from trees to oil slicks. So in your first game, take it easy; you'll run up more points and learn the game faster than if you gun the engine so hard that you are constantly colliding with cars and trees.

- *Look Ahead.* Just like they taught you in Driver Training, look far down the road. If you are watching just past the edge of your hood, you often won't be ready for twists in the course or moving or stationary objects that are strewn in your path.

- *Respect Your Transmission.* The machines that have gearshifts (either two-speed or four-speed) are usually fairly realistic in their re-creation of the need for shifting gears. Start in first. Then, when you notice the engine revving with unusual loudness or vibration or when you are unable to increase your speed even by flooring the accelerator, shift on up. Staying in an unrealistically low or high gear will usually keep you from reaching your maximum speed as quickly as possible.

- *Use a Light Touch in Steering.* When a machine has a steering wheel, most players grab it and hold on so hard that they're in danger of making a mold of their fingers in the black plastic. And

when they steer, they tend to make big movements to the left or right. Holding on tightly reduces your ability to react as fast as possible to curves in the course that require a sudden change of direction. Making big movements often results in oversteering, and oversteering often results in crashing into walls and other solid objects.

So try holding the wheel differently. One way is to control the wheel with just the palm of one or both hands. (To understand this, visualize how the player would look if the steering wheel were removed: He'd appear as though he were frantically waving good-bye to lots of departing friends at once.) Another steering technique is to hold the wheel fairly tightly but to be constantly moving it very slightly and very rapidly back and forth. This makes you think constantly about steering and gets you used to making minor steering adjustments; it will therefore reduce the likelihood of oversteering. The best reason for using this technique, however, is that it lets you impersonate your favorite race car driver, from A.J. and Mario to Cale and Richard to Shirley and Big Daddy. Who knows—maybe they learned *their* techniques on coin-op video driving games.

Night Driver

This Atari game appeared both in an upright version (1976) and in the famous sit-down model (1977). The sit-down type was the first video game to put the player in the posture of a real driver. The driver sits in a black plastic seat and faces the screen. In front of him and below the screen is a small black steering wheel with three thick chrome spokes. To his right is a black knobbed four-speed gearshift in the standard H-design gearbox (first: up, left; second: back, left; third: up, right; fourth: back, right). At the driver's feet is a big silver accelerator pedal. There's no clutch, no brake pedal, and no reverse; this race car is apparently a semiautomatic made only to go fast and in one direction.

The hood of a gold race car is permanently affixed to the screen, so you have more or less the view of your car that a race driver would have of his. On the remainder of the screen, there is one of the simplest and most effective sets of graphics in video game history: just dozens and dozens and dozens of short, vertical, white posts that clearly mark your course against an all-black video night. The posts are smaller at the top of the screen than at the bottom, creating a strong sense of a three-dimensional race-track.

Your task is to stay on the course. Simple, huh? Sure, it's simple, if you want to go slow and run up a score that will make small children point at you and laugh. If you want to do well, you'll have to reach simulated speeds of over 200 miles per hour on the straights (250 is not exactly rare).

When you pop in your race entry fee (a quarter) and stomp the accelerator, two things happen. You hear the powerful sound of a high-revving engine and you see your car moving through the course. Actually, the course moves past your car, but the illusion is convincing.

When (not if, *when*) you crash into the white posts, there is a loud sound like that of a very bad car collision and the screen violently flashes from black to white several times. If you not only crunch posts but also run yourself off the course entirely, the screen reads out, OFF THE ROAD. WAIT FOR TOW TRUCK. Soon your car is replaced on the track.

The more distance you cover, the more points you get, one point for every three pylons on your left or right. To blast through the maximum distance by the end of the game (which ordinarily comes in 100 action-packed seconds but is adjustable to 50, 75, and 125) you must balance speed and safety.

Posts are the only visible hazard, but there is also the danger of the road shoulder: If you get too close to the edge of the course, you'll hear a scratching sound and you'll find you can't control your car as well as you normally can.

Now shove it into first and get moving.

Monaco GP

Monaco GP, from Sega/Gremlin, until the late 1981 introduction of its sequel, Turbo, was the best video driving game of all time. This 1980 machine is a good driving game in its upright model, but is utterly *awesome* in its famed cockpit format.

So take a seat. The seat isn't just hard plastic; it has a padded cushion at the bottom. Drop in your quarter (or fifty cents: This machine has done better than most that have tried for the higher rate) and prepare for ninety very intense seconds.

On your left you have a two-speed gearshift, marked "L" for low and "H" for high. Shift up earlier than you do in most video driving games. At your feet is a gas pedal, and in your hands is a small racing-type steering wheel. On the dashboard under the screen are three gauges, including a functioning tachometer.

You have not only a screen in front of you, but speakers in

front and behind. The rear speaker is there partly in a moderately successful attempt to make realistic sounds as you pass another car: The sound of the competing racer begins on the front speaker and continues on the back one.

The screen shows your car—the red racer—and a narrow course with plenty of other cars on it. All the cars are Indy style. To run up maximum points you must go as far as possible; as in other driving games going far is a function of speed and collision avoidance.

Often you must slow to avoid crashing into competing cars. Occasionally you must yield to a yellow ambulance whose squealing siren demands that you move aside. From time to time there are light blue rain puddles on the gray asphalt, making the course slippery and causing skids. Sometimes the whole track is light blue, indicating slippery ice. When you're on slick surfaces, don't jerk the steering wheel too suddenly or you will lose control of your car.

The track gradually narrows and broadens at many points during the race. Among the narrow areas are bridges where water shows on either side of the track. Sometimes the course narrows very suddenly; a sign pops up to warn you just before this happens.

One more factor that makes your driving hard also ensures Monaco's place in any driving game hall of fame: night driving. When night falls, suddenly nearly all the screen goes dark and all you can see is a small wedge ahead of you lit by your headlights. This effect originated with Monaco and is both challenging and entertaining.

At the end of the game a red display to the left of the screen reads out the number of runs that have been made since the machine was last turned off and also reads out your rank among them. If you're in the top five, the machine congratulates you with a car-horn fanfare.

• SEA WOLF

Midway's Sea Wolf, which made its video bow in 1976, was the biggest-selling game after Pong (1972) and Space Invaders (1978). Sea Wolf's sales were about 10,000, a huge figure for its time.

Even more than some games that were dazzling successes in

their day, Sea Wolf is still entertaining. It is also unique, (unless you count its color-monitor sequel, Sea Wolf II, as being the second of a type). It is a submarine game where use of a periscope is essential.

In Sea Wolf, you are in the submarine. Your mission is to sink light-blue enemy ships that sail on the dark blue sea of the screen. To sight enemy vessels, you look through the periscope, a heavy black metal device suspended from a semicircular housing that juts out from the top of the machine. On its right handle is a little white button that you use to fire torpedoes.

When a ship sails out from the left or right edge of the screen, you must quickly aim by turning the periscope, always "leading" the ship to account for the time it will take your torpedo to rush to the surface of the sea. Each torpedo rockets through the water with a realistic sound that is the classiest feature of this classy machine.

The enemy ships come in three sizes and three speeds. There are medium-size, slow freighters, worth 100 points if sunk. There are also large, medium-speed, three-gun warships, which earn you 300 points if you hit them. Finally, at 700 points, are the PT boats. These boys are small and they are fast; they present the challenge of the game.

Also on the screen are round mines that float between your sub and your targets. These are no hazard to you, but they do block your shots. If you hit one of them, the screen announces, ZAP or WAM. (Who said machines can spell?)

You can increase your points by noticing the pattern of the enemy ships. The PT boats and freighters both go in the direction opposite that of the immediately previous warship. Also, the ships alternate directions: If the last ship went right, the next one will sail left.

The most valuable pattern to know is the timing of the PT boats. They speed out at nine- and twelve-second intervals. If the most recent interval between PTs was twelve, the next will be nine, and vice versa. You can accurately note the seconds since the last PT boat by watching the digital timer on the screen, which counts down the seconds remaining in the game. Better, you can have a friend yell out when a PT boat is due: that way you needn't distract yourself by watching the timer. When a PT boat zips out from the side, immediately turn the periscope in the direction the boat is going and fire off a torpedo aimed just before the edge of the screen toward which the PT is speeding. 700 points.

• DEATH RACE

This Exidy game came out all the way back in 1976 but still remains number one in a somewhat obscure category of video games: the morbid ones. Other contenders in this category include Desert Patrol, introduced by Project Support Engineering in 1977, and Shark Attack, originated by Pacific Novelty Manufacturing in 1980 and then produced under license by Game Plan.

In Desert Patrol, the morbidity came not from the game's intent but from the way players insisted on dealing with it. Stan Long, operations manager at the two Scandia Fun Centers on Northern California freeways, describes the violent aspects of Desert Patrol: "The good old sadistic Americans like to shoot the man parachuting down even though the players lose points for doing so. When the parachuting man is shot, he screams."

In Shark Attack (similar to a 1975 game, Shark, from U.S. Billiards), there are four divers pursued by a shark. But guess what. You are not the divers. *You are the shark.* *Play Meter* characterized the game in these cheery tones: "Divers appear in squadrons of four, they talk to each other, audio heartbeats race, and excruciating screams of pain are heard as shark devours divers." If you saw *Jaws* and rooted for the shark, this is the game for you.

But if you want a seriously gruesome game, you have to play Death Race. This is not only the most morbid game in history, it's also the most controversial. It was covered by many magazines and newspapers, including, predictably, the *National Enquirer* and *Midnight*. Criticism rained down on Exidy from a variety of observers, including a psychiatrist interviewed on NBC's *Weekend TV* show. Exidy said it wasn't promoting violence, and the company counted its money as controversy increased sales.

In this game you use a steering wheel and an accelerator to control a little white car on the screen. With this car you do your best to run over little humanlike figures who try to flee your vehicle. Exidy, probably with its tongue deeply imbedded in its cheek, calls these guys "Gremlins." When you hit one, he squeals like a small animal getting caught in a leghold trap and a white cemetery cross pops up where the fatal collision occurred.

Early controversy about the game may be why Exidy called the humanlike figures Gremlins rather than people. Dennis Moore, operator of the small Game World arcade in the Sierra village of Twain Harte (which includes a Death Race game) says

that when he first saw the machine it was called *Pedestrian*. Moore also says that the squeal used to sound more like a human scream and that even now operators can adjust the machine to give a sound more like a scream or more like a squeal, depending on their preference.

The best strategy in this game, if you want to nail as many little figures as possible, is to go after them as suddenly as possible. Their reactions aren't too hot, and you will often get them if you surprise them. The two-player version of this uplifting game gives you the chance to team up with a warped friend, as one player drives the little guys into the path of his good buddy.

If you think the screen and the theme are macabre, wait till you look at the cabinet. Above the screen readouts for the scores, there are two tombstones marked PLAYER 1 and PLAYER 2. On the backglass above and behind the screen, there are skeletons wearing cloaks and driving fast cars: the blue one looks like a late-'50s Corvette; the green one may be a speed-modified mid-'70s Dodge Charger. Under the screen is printed a set of standards:

1-3 POINTS: SKELETON CHASER
4-10: BONE CRACKER
11-20: GREMLIN HUNTER
21 OR OVER: EXPERT DRIVER

On the front of the cabinet below waist level are all sorts of glorious pictures. There's a tombstone engraved "RIP/FRIENDLY FRED/1831-1963," and others dedicated to the memories of "NICK THE MOLE 1819-1914" and "CORDIAL JOHN 1823-1913." There are also four engraved crosses.

Especially inviting is a picture of the Grim Reaper himself, a skeleton garbed in a purple cloak, carrying a scythe over his shoulder, and beckoning with a bony finger toward two skeleton drivers speeding down a road. Just ahead of the Reaper are two grave holes with nothing in them. Yet.

Death Race isn't just a grisly experience suitable for blood-thirsty sadists. It's amusing to play even for the more normal players among us, if we take the game in the right light. One would wonder, however, about anyone who says this is his favorite video game.

Death Race rose from the grave in 1977 in the form of Exidy's Super Death Chase. It's very similar to its gory predecessor, but

has players trying to run over skeletons, not Gremlins. In addition, a ghost occasionally appears on the screen. If you run over it, you get bonus points.

• SPACE WARS

Space Wars was introduced to the world at the Amusement and Music Operators Association show at the Conrad Hilton Hotel in Chicago on October 28 in the year 1 B.S.I. (the year 1 Before Space Invaders). When you consider all the factors that can make a video game important, Space Wars probably ranks no lower than fourth in importance in US video history. Only three games are clearly more significant than this Cinematronics machine: Pong, the first commercially successful video game; Space Invaders, which gigantically enlarged the video market; and Pac-Man, the first game to attract large numbers of women.

Space Wars was *the* monster of its time. It was the number-one hit of the 1977 AMOA show, where it debuted. *Play Meter* magazine named it the top earner of 1978. It remained in *Play Meter's* earnings survey from the first poll, published in June 1979, when it was third, all the way until July 1980, almost three years after the machine was introduced, when it was seventh. No other game, not Space Invaders, not Asteroids, has ranked so high so long after its debut.

Still, the phenomenal earnings success of Space Wars may be only the third most important factor to make it a charter member of any video hall of fame. The other factors are its theme and its technology. It was the first highly successful video game to use the theme of space battle. In this respect it was the first in a long line of distinguished machines that have included, to name just three, Space Invaders, Asteroids, and Defender. In technology, Space Wars contributed Vectorbeam, a system projecting ultra-sharp images on a screen. Later hit games using Vectorbeam or similar technologies have included Cinematronics machines such as Tailgunner, Rip Off, Star Castle, and Armor Attack, as well as Atari's Asteroids and Asteroids Deluxe.

Despite its innovative contributions to video game history, Space Wars itself owes some debt to the past. In particular, the game play itself is similar in some ways to the noncommercial Spacewar games played during the 1960s on massive IBM com-

puters by various students at M.I.T. and by an undergraduate at the University of Utah by the name of Nolan Bushnell.

How the Game Is Played

Space Wars presents a battle between two spaceships. One, controlled by the player on the left, is vaguely triangular in shape; the other has a hexagonal head and a stick-man body. The game can be played only by two players, though only twenty-five cents is usually required to play.

On the black control panel, each player has five square white buttons that maneuver his ship: Left (rotate left), Right (rotate right), Forward, Fire, and Hyperspace. In fact, Space Wars was the first hit game to use Hyperspace, later seen in titanic machines such as Asteroids and Defender.

In the center of the panel are ten more buttons. Using these, the players mutually select which game to play. There are three beginner levels, three intermediate levels, and four expert levels. Next, they choose which of one or more modifications to apply to the game selected. The players might, for instance, first agree upon game five (Intermediate level, Fast Missiles), with modifications one and three (Bounce Back—Objects Rebound from Edges and Black Hole—Invisible Sun).

Your goal in Space Wars is to hit your opponent's ship with your missiles. Over and over. In almost all video games, you either totally blow away an enemy object or completely miss it. Here (and also in Armor Attack, from the same company) you can hit your opponent's vehicle without totally wasting it. Sometimes your missile will destroy one of the two tailfins; in this case, the enemy ship will lose about half its speed but will still be able to rotate and fire normally. If all but the head is destroyed, the ship will be unable to thrust or turn but will retain the ability to wreak vengeful fire on the ship that caused its mutilation.

Your coins purchase a unit of time, either 90 or 120 seconds. With more money you can purchase more time—up to 20 hours at once. When your time is up, the game is over, unless you toss in more quarters *during the game* and thereby extend your time.

In Space Wars, even the background is intriguing. On the left there is the Big Dipper; on the right the constellation Orion. Occasionally a tiny asteroid streaks across the screen. In the center is a powerful, sparkling star. This is no mere decoration. Remember the Black Hole—Invisible Sun option? The center star is the Sun.

The Sun in Space Wars, like the Sun itself, exerts tremendous gravity. But in Space Wars, for a mere quarter, players can control the Sun itself. (And your parents never thought you'd amount to much!) In modification three (Black Hole—Invisible Sun), the Sun continues to pull hard on anything that gets near it (including ships and shots) but is invisible and therefore more dangerous than usual. In modification four, Negative Gravity, the sun flings you out instead of pulling you in. In modification five, No Gravity, both the Sun and its gravity disappear.

Strategy

The strategy that is most important is a matter of common sense: fire at your opponent when he can't fire on you. So try to get your shots off before your opponent can align his ship so it's pointing at you. Use a variety of evasive techniques: sudden changes of direction, serpentine routes, and erratic speeds.

Many Space Wars strategies depend on the modifications you have selected. If you have chosen Bounce Back, you can trickily angle shots off the wall, as though you were playing pool in space. If you haven't chosen Bounce Back, you can shoot off-screen wraparound shots, as in Asteroids. You must aim your shots in various ways, depending on the sort of Sun you have selected.

Once you establish a lead, you can consider stalling. Evade your opponent and don't take a shot unless you're sure that setting up the shot won't expose you to successful attack from the enemy. You can also stall by running into your opponent's ship: Each time you do this it scores one point for each side and wastes a significant amount of time.

• RIP OFF

Rip Off is one of a number of first-rate and unusual games whose quality is not reflected in the magazine surveys. That's not to say Rip Off did badly: It made it as high as fifth in *Play Meter*, in October 1980, and as high as fourth in *RePlay*, in June and July of that year, when it was headed only by Asteroids, Galaxian, and Space Invaders.

But while ranking as high as fourth in the polls, Rip Off is number one in another category: It is by far the best cooperative, or

partnership, game ever invented, home video included. In cooperative games, two players work simultaneously toward a common goal, rather than playing alone or trying to destroy each other.

Rip Off is made by Cinematronics, and its screen features the clean white lines of that company's innovative Vectorbeam system. Rip Off first appeared in 1980. In 1981 Centuri began making cocktail table versions of the game under license from the original manufacturer.

The Game: Rip Off the Aliens or They Will Rip Off You

Your goal is to keep alien terrestrial vehicles from stealing your small triangular fuel canisters. As soon as the enemies have made off with all eight of your canisters, you are not only out of fuel, you are also out of business: The game is over. As long as one or more fuel containers remain, you can run up points for shooting down the space criminals in the act of attempted larceny.

The scene for Rip Off is a planet or asteroid far in space. You and your partner each command individual heavily armed Space Tanks that are shaped sort of like horseshoes and that speed along the ground. You and your partner each have separate control panels, each with buttons for Rotate Left, Rotate Right, Thrust, and Fire.

Your fuel-hungry enemies have Space Tanks too. They come in six varieties. All are smaller than your vehicles and all have sharp-pointed noses. Quite frankly, they all look like cockroaches.

As the game begins, there is a low-pitched hum in the background. Three enemy Space Tanks sneak out from the side of the screen. One disappears and the other two streak toward your precious canisters. (Later in the game, all three will battle you at once.) You and your partner engage them in battle, each side firing away. The enemy tanks are no fools; not only will they try to heist your basic lifeblood, your fuel canisters, but they sometimes also will briefly remove their attention from the canisters and instead fire on you in an attempt to make their crime safer.

Shooting at these enemies is not the only way to destroy them. You can also run into them. Crashing into an enemy is not as much of a sacrifice as it may seem: You get an endless supply of tanks.

Over and over, the enemies come out and you try to fend them off. But that doesn't mean the game is boring. Far from it:

It's one of the most engaging games you will ever play. That's because each time the enemies appear, the level of challenge is different, and in general the level increases during the game. First there is a trio of ten-point enemy tanks, then, once you destroy them, an identical second trio comes out. Next, it's three twenty-pointers and then another three of the same type, and so on up through two trios of sixty-pointers. The higher the points offered for their destruction, the faster the enemy tanks.

After you have survived all six pairs of trios of enemy tanks without losing all your fuel canisters, you proceed to the next level. The second level is "+10," and you can go all the way to "+100" and above. At "+10," each space felon you destroy is worth ten more points than usual.

With the loss of each fuel container comes another change that greatly heightens the intensity of Rip Off: As each canister is stolen, the pitch of the background hum increases, until it is so high that it seems that if it gets any higher only a dog will be able to hear it. The higher the pitch, the greater the feeling of pressure.

Strategy

Like any other team sport, Rip Off requires cooperation and planning. It's usually best to play a zone defense, each player taking responsibility for half the screen, after the players have divided it into top and bottom or left and right. Each player should post his tank at least halfway between the edge of the screen and the fuel canisters, and most players position themselves closer to the canisters than that. During the short lapses when you are waiting for more space thieves to come out, you should aim toward one edge or another.

You first should try to shoot the enemies; if that fails, barrel into the suckers. When there is any question about which of two astro-felons should be attacked by a given player, one player, just like a football defensive captain, should make clear who covers whom: "Take the left guy!" and so on. If there is just one enemy remaining, one player should impersonate not a football captain but a baseball outfielder, calling "Mine!" or "Yours!" The player calling "Mine" should race in for close hand-to-hand combat, while his partner stays at greater range, trying to blow away the enemy from a distance but also ready to fire on him or collide with him if he clamps onto a canister and flees toward the edge.

Often you will fail to nail an enemy before he cops a canister but you will get him before he escapes. This will leave the canister

some distance from its original center-screen position, and will make it harder to protect than when it was with the others. The trick here is to get one of the enemies to help you. You wait until the beginning of a new level and let a ten-point enemy tank (the slowest type) latch onto the stray canister. If you are fortunate, he will drag the canister near the remaining group. When he gets close to the canister cache, blow him away, leaving your fuel container in a safe position.

In many video games, you must "lead" the enemy targets: shoot ahead of them. Nowhere is this more important than in Rip Off, where your shots are slower than in most games and the enemy, especially when attempting to escape, is faster. Fire way ahead of him, like a football quarterback throwing a long pass to a cheetah.

• CARNIVAL

Want to take a break from the tension of overwhelming space attacks? Walk through the arcade and find Carnival.

This game, introduced by Sega/Gremlin in 1980, made it to ninth in *Play Meter's* survey in November of that year. Though many machines have done better in earnings, what this simple, colorful, and intriguing game does better than any other video game in history is to just provide relaxed fun.

Carnival is the video equivalent of the old-time carnival shooting gallery. At the bottom of the screen you have an upward-pointing, light blue pistol and, under that, forty-eight light blue bullets in a row and twenty in a row beneath it. You move the pistol with buttons marked Left and Right and you shoot it with a Fire button.

There are three rows of colorful targets, the top and bottom moving right and the middle going left. Moving against a black background, the targets include amusing pictures of red owls, white rabbits, and yellow ducks. There are also individual blue letters (B, O, N, U, and S, never in that order), and two types of blue boxes, one with a black number "5" in it and one with a "10."

At the top of the screen is a yellow wheel with eight "pipes," which look like metal flags, sticking out from it like spokes. The pipes come in green, blue, red, and white. Just below the pipe-wheel is a narrow, horizontal green rectangle showing the num-

ber of points you will get if you knock out a pipe; the number declines throughout the game.

Sometimes, just to the left of the pipe point box, a yellow box flashes on, showing that a certain number of either bullets or points will be won or lost if you hit the box. A “+” sign means you gain what’s in the box; a “-” sign means you lose it.

The owls, rabbits, and ducks are worth fifty points if hit in the top row, thirty in the middle, and ten in the bottom. These figures increase in later rounds. Various other point awards are explained on the Carnival cabinet.

To end a round, you must hit every target on the board, including not only all the targets moving in all the rows, but also all eight of the pipes. Until you knock out all the pipes, more and more targets are gradually added to the three moving rows.

To hit all the targets, especially in the faster-paced rounds that follow the first, you will need more bullets than the sixty-eight you originally receive (forty-eight in rounds after the first). You can get more bullets by hitting the left box when plus-bullets are shown. You can also earn more ammunition by shooting the “5” and “10” boxes that show up every once in a while: Each is worth bullets in the number given in the box.

You can also *lose* bullets, and not just by using them. See those sweet little yellow ducks that stand harmlessly in the three rows, just waiting to get blown away for points? Well, they are not precisely mild-mannered reporters for a great metropolitan duck newspaper. Once a duck makes it unharmed from the top row all the way to the center of the bottom one, it is transformed (without even—pardon the term—ducking into a telephone booth) into *Superduck!* Once it becomes Superduck, the flying yellow monster flaps and quacks its way quickly downward. If you don’t rapidly blast it away, it will descend all the way to your arsenal and cheerfully chomp away *ten* of your precious bullets.

The relaxed, entertaining mood of Carnival comes not only from the easygoing theme and the colorful pictures. It stems also from the old-time calliope circus music that plays pleasantly in the background. A humorous feature of this game is the blue box located to the right and just below the bottom row of moving targets. In this box is a black musical note (an eighth note, to be exact). If you hit this box you get absolutely no points at all but you do shut off the music. If you want it on again, you simply fire on the box a second time. Sega/Gremlin provides the little note box for the player with a splitting headache, an uncomfortable hangover, or just a weariness of the otherwise-endless calliope

music that, once you are in your third or fourth consecutive game of Carnival, begins to lose its charm.

Strategy

Your first priority should be to hit all the pipes, since this keeps the other targets from increasing. Your next priority is to shoot the moving animal targets. Hit as many as possible when they’re in the top row, where they’re worth maximum points.

Three emergencies take precedence over any standard shooting. The ultimate emergency is the emergence of Superduck. Few players can easily afford to give up ten bullets to these hungry birds, so it’s important to knock out these foul feathered flyers before they migrate all the way south.

The other emergencies are the occasional and fleeting chances to run up extra points or earn extra bullets by hitting the plus-minus box on the left or to grab extra ammo by shooting the “5” and “10” boxes that appear in the rows of moving targets.

The ideal spot for your pistol to remain for most of the game is the position that allows you to shoot right between the plus-minus box on the left and the pipe point box in the center. This location allows you not only to get the pipes quickly, but also puts you as close as it is prudent to be to the valuable bullets and points that suddenly pop up in the plus-minus box. (You wouldn’t want to be right under the plus-minus section because you might mistakenly hit it when it’s in a minus mood.)

At the end of the game, if you have one of the top three scores since the machine was last switched off, the screen will instruct you how to enter your three initials on the screen. The great thing about Carnival is that the game is so much fun that it doesn’t really matter if you’re one of the top players. If you’ve simply been able to play for a while, you will have had a pleasant, relaxing time, refreshed and ready for the critical interplanetary wars awaiting you in other machines or just ready to leave the arcade in a fine frame of mind.



Stars of 1981-82

• MISSILE COMMAND

Missile Command is the most humiliating video game ever invented. This Atari machine, introduced in June 1980, is extremely hard to master: A top player must have dazzling reactions, awesomely precise eye-hand coordination, and enough experience on the machine to understand dozens of details. So one reason Missile Command is so humiliating is that only the rarely talented and heavily practiced player can escape an embarrassingly low score.

The other reason is unique to Missile Command. When a player is wiped out in any other game, the machine doesn't rub it in. Usually the screen, with tasteful brevity, simply announces GAME OVER. In GORF, some goofy alien voice does add, "Too bad, Spaaaaaaace Cadet," and the cynical observer may figure that GORF's Midway programmer is taunting the losing player just a little.

But in Missile Command, if the player does poorly enough that he doesn't produce one of the top eight scores on the machine (and on busy machines it can take more than 100,000 to break into the top eight), the screen explodes in a blindingly bright red and white nuclear blast that thunders, growls, shimmers, expands, contracts, and spells out THE END.

What that message means is not just that the game is over, *it means that civilization in the United States is over.* No more Safeway stores, no more Johnny Carson, no more New York Yankees, no more going to the lake in the summer, no more sneaking a look at *Playboy* or *Playgirl*, no more double dates, no more getting gas for the car, no more téachers or professors, no more phone calls, no more Budweiser, no more cheeseburgers, not even any more french fries, unless you want them more well done than you've ever seen.

The amoebas reproduced, the amphibians crawled out of the

water, the Indians started human civilization on the continent, Leif Erickson or Christopher Columbus began the takeover by Western culture, Jefferson and his pals wrote a terrific constitution, millions of American men and women fought in this country and in Europe and the Pacific to protect the nation, John Kennedy and Ronald Reagan and the consumer and environmental groups did what they could, the symphonies played and the manufacturers produced and the publishers published, but then they gave you the ball and you were too uncoordinated to protect the country from missiles and now everything's up in smoke. Nice going, buddy. THE END, man. And you did it.

This is no playful game, no Pac-Man or Centipede. This is war, the big war, the unthinkable war, the Third World War. The screen doesn't spell it out, but those aren't missiles from Atlantic Highlands, New Jersey, streaking down from the sky. They aren't from Buenos Aires or Tel Aviv either. It's no coincidence that in the first attack waves, the missiles are *red*. And Atari programmers call the most common attack missiles *ICBMs*—intercontinental ballistic missiles. That means they come from another continent. Atari won't admit it, but those missiles are coming at you direct from the You Ess Ess Are—from Russia, stupid.

Do you really want to play this game? Do you have the courage? Do you have the skill? Do you have the dedication? Do you have the twenty-five cents? Okay, here's how.

The object of the game is to protect your cities from destruction by ICBMs, missiles launched by plane or satellite, and Smart Bombs. You get a new city every 10,000 points. If you don't need it right away, it's stored for future use. When it appears on the screen, the machine plays a little flute fanfare and announces BONUS CITY.

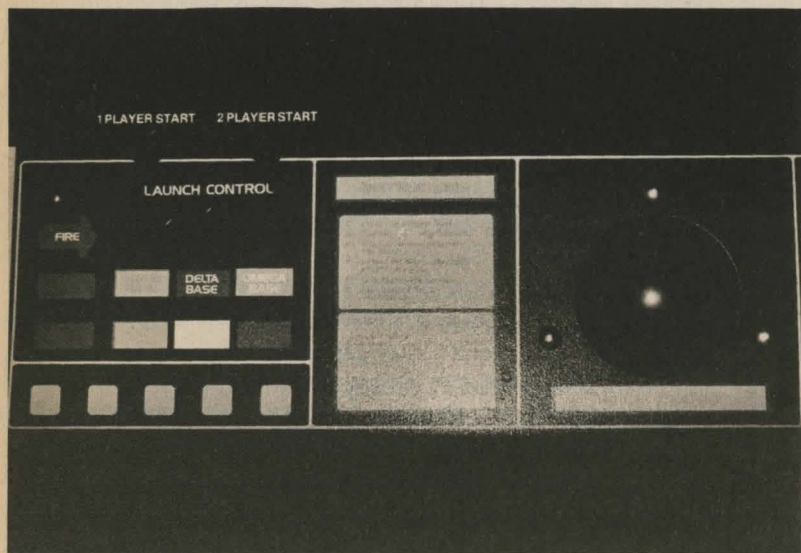
The cities make the game more meaningful. When Missile Command was in an early stage of development, Atari engineers designed the attacked area to look like the California coastline. They named the cities for six population centers in the state: from north to south, Eureka, the San Francisco Bay Area, San Luis Obispo, Santa Barbara, Los Angeles, and San Diego. Now players often describe the six as major U.S. cities. A common assortment is, west to east, Los Angeles (or San Francisco), Denver, Houston, Chicago, Washington, and New York.

But you can make up your own six. You can even pretend the six cities aren't cities at all but are six of your friends or six of your relatives.

Each device that attacks your cities presents special problems. 99

The ICBMs fall fairly fast even at first, and in late waves they absolutely plummet. They take jagged paths that increase the difficulty of targeting them. Some of them branch into several separate missiles that Atari programmers call MIRVs* (multiple independently targeted reentry vehicles).

The plane-launched and satellite-launched missiles are identical. They differ from ICBMs mostly in that they are always dropped from a lower altitude, while the ICBMs always start at the top of the screen. The lower the altitude, the less time you, the antiballistic missile (ABM) commander, have to fire a defensive missile at them. Although plane- and satellite-launched missiles don't MIRV, often several are launched at once. If you're still skeptical about whether Atari thinks this war is Russia versus America, you may want to consider what Dave Theurer, the chief Missile Command programmer, calls the satellites that launch the missiles. He calls them Sputniks.



Missile Command

Finally, there are the Smart Bombs. Atari folks also call them Smart Missiles or Cruise Missiles. The Smart Bombs drop in a jagged path, but that's not the real problem. The trouble starts when you try to blow them away. They sense all nearby explosions and dance and hover here and there, doing their best to avoid your defensive explosions and make their way to their appointed targets. Smarts have been known to float and flutter the distance between four cities in their single-minded missions of destruction.

The game gets harder—more devices descend and they fall faster—through the eighteenth wave. Periodically, before the start of a wave, the colors on the screen change. The change helps disorient the player. In the nineteenth wave the colors change back to the original: black sky, red missiles, etc. From then on all attack waves are equal to the brutal eighteenth.

Here are the points you earn in Missile Command. Remember that in the third and fourth attack waves you get double points, in the fifth and sixth you get triple, and so on up to the eleventh and later waves, where your points are multiplied by six.

<u>Device Destroyed</u>	<u>Points</u>
Smart Missile	125
Killer Satellite	100
Bomber	100
Attack Missile	25

<u>Possession Saved</u>	<u>Points</u>
City	100
Defense Missile	5

On your control panel you have three little red buttons on the left and one big black ball on the right. Use your middle three fingers to operate the buttons and use your right hand to turn the ball. The buttons operate your three missile bases on the screen. The left button controls the left base, etc. The black ball, known as the Trak Ball, moves the cursor, the little cross that appears on the screen during each attack wave. The Trak Ball is the most precise targeting device in the video game world.

You move the cursor to where you want each of your missiles to fire. Once you have fixed your target on the descending attackers, you press the button for the missile base from which you want to fire an ABM. You get ten missiles in each bunker; when you're down to three, a warning beep goes off.

When you press the button, two things will happen at once: (1) an X mark will appear where the cursor is; the mark will remain even after the cursor is moved; and (2) a defensive missile will rocket up and, upon reaching the X mark, will explode, expanding and shrinking in concentric ovals. Each explosion will destroy everything within it. If an enemy device falls into an explosion, it too will explode. All explosions—of an ABM, and ICBM, a satellite, whatever—are the same size, and all start from the center of the object exploded or, in the case of an ABM, from the center of the X left by the cursor.

Training Manual for Missile Commanders

REGULATIONS 001–008: See Bylaws of the Awesome Player Society

Be Cool.

Defense! Defense!

Fire Furiously but Not Foolishly.

Pig Out When the Slop Is Handy.

Not Too Much or Too Little, but Just Right.

Be Ship-Centric (here: Be *City*- and *Base*-Centric).

Practice Makes Less Imperfect.

Keep Your Mind in Mind.

REGULATION 009: Think Like a Quarterback. Any decent quarterback doesn't throw to his wide receiver by aiming the ball where the receiver is. The quarterback must aim the ball where the receiver *will be* when the ball arrives in his vicinity. Similarly, you as missile commander must take into account the speed of your missile and the speed of the descending attacker and target your shot so it will explode close enough to the attacker to destroy it. Most obviously, this means that in order to hit a descending missile or Smart Bomb you must fire when your cursor is somewhat below it. As the game proceeds and devices fall at faster and faster rates, you must fire farther and farther below the attacker.

Bombers and satellites present a special problem: They move horizontally but launch missiles downward. So fire to the side of and below these missile-dropping maniacs.

REGULATION 010: All Missile Bases Are Not Created Equal. The instruction list on the control panel puts its verbal

arm around the player's back and offers this friendly advice: "Fire from closest base with Fire button." That's terrific counsel. Terrific for machine operators who want players to lose quickly and put in another quarter. Bad for the player. Sure, many times the best move is to fire from the base nearest the attacking device. But if this advice were always valid, it would be because all three bases fire at equal velocity.

In fact, these bases are about as equal as an inning's worth of baseball hitters named Jane Fonda, Ronald Reagan, and Willie Mays. Jane is of course the missile base on the left, Ronnie is the one on the right, and in center field you have the Say Hey Kid.

Jane and Ron are pretty good bases. All three bases have ten nuclear-tipped missiles that cause explosions of identical size and of absolutely devastating power. Jane and Ron fire missiles that move pretty quickly. But Willie hits with much more speed: His missiles travel about *three times* as fast. While Jane and Ron's missiles streak to their targets, Willie's get there almost as fast as they're fired.

The differences in bases are important in two basic ways:

(1) In following Regulation 009 and "leading" your target, you aim your missile farther away from the attacker when you use Jane or Ronnie than when you use Willie. Even in fast attack waves, descending missiles will make little progress before Willie gets to them.

(2) You must use appropriate missile bases at appropriate times. In particular, you must not waste Willie. When any missile will do, use Jane or Ronnie, depending on which one is closer to the descending weapon. (The closer one will get there faster, allowing you to predict better where the attacker will be when the missile reaches its destination.) When an attack device is very close to Jane or Ronnie, use that base: Within a couple inches of the base Jane or Ron will reach the target faster than Willie. But when the attacker is some distance from Jane and Ron and you must have maximum speed or maximum precision, use Willie.

If you plan well and shoot well with Jane and Ronnie, your ten Willie missiles will be enough. Use Willie on Smart Bombs, which dance around annoyingly and can usually evade shots from the other bases. Also use Willie when you have failed to hit a descending device when it was at high altitude and it now is just about to strike a city.

A good rule of thumb is this: Try to preserve all ten Willie missiles during the first part of the attack wave and try to have zero to few Willies left at the end. This way you won't waste Willies when

attackers are high enough that Jane or Ronnie may do the job, and you will also make good use of your most effective weapon before it is rendered useless by the end of the wave.

REGULATION 011: Kill Lots of War-Birds with One Stone.

It is important to conserve your missiles. The least significant reason is the one the machine emphasizes: You get five points for each missile you don't use. It's not often that the points for saved missiles make much difference.

The most significant reason to save missiles is that you will need them to knock out descending attackers. Early in the game the semiexperienced player won't need most of his missiles. In fact, good players usually fire no more than six of their missiles against the first wave and therefore save twenty-four or more, obtaining a bonus score of at least 120.

In later rounds, however, there will be times when you could use twice the missiles you have. For one thing, there are more attackers streaking down. For another, they are faster and more evasive. Finally, you'll lose a lot of missiles at once when a whole missile base is destroyed.

The main way to save missiles is to use each one to blow up as many attackers as possible. To do this, aim as many shots as possible so they will explode where two or more attackers are near each other, thereby knocking out two or more devices per missile. If two ICBMs are gradually converging, you have time to use Jane or Ron. If you don't notice the enemy objects till they're nearly together and are about to diverge too far to be destroyed by a single shot, use your speedy Willie base. Another time to use Willie is when an attacking missile suddenly MIRVs.

Remember that the device you destroy explodes in its own devastating white-hot fireball. Make use of that explosion to wipe out yet additional attackers. Just as one match can set off a whole book one match at a time, one well-placed missile shot can set off enough consecutive explosions on the Missile Command screen that many attackers can be destroyed by a single defensive missile. Therefore look not for just two attack weapons that will be close together; look for as many as possible that will be close enough to be blown away by a chain of blasts moving up (not down, usually), left, right, or in a combination of those directions.

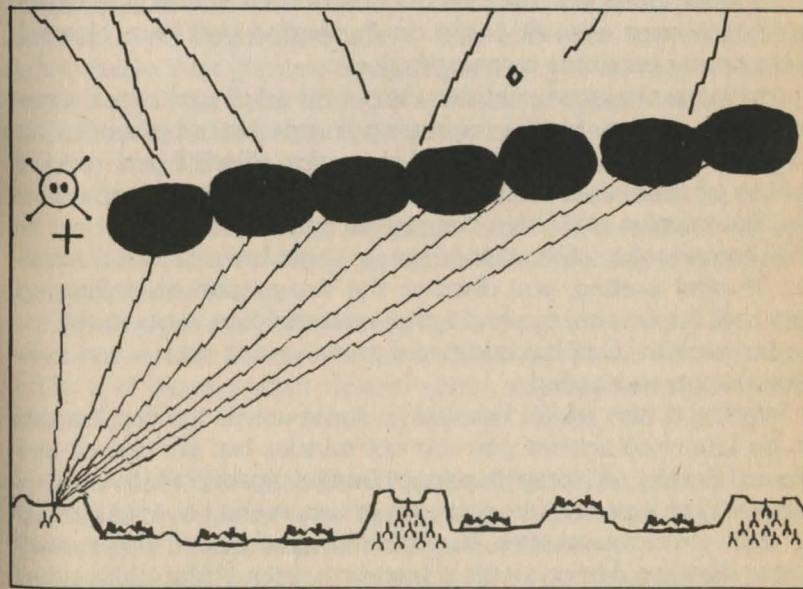
To get maximum explosion area for your missile, fire it so a descending device is blown up by the very edge (top or side) of the defensive explosion. This way, the combined blasts will over-

lap as little as possible. Shooting a little on the low side will also help you if, after you launch your ABM, an ICBM MIRVs or a plane or satellite drops missiles.

The skilled Missile Commander will commonly liquidate six or more enemy devices with a single well-aimed, well-timed ABM shot.

In carrying out this regulation, be patient: Wait until multiple attackers can be destroyed with a single blow (wait for ICBMs to converge or to MIRV). Wait also to see if one match will ignite others: The novice player will often fire off missiles to destroy devices that would have met their maker without additional encouragement.

REGULATION 012: Spray Those Pests. It is best to fire ABMs as precisely as possible: you don't want to waste missiles and you do want to hit with as much punch as you can. Still, most every player will be under such heavy and fast attack in advanced Missile Command waves that he will have to get off a lot



Spraying the pests: When the attacks get heavy, use your left or right base to fire a horizontal wall of exploding defensive missiles.

of roughly aimed shots at once. Near the start of such waves the player will fire a spray of six to eight shots right to left or left to right across the screen, evenly spacing them to avoid wasteful overlapping explosions. Chief Missile Command programmer Dave Theurer recommends using a spray on waves five (the first one with triple points) through twelve. Theurer says that spraying in earlier waves is unnecessary because there's time for more precise shooting and that spraying in later waves wastes more missiles than the player can spare against the horrendous attacks that rain down during those phases of the game. Still, avoid spraying until after wave five if you can: Spraying has limited accuracy.

Probably the best technique for a full horizontal spray—one spreading the whole width of the screen—is to use either Jane or Ronnie and to begin by targeting missiles to explode as far as possible from the base you use. That is, if you use Jane, start your spray on the right; if you use Ronnie, begin on the left. The shots at the start of the spray should be higher than those at the end. This is because by the end of the spray the enemy missiles will be lower than at the start.

To fire a spray, you must hit the missile base button very rapidly. If you have a weak finger on the button you have chosen, temporarily substitute a strong finger.

Full horizontal sprays at the start of an advanced attack wave are good strategy for the improving, inexperienced player or for anyone in a panic. Ideally, however, *don't fire till you see the whites of their warheads*. Wait a moment until it is clear where the first missiles are. Often they will fill only the left or right half of the screen and a full horizontal spray would have been half-wasted. If, after waiting, you discover the first missiles are taking up just half the screen, apply a spray of about four shots in the invaded section. Employ additional partial or full sprays and individual shots as needed.

Waiting is also useful because in some waves the first devices to be launched against you are not missiles but are one or two Smart Bombs. A spray is almost useless against these evasive creeps, and a premature spray therefore would have wasted up to eight precious missiles. Instead, the calm player blows away these dancing demons with a few shots from Willie. Still, either just before or just after firing at the Smart Bombs, you can launch a partial or full spray once missiles do begin streaking down from the top of the screen.

Since attackers plummet faster and faster as the game progresses, spray lower and lower.

REGULATION 013: Give Smarts Double Trouble. Smart Bombs present the single greatest challenge to the Missile Command player. They are so skilled in defensive martial arts that they make David Carradine's Kung Fu character look like a drunk with arthritis. You think you've doomed them with multiple shots in their vicinity or with one well-placed blast right at them, but they maddeningly hover above your explosions and sneak around them to destroy a diligently defended city or base.

Cities and bases are too important to lose. They are so important that you should spend two or three coveted Willie missiles on a single Smart Bomb if you have to. So give yourself time to take at least two shots at every Smart. Fire one missile when the Smart has dropped low enough—about three inches above the cities—that Willie will reach it almost instantaneously, before it can flit out of the way. If you miss the first shot, take the second one immediately after realizing the first has failed.

REGULATION 014: Don't Lose Two Cities to Save One. Important as Smart Bombs are, they and other enemy devices often cause their greatest devastation not by what they hit but by what they distract you from protecting. The inexperienced player will often be so intent at getting one attacker, especially an annoying Smart Bomb, that he will spend too much time fighting it and will meanwhile allow the destruction of two cities, two bases, or one of each. Ironically, the player often will lose the single city or base he was protecting, as either the distracting attacker or a later ally finds its target.

So keep your priorities straight: The important thing is to end each wave with as many cities as possible. To do this, as many cities and bases (which defend cities) as possible must be preserved.

REGULATION 015: Don't Defend Dirt. This phrase is used by the Atari engineer who designed the home version of Missile Command. It helps explain an important strategy.

As mentioned earlier, it is important to conserve missiles. It is easy, however, to get so used to blowing up any attacking device that the player will fire at ones that can do him no harm. Try to stay sufficiently calm to judge whether a weapon will hit a base or

city if it is allowed to descend all the way to earth. If it will not, let it go and use your time and missiles where they will count.

REGULATION 016: You Are the Milkman, Coo-Coo-Ca-Joob. Milk planes and satellites for easy points. Early in the game, the more bombers and killer Sputniks you destroy, the more will come out. These fat targets are easy to hit and the points won't hurt you. So nail them fast and hope for more.

Later in the game it is also important to quickly wipe out these horizontal travelers, but for another reason. At that point in the game a set number will come out, but they are much more dangerous than before. They have dropped lower and lower and they will launch missiles more and more often. Obviously, a very low plane or Sputnik dropping a lot of missiles is very hard to combat. So get them fast.

Early-wave planes and Sputs merit shots from your left or right missile bases. Late-wave ones deserve your best: Ladies and gentlemen, batting for the United States, playing center field, number twenty-four . . . WILLIE MAYS!

REGULATION 017: When in Doubt, Wire Willie. The player faced with an awesome attack from fast-MIRVing missiles, dancing Smart Bombs, and missile-dropping bombers and Sputniks and trying to use strategies effectively will understandably make mistakes of judgment.

One of the most common judgmental errors is concentrating too intently on saving the powerful center missiles.

Cities and bases are too dear to be protected by a missile that may not do the job. Therefore, when an enemy device is nearing a city or base and you're not sure your Jane or Ronnie missile will reach its target fast enough, whip out a Willie.

REGULATION 018: Turn Over No Weapons to the Enemy. Despite your best efforts, you will from time to time find yourself with a doomed missile base. A missile or Smart Bomb will be about to fall on it and the device will be too low to be shot by that base (when a device gets to about an inch and a half above a base, it is immune from destruction because the cursor cannot be placed that low).

This is no time to write off the base as a tax-deductible business loss. Instead, since you're going to lose the points for your doomed base's missiles anyway, fire off as many of them as you

can as effectively as you can. In a split second before destruction a good player can squeeze off six or eight shots that significantly aid his defense.

REGULATION 019: Avoid Ambush. Players, even good ones, will sometimes suffer a loss of a city or missile base to a device they didn't see or thought was destroyed. This can happen in three main ways:

(1) A missile can be launched right down the edge of the screen, away from the player's area of attention.

(2) The player will assume an attack is over because two or more major groups of attackers have been confronted and no more are descending, but after a brief pause a lone last missile will sneak down. This once happened to a writer working on a book about video games. He assumed a wave was over, bent down to tie his shoes, and arose to helplessly watch a single devious missile running smack into Denver.

(3) The player will launch a defensive explosion that he is sure has wiped out a certain attacker, and the player will switch his attention to other devices. But sometimes the player will find, perhaps too late, that an attacker has survived the supposedly lethal blast and has quietly made its way toward a city or base.

So watch the whole screen, don't assume a wave is over until the machine starts toting up the points earned during the wave, and be sure nothing escapes your explosions unless you know about it.

REGULATION 020: Save the Right Cities. The player who is being overwhelmed by an attack cannot save all remaining cities. But he can have something to say about which cities are lost. Often, for instance, there is time to nail one attacker but there are two attackers each about to reach a city. Which city do you save?

A city can usually most easily be protected by a missile base right next to it. Willie, in the center, is the most effective base. So if you can save just one city on Earth, save one of the two right next to Willie. If you're right handed, you probably should save Chicago. If you're a southpaw, protect Houston.

If you can preserve two cities, try to save one right next to Willie and one right next to that city (for instance, Chicago and Washington). That way you can focus your efforts on one small area of sky extending from Willie to the second city from him. If you can save three towns, save them all on one side of Willie and

concentrate on commanding the sky from Willie to the base on that side.

REGULATIONS 021–023 Before disclosure here, regulations 021–023 were top secret, they were known to few. In most cases they are useful only to excellent players. These secrets are not to be shared with wimps: those who despite lots of practice score below 50,000, those who think all three bases are equally effective, those who while waiting to get on the machine distract the current player by placing a reservation quarter on the control panel during an attack wave.

REGULATION 021: Only Three Are in Danger. Under the computer program for Missile Command, no more than three of the player's cities will be destroyed in any attack wave. You can put in your quarter, press the button to start the game, and give yourself a quick shave during the first wave and you'll wind up with a smooth face, three cities, and 300 points "earned" for "saving" three cities. Similarly, if you start with four cities, you will end up with at least one whether you play well or not.

This explains your miraculous escapes from disaster when you've defended poorly during a wave, lost all your missiles, lost three cities, but then find the last ICBMs, Smart Bombs, etc. all falling harmlessly to earth.

Knowing this secret should help you relax during the game, knowing the worst that can happen is a loss of three cities. This obscure fact has several ramifications for strategy.

One conclusion to draw from this fact is that once you have lost three cities, the others are immune from destruction. Therefore don't defend them: They don't need you. Use your time, skill, and remaining missiles to defend bases and to destroy as many points' worth of attackers as possible. (There are so many points available for destroying enemy devices that in late, high-point waves some players don't defend any cities.)

Another lesson to learn from this is that sometimes you can gain more points in the long run by losing some in the short run. This lesson applies when (1) you are up in a high-point wave, (2) you have begun the wave with four or five cities, (3) you will probably lose three of them, and (4) you are approaching a 10,000 increment (40,000, 50,000, etc.), where a new city will be awarded, but (5) even with a good effort you will not during this wave be able to get more than 3,000 points past that increment.

In this case, it is often better to sacrifice points and keep your score just below the 10,000 increment. Say you start wave ten with four cities and 35,000 points and your quality of play indicates you will lose three of those towns. With maximum effort you could reach 43,000 points. With your remaining two cities (one left over from the attack and one awarded at 40,000) you will stand a good chance of being destroyed before you get to 50,000, where another city would be provided.

Instead, you may be wise to get close to 40,000—say 39,500 (including the points you will be awarded after the end of this wave, for the cities and missiles you have preserved)—but not exceed it. Then, instead of starting the next wave with 43,000 and two cities, you will begin with 39,500 and one city but with the near-certainty of going well over 40,000 during the wave and earning another city. You probably can save the city you're starting with, especially since you have only one town to defend. Very likely you will get past 45,000 and have two cities at the top of the next round, a significant improvement over 43,000 with two. And you might even get to 47,000. Whether at 45,000 or 47,000, whether with one city or two, you will be perched in a promising location from which to top 50,000 points.

REGULATION 022: If You Pork Out, Listen for the Oink. When you hit a missile base button but the base fails to fire, you'll hear an *oink* sound. This happens most commonly when you've exhausted the ten missiles in a base or the base has been destroyed by an attacker.

It also happens, however, when the computer can't handle more than the objects already on the screen. According to Missile Command programmer Dave Theurer, if (A) the number of defensive explosions (explosions caused by your ABMs and caused in chain reaction by those explosions) plus (B) the number of ABMs on the screen totals sixteen or more, the player will be unable to fire until the total decreases to fifteen or less. So if you shoot a great deal or if you fire so accurately that your shots touch off many chain reactions, you will pay a price of impotence for your prior power.

Similarly, you will be unable to add more havoc to the screen if the *machine* is pigging out. Fair? Of course not, but who ever said machines have morals? If the total of ICBMs, Smart Bombs, planes or Sputniks, and offensive explosions is twenty or greater, you will be unable to fire.

All this explains why you will sometimes at a critical moment

pound a missile button as fast as you can only to hear it fail to fire and only to lose a key city or base that you expected to save. When this happens, players often believe there has been a failure of the hardware—"This damn button isn't working!"—when in fact it's a simple limitation of a program that itself deals with a printed circuit board that can handle only so many bits of information. This limitation is a major flaw in an otherwise outstandingly attractive game.

If it makes you feel any better, the enemy has its limitations too. If the number of ICBMs, Smarts, planes/Sputs, and offensive explosions is eight or greater, no more devices will be launched at you till the number decreases to seven or less.

REGULATION 023: A Bug That Won't Bug You. Players who have ascended into the ionosphere of Missile Command achievement know there is a surprising, amusing, and absurdly generous bug in the program.

A good Missile Command beginner will score 2,000 points. After \$10 on a game set for quarters, he will be up around 30,000. An ace player will get to 800,000 and then, as will be seen, higher.

At the end of the wave in which the great player reaches 800,000 points, the machine will—contrary to its own rules and habits—award from 1 to 128 unearned cities.

The bug that causes this uncharacteristic charity in a machine typically brutal is so mysterious that even the game's programmer is not sure what numbers are possible between 1 and 128, but he thinks all of them are.

What this bug means is that a player can receive six unearned cities on the screen and have up to 122 in storage. He can leave the arcade, run a couple miles, shower, grab a quick lunch, and still have an ongoing game to which to return. Even terrible play will get the player from 800,000 to 1,000,000, where the same bug waits to buzz out again. The Missile Command programmer believes the bug makes another appearance at 2,560,000.

• **BERZERK**

Berzerk stands at the top of several coin-op peaks. It is the funniest game ever. It is the ultimate game pitting man against ma-

chine. And, though Stern Electronics has produced pinball winners, including Meteor and Flight 2000, and popular videos such as Scramble and Super Cobra, Berzerk, with a production run of some 17,000, is the top seller in the history of the company.

In Berzerk the player controls a Humanoid, a human-looking figure on the screen. The Humanoid must fight his way through a maze guarded by Robots. You control the Humanoid with a black joystick in the center of the control panel. Whether Stern has left-handed executives has not been revealed, but for one reason or another Stern, in this and other games, does provide two Fire buttons: one to the left of the stick for southpaws and one to the right for right-handers.

The joystick moves in eight directions: up, down, left, right, and the four diagonals. Moving the joystick in one of these directions moves—or is supposed to move—the Humanoid in the same direction and, if the Fire button is pressed, allows him to fire at the same angle. Even when working as intended, however, the joystick does not move the Humanoid in perfect 45-degree diagonals (they're more like 40). More important, it's hard to get the man to move diagonally. And the joystick often breaks down, causing Berzerk—like many joystick machines before it—to be out of order more than most video games.

Robot-Filled Mazes

The object of the game is twofold: to survive and to run up maximum points. You survive by leaving the maze by a door before a Robot can shoot you or ram into you. You get points by shooting the Robots. And you receive bonus points if all the Robots are destroyed (by you or other means) before you exit a maze.

So not only are you, the person, playing against Berzerk, the machine, but the human you control is fighting against the Robots on the screen. That's why Berzerk is the ultimate man-versus-machine machine.

All Robots move toward you. If one runs into you, you are electrocuted and lose your Humanoid. You are also electrocuted if you run into a wall of the maze; to be fair, the Robots suffer the same fate if they run into a wall. Or into each other.

There are one to eleven Robots per maze or "room." The number is random, though the computer is programmed to gen-

erate more numbers in the higher part of the range than in the lower and also almost always follows a densely populated room with a sparsely populated one.

Alan McNeil: Humanizer of Machines

Unlike the fearsome, never-erring monsters of other video games, Berzerk's Robots screw up all the time. They fatally shoot each other in the back of the head. They run into walls and electrocute themselves. They run into each other with the same shocking effect. They can't figure out how to get through the maze.

The berserk behavior of the Berzerk Robots is part of the humor built into this game by Alan McNeil. McNeil, a thin, bearded engineer, was the sole designer and programmer of Berzerk. Stern, unlike its more secretive corporate brethren, who fear that identifying their designers will lead to them being lured away by other firms, let McNeil "autograph" the machine: his signature is printed on every Berzerk cabinet.

McNeil, now the chief engineer for software of Stern's Universal Research Laboratories, designed Berzerk to release the humor, fear, and loathing that he and some of his friends feel for computers. Alan told Hanke Gratteau of the *Chicago Sun-Times*, "I have this love-hate relationship with computers." He said he began hating computers in his teens, as a student at the University of Chicago Lab School:

I thought the computer was the worst piece of machinery I ever dealt with. I kept writing a program over and over again that was supposed to average twenty-five test scores, and the computer kept rejecting it. It took hours, days, to get it to do something that I could have done in a few minutes, even without a calculator.

Interviewed for this book, McNeil said, "I like computers to be more humanized. Half the people I know are afraid of computers. Video games are helping."

So, instead of being the foolproof, silent automatons that science fiction movies have led people to believe both Robots and computers are, Alan's Robots make at least as many errors as humans. In addition, unlike most machines, these Robots also speak. Their comedy act, therefore, isn't limited to just slapstick mistakes. It includes jokes. Most of their lines—always in exag-

geratedly electronic tones—can be taken as serious threats or as ridiculous, overly stern (no pun intended) warnings right out of 2:00 A.M. TV movies: "Kill the intruder!" "Humanoid must not escape," and so on.

If you get your man out of a maze without wiping out every Robot in it, the remaining Robots call after you like you're some kid running away from a playground boxing match: "Chicken! Fight like a Robot!" Admittedly there isn't yet much competition for funniest-spoken or -displayed statement in a video game, but this one by McNeil is an easy number one for now.

Alan also gets second place: When a player completes a game and, not having previously inserted extra quarters, has no credits left on the machine, the electronic voice, seemingly having analyzed the player's clothing, announces, "Coins detected in pocket!"

Back to the Game

So much for Alan McNeil. He may be funny, but he's also put together a challenging machine.

The robots get tougher throughout the game. You begin against yellow Robots who move toward you but can't fire. Once you have accumulated 300 points, the next maze you enter will be populated not by the semi-harmless yellows but by red ones. These boys have been given the right to bear arms and a license to kill. Each can fire, and every shot is fired at you. In a way they share a single shot: None can fire when any Robot's shot is still onscreen.

The game gets harder and harder all the way up to 20,000 points, which, in Berzerk, is an astronomical score. It gets harder because the Robots fire more shots, fire faster shots, take less time between shots, take less time at the start of a room before firing at you, pause more briefly before moving toward you, or in most cases become more challenging in all these ways at once. Each time they get tougher, they change color.

Obviously these Robots are so rough that Berzerk confronts you with no other enemies, right? Wrong. You apparently haven't heard about Evil Otto. This guy is so bad that he's been reviewed by the media. "Indestructible 'cookie monster,'" says Dave Pierson of *Play Meter* magazine. "Malicious basketball," writes Monica Anne Krausse of the *El Paso Times*.

Malicious basketball? Excellent description. Evil Otto actually is an octagon, but onscreen he looks more like a ball. He has two

eyes, no nose, and a great big smile, just like all those "Have a Nice Day" smily faces that used to beam out from blouses and bumpers all over the United States, uplifting some citizens and nauseating others. "I just hate smily faces," says Alan McNeil.

Evil Otto is the Superman of video games. The sucker is indestructible. He even has one power Superman lacks: Otto can bounce right through walls without even damaging them or losing speed. That's right, bounce. So the basketball metaphor is right on target. Fortunately Otto waits awhile before, as they say in basketball, he is "inbounded." If you're a good shot, you can wipe out enough robots to find a safe way out of the maze before Otto shows up. If, however, you are stuck in the maze with no safe exit and Evil Otto corners you, say your prayers. You are about as likely to evade Evil Otto as a falling apple is likely to evade the law of gravity. To be scrupulously honest, you do have a *chance* of getting by him, but only a *very* slim one.

Otto's behavior depends on the number of Robots. If the maze begins with lots of Robots, Otto will wait longer to come out than if there are few at the start. Once he is bouncing around, he will move faster and faster as fewer and fewer Robots are left on the screen.

Okay, Now What Do I Do?

Now that you know all about the Humanoid, the maze, the Robots, and Otto, how do you survive and run up points? Well, here are some hints, from Alan McNeil himself:

Hold Down the Fire Button Perhaps the key to effective shooting is to hold down the Fire button. This not only keeps the Humanoid's gun shooting automatically; more important, it *freezes the Humanoid's position*. One of the big problems many Berzerk players have is that as they move the joystick to aim their Humanoid, the Humanoid moves in the direction in which the joystick has been pushed and moves away from where the player wants him to be. With a frozen Humanoid, however, the player can aim the Humanoid's weapon without repositioning the Humanoid.

Roboticide from Afar Like any devious plotter, get your enemies to kill each other instead of you. When you are safely separated from the Robots by a vertical wall, move your man up and down to get the stupid Robots to all line up at about the same

"level" on the screen (even if they don't have a clear path to you, they still will try to stay at your level). Once at the same level with each other and you (it works on vertical and diagonal lines too, but you're more likely to be in a safe position if you're at the far right of the screen, near the door), the Robots will fire in your direction. They won't hit you, but they often will hit each other.

When Evil Otto comes out, he, too, will stay at about your level. So make your level about the same as that of some of the Robots, and Otto will bounce right through them, merrily electrocuting each one. And you get points just as though you had shot them yourself.

Use Your Bulletproof Necktie This one's for experts. Take a close look at your Humanoid. Notice that horizontal black line between his head and body? The computer doesn't "see" that as part of the Humanoid. So, if you can very precisely control your man and if a Robot gets off a shot at the upper part of your man that you can't evade, move delicately and quickly so the shot passes along that black line, between the head and the body. No damage is done to your man!

Final Notes Berzerk is named for a series of novels called the *Berserker Stories* by Fred Saberhagen. According to the *Chicago Sun-Times* these books are "about robot war machines out to kill all biological life forms."

The Berzerk video machines haven't killed any biological life forms—except onscreen—but they have knocked off a lot of quarters. The game reached third place in the *RePlay* survey printed in the February 1981 issue (the machine was introduced in late 1980) and attained the same ranking in *Play Meter* in June.

Meanwhile, back in Chicago, Alan McNeil continues to struggle against the machines, including video games. He told the *Sun-Times*: "There's a saying around here: 'If AI can play the game well, the game won't sell.'"

• SCRAMBLE

In the June 1981 issue of *RePlay* magazine Stern's Scramble was number one. Ahead, incidentally, of games called Pac-Man,

Defender, and Asteroids. A machine could do worse. In fact this machine usually did do worse, but it remained no lower than third or fourth in both *RePlay* and *Play Meter* for several months in mid-1981.

This game, licensed from Konami Industry in Japan and introduced in 1981, is a poor man's Defender. This is its greatest strength in the quest for earnings and its greatest weakness in appealing to video aces. It is similar to Defender in being one of the few horizontal-mode video games: While in most games you have a base or ship at the bottom of the screen with attackers diving from above, in *Scramble* and *Defender* you pilot a ship that travels from side to side. The reason *Scramble* is a poor man's Defender is that it provides the player with neither as much challenge from enemies nor as much control over his own ship. The lesser challenge makes *Scramble* less attractive than *Defender* for expert video players, but makes it more inviting for the millions of players who find *Defender* overwhelming.

To control your ship in *Scramble*, you get a joystick with eight directions: up, down, forward, back, and the four diagonals. Diagonal positions don't cause diagonal flight: they cause a combination of the movements caused by the two positions they are between (such as forward and up at once). Usually you can vary only your *forward* speed. If, however, you're as far right as you can go the screen, jerking the stick to the left will make the ship go backward.

Using the joystick, you avoid obstacles at the top and bottom of the screen and you position your ship to fire at targets. Your ship has a laser (four shots at a time) and bombs (two at a time). You must hit enemy rockets and ships to run up points and to avoid being hit by them. You must also destroy fuel tanks on the ground: Each destruction adds to your fuel supply, and if you run out of fuel your ship drops to the ground and crashes. You can also blast away at mystery objects on the ground that look like genie lamps and that provide varying amounts of points.

There are five sets of hazards. When you survive one, you continue traveling to the next. Below are the five sets and what to do about them. The strategy comes mostly from Louis Rudolph, who not only is Stern's manager of field service and technical publications but has also scored well over 100,000 points on the machine. To answer some of the author's questions, he played *Scramble* while talking during a phone interview: One of the machines stands only a few feet from the phone he was using.

LEVEL ONE: *Rockets* Here you should speed up a little, nail two or three rockets that are on the ground, then slow down a little now that you have made your immediate path safe from rockets that might have been launched. You should alternate fast and slow speeds throughout this level. When you can, shoot rockets before they're launched. Otherwise wait to shoot them as they fire upward. Rockets housed in silos can be destroyed only by bombs or after launch.

LEVEL TWO: *Twenty-eight Big Macs to Go* The Big Macs are flying saucers that look like heaping hamburgers and that fly in erratic patterns that make them difficult to shoot once lots are on the screen. Rudolph's solution is to bag the burgers before a whole group makes it onscreen. To do this, fly your ship all the way to the right end of the screen, move it to an altitude about 60 percent up, then consume the burgers one by one as they appear. If you are unable to wipe them out before a whole formation of them is buzzing in all directions, fly under them to evade them. It's more important to survive than to eat a lot of burger-points.

LEVEL THREE: *Space-Age Spermatozoa* Next you face what Stern calls asteroids. These long-tailed round creatures look more like energetic spermatozoa flying through space. Women in their fertile years may want to avoid this game.

Lou Rudolph says that in this stage you position yourself all the way to the *left* and about 50 percent high and fly more or less right through the center of the wave: "It's almost a complete dead spot," he says. You can fire all you want, but none of the "asteroids" is affected by shots or bombs.

LEVEL FOUR: *High-Rise Apartments* Here you must fly through a series of objects that look like high-rise apartment buildings in profile. They have rockets on their roofs. The technique for Level Four is similar to that for the first stage: Push the joystick forward and back as the objects just ahead of you dictate.

LEVEL FIVE: *The Maze* In this stage the emphasis is on maneuvering. Rudolph says the technique here is like that for making your way through what comes in the next level: attacking the enemy Base itself. So let's move on to that.

The Base The Base looks like a large version of the mystery-score genie lamps you've been shooting for bonus points. You must bomb or shoot the base. To reach it, first move all the way to the right of the screen. Take care to avoid obstacles. Soon there will be a sudden drop-off that requires you to move the stick between the left and down positions (to 7:30 on a clock). This makes your ship drop straight down. Then you move back to the far right of the screen, then drop again by moving the stick to 7:30. Next you bomb or shoot the Base. If you destroy it, your ship is destroyed but is replaced. If you *collide* with the base, your ship is *not* replaced.

Once you have aced the Base, the screen says: CONGRATULATIONS. YOU HAVE COMPLETED YOUR DUTIES. GOOD LUCK. TRY AGAIN.

You will try again—the game keeps going—and you will need good luck. Because though you face all the same levels, you'll be using fuel at more than twice your previous rate, as though you've jumped from a Datsun to a Lincoln. So while in the first time through you needed to blow up only about one quarter of the fuel tanks to keep your ship running, now you will have to nail about 60 percent. In about your *fifth* run through the levels, you will have to blast away *every* fuel tank or your ship will run out of gas and crash to the ground.

Scramble is seen in two varieties. The first 40 percent of the production run was easier than the rest, which featured first-level fuel consumption at about double the rate of the original machines.

Super Cobra

Before Scramble had even reached its earning peak, Stern, in the spring of 1981, licensed from Konami and began producing Super Cobra, a sequel to Scramble that is more difficult than the original.

Here you get a killer helicopter instead of a jet airplane. There are ten different levels you must negotiate before you get to the Base. Lou Rudolph says the game is "twice as long and four times as hard."

Tanks on the ground fire back at your ship. Some of the ground-based missiles fire straight up, while others curve to the right and left. Some are fired from offscreen and are seen only after launch. Although the cabinet identifies your ship's weapons

as "Bombs" and "Sidewinder Missiles" instead of the "Bombs" and "Laser" of the earlier game, the Sidewinders don't wind around anything: They're just the good old Scramble shots under a new name.

Rudolph says Super Cobra "requires precision flying just about throughout." One hint he gives is that if you are to the left of a mountain and enemy tanks are to the right and are aiming at the top of the mountain, you must launch your bombs right as you pass over the peak of the mountain.

Stern Airlines wishes you a pleasant flight.

• GORF

GORF is another hit from the prolific stable at Midway. Introduced in March 1981, GORF made number one in *Play Meter's* earnings survey in the September 1 issue (reflecting a survey of July 3). This probably had more to do with the questionable validity of magazine surveys than with the strength of the machine—even *Play Meter* publisher Ralph Lally considered GORF's top position a fluke, and in the immediately preceding and following polls it was fifth and third, respectively.

GORF is unique. It is the first video game to present five very different games in one. Two of the games—abbreviated and modified versions of Space Invaders and Galaxian—are licensed, the former from Taito and the latter from Namco. The other three were created by Midway's own engineers.

Throughout the games of GORF a weird, high-pitched, psychotic-sounding, vaguely male electronic voice will taunt you. Among the charming phrases of the invisible narrator are: "Prepare yourself for annihilation," "Survival is impossible," "Some galactic defender you are . . . ha ha ha!" and "My GORFian robots are unbeatable."

There are six levels of proficiency you can reach in GORF: In the first series of five games a box to the right of the screen lights up proclaiming you are a mere Space Cadet; in the sixth series you have been promoted all the way through the ranks of Space Captain, Space Colonel, Space General, and Space Warrior to the lofty title of Space Avenger.

Three of the weird narrator's comments vary with the rank you have attained. He says "Bad move" or "Bite the dust" or "Too

bad," then adds your title. For instance, when you've lost the game and are only in the first series, he says "Too bad, Space Cadet." But the voice draws out certain vowels, so the preceding sentence really sounds like "Too bad, Spaaaaace Cadet."

This astro-creep's belittling remarks, spoken with annoying pronunciation, have the effect of making you want to blow up his hotshot GORFian buddies real bad, and therefore to dredge up another quarter and send it clanking down the slot. The operators of GORF machines therefore like the spaced-out narrator a lot more than you do.

Astro Battles

This is the first game within the game and is a variation of Space Invaders. There are three rows of eight: yellow pointy-heads at the top, green Toasters in the middle, and red Skulls on the bottom. These interplanetary uglies don't just materialize: They are dropped by a weird, red being with a bloated, conical body, little yellow feet, and small blue antennae. Midway calls him a GORF. (Important: GORF is FROG spelled backward!) He looks sort of like an inflated strawberry, and he bounces back and forth at the start of Astro Battles, rapidly flinging invaders down like a sort of amphetamine-addicted card dealer in some space Las Vegas.

As in all the other GORF games you get an Interstellar Space Fighter at the bottom of the screen. You operate it with a black handle that enables you to go left or right or one third of the way up the screen. On the front of the handle is a trigger that fires laser shots. Unlike any other game before it (except Computer Space, the first video game), GORF lets you stop the flight of any shot by shooting another one. So if you realize your shot isn't going to hit anything, you can whip off another in its place without waiting for the first to clear the screen. Typically you get two ships for a quarter, four for fifty cents.

Occasionally a Mystery Ship, in one of two sizes, will zip across the top of the screen. Once in a while the GORF will bound across in a special encore appearance.

If you know how to play Space Invaders, you know much more than you need to to play this simplified version. Because the Mystery Ships' point value isn't affected by the number of the shot with which you shoot it, and because twenty-four invaders are not nearly as threatening as the fifty-five of Space Invaders, complex strategy is either inapplicable or unnecessary.

Laser Attack

Two squadrons attack you in game two of GORF. Each has a GORF at the top, then three spaceships (Midway calls them Kamikaze Ships), then one Laser Ship. The GORFs and the Kamikazes swoop down in an attempt to ram you. Each Laser Ship drifts back and forth, firing down a powerful blade of laser light whose whole length remains briefly in place. Players' ships are often destroyed as they run into the laser blade or move too carelessly in a frenzied attempt to evade it.

The key to handling the Laser Attack is to make killing the dangerous Laser Ship your first priority. After that the rest of the attackers present little challenge.

Galaxians

It's not hard to figure out which game this part imitates. There are twenty-four Galaxian-style Mooseheads and Flagships. Midway calls the eight front-line Mooseheads, not very flatteringly, "Phasor Fodder."

As in Astro Battles, if you know the original game, you are more prepared for this mini-version.

Space Warp

Now you have reached stage four, and another Midway original. A small, segmented blue circle appears in the center of the screen. Immediately thin reddish-yellow streaks begin extending in all directions, like irregular spokes. Although some move toward you, they're harmless.

Torpedoes, also known as Torps, are launched down at you. You can't destroy them by shooting, but they aren't too hard to avoid if you pay attention to them. In the circle in the center, one alien after another (some called Space Warp Fighters, the rest being the good old GORFs) begins a spiral path that expands to larger and larger diameters until the alien gets as low as your ship. At the start of each spiral the alien is almost invisibly tiny but is moving slowly; at the end each is large but very fast. They are easiest to hit when small but slow. Some players believe it is most effective to bring your ship to as high an altitude as possible when attacking those spiraling pests.

Flagship

Now it's time to get down to business. You've negotiated four diverse challenges, none excruciatingly hard, but in the aggregate difficult for the inexperienced GORF player to handle without losing his ships. Stage five brings you to the heart of the GORFian empire: the Flagship.

Important and politically powerful as the GORFian Flagship may be, however, humans cannot help noticing that it looks not so much like a potent space vehicle as it does a festively decorated blue, yellow, and pink Black and Decker electric drill. To destroy it you must strike its "internal power reactor vent." The reactor vent is the pink section in the center of the ship.

The Drillship has its bit pointing to the right, and the ship slowly and repeatedly moves right and left, right and left. It drops fast-falling Fireballs against which your Phasor is useless. The Flagship is guarded by a red-pink arclike shield that looks like a thin upside-down rainbow. Each time your Phasor hits the shield it makes a hole in it.

Strategy here is simple. Your first priority is to avoid getting fried by the Fireballs. Next, play a two-part offense. First bring your ship as high as possible and rapidly blow lots of holes—next to each other if possible—in the shield. This gives you space through which to shoot. Then position your ship under the pink reactor vent and move your ship right and left at the same pace and in the same direction as the Drillship is moving. Then just fire away. Your shots will soon blast into the ship just below the reactor vent. Soon after you have damaged this section of the ship, one of your shots will strike the vent itself.

When this happens, there is an utterly terrible explosion and the Drillship becomes deformed and shreds all over the place in a long, agonizing space death. This explosion is so lengthy and ragged that when the author nailed his first Flagship he actually feared that he had somehow broken the machine and was going to be asked to pay for repairs.

General GORF Data

The game gets tougher as it continues. Aliens start lower, bomb more frequently, dive faster, move more evasively, or take a combination of these steps to transform you from a fearsome anti-GORF space commander into a humbled human searching for another coin.

This game is no Defender or Asteroids in challenge or coherence, but it is attractive in its variety and in its provision of a sentimental walk down memory lane with those good old aliens from Space Invaders and Galaxian.

• CENTIPEDE

This one isn't just for the ladies, it's also *by* a lady: the key engineer-programmer of this game was Dona (pronounced *Donna*) Bailey. "I'm convinced my game is a woman's game," she told Paul Trachtman of *Smithsonian* magazine. Dona came to Atari from General Motors, where she worked on the computer system for the 1981 Cadillac Seville. She is the only woman programmer at Atari and one of the few in the whole industry. The game, introduced in 1981, appeals to men too, and in November of that year it reached number two in *Play Meter* magazine.

This machine, like the other game that has had special attraction for women, Pac-Man—is cute, colorful, and much less violent than most. In it you have a harmless-looking small gun at the bottom: a white, curved object that looks like a snake's head or a two-eyed bottle of expensive perfume. It may in fact be the "tiny little gun" that Nancy Reagan used to keep at her bedside before she was protected by the Secret Service. Atari calls the Centipede gun a Bug Blaster: It points upward at a black screen dominated by cute, colorful little mushrooms and—soon—cute, colorful little bugs.

The Game

As the game starts, so does a fast-paced tap-tap-tap of a tomtom. This is the rhythm section that backs the lead music played by your gun and the insects. This game is almost as much fun to listen to as to play. And that's the central attraction of this game: While the machine presents no tremendous challenge of apocalyptic space battle, it does provide a lot of relaxing *fun*.

So here come the bugs. The chief insect is a long green Centipede. It is made up of a dozen small, round sections, each with two stubby legs. The front section is the head, and it has two tiny orange eyes. The Centipede isn't bad-looking. You wouldn't want to take it to the prom or anything, but it's a real relief after a hard day of facing up to Defender Mutants or Space Invader Skulls. This many-sectioned critter moves rhythmically to the left

and rhythmically to the right, winding its way down through the mushrooms. Never a lover of insects, even cute ones, but always interested in packing in the video points, you blast away at the Centipede. Each time you hit a body section, it disappears and you get ten points. When you hit a head you get one hundred.

When the disappearance of a section causes a break in the Centipede, the front section of the back part sprouts eyes and becomes a head itself. If the head is hit, the next section becomes a head. Pretty magical, huh? When there's just one segment left (necessarily a head), it will move at high speed. When you knock off a whole Centipede, all the colors on the screen change and a new Centipede (bright pink this time) begins curving down from the top.

Very often a four-legged Spider bounces up and down to the left or to the right. If its body (not just its legs) hits your gun or a mushroom, it destroys it. Less commonly than you see the Spider, you hear a whistle like a bomb dropping, but instead of a bomb a large Flea dives from the sky. Rather than eliminating mushrooms, it creates them in its path. Once in a while a big Scorpion, which actually looks much like a snail, will sneak across the screen near the top. It poisons any mushrooms it touches, and poisoned mushrooms in turn poison the Centipede when it contacts them. Instead of continuing to gradually wind its way down to the bottom, a Centipede, once poisoned, suddenly plummets toward the player.

You get 300, 600, or 900 points for shooting the Spider (the closer he is to you when you hit him, the more points you get), 200 for the Flea, and a big 1,000 for the dangerous Scorpion. You even get one point for getting rid of a mushroom, though it takes four shots to do that.

You fire with a Fire button in the center of the control panel. On your right is a small white Trak Ball, recently seen in a big black version in Missile Command. The Trak Ball moves your "tiny, little gun" left and right and, to a limited extent, up and down.

As the game goes on, it gets harder: All the insects move faster and Spiders, Fleas, and Scorpions appear more often.

Strategy

The best strategy for this game is to have a good time and realize that even if you don't do well right away it's likely that you'll learn this game much faster than most.

Your first priority is to survive, so be sure to knock off or evade Centipedes, Spiders, and Fleas when they get down to your level. But your second priority is to run up points. Remember that holding down your Fire button will cause shots to be fired automatically; most of the time you should opt for automatic fire. The first thing to do in the service of points is to wipe out a nice big window in the mushroom patch. Knock out enough mushrooms that you have plenty of clear shooting space. To blast away as many mushrooms as possible, raise your pistol to its highest level.

If you're firing at the Centipede when it's some distance above you, follow it left and right with your gun. When it's immediately above you (this can happen when your gun is at its original low level, or at a higher level to which you have moved it), wait for the head to reach you, then leave your Bug Blaster in one place, hold the Fire button down, and fire automatically at each body section as it passes over your pistol. When the Centipede has just touched a poisoned mushroom and has begun to dive toward you, race right under it and wipe it out with automatic fire: It makes a fast but easy target.

Although the Spider and Flea seem to descend with great speed, they're not as tough as they look. If you're right under one of them, you will almost always knock it off before it can fatally jump on your head. Of course keep in mind that you can't fire a shot till the previous shot runs into something or clears the top of the screen. So if a Spider or Flea is about to crash down on you and you're not sure you'll have a shot before it's too late, zip out of the way at the last fraction of a second. Even if you do lose your gun, you get two more, plus an extra for every 10,000 points.

One last Centipede strategy is offered by Eric Ginner (pronounced "Jinner"), a twenty-year-old college student from Mountain View, California. This strategy may be last, but, given Ginner's credentials, it certainly isn't least: Eric won Atari's national Centipede tournament in October 1981. For this achievement he received an \$8,500 Ford EXP and \$3,500 in cash. His best score on Centipede is a mind-blowing 824,000.

Eric and three friends (Sam Mehta, Franz Lanzinger, and Eric Wang) use a strategy they think is employed by no other Centipede player. Here's how Eric puts it: "Clear all the mushrooms from the top half of the screen and build a dense block of mushrooms on the bottom half. This keeps the Flea from coming down until you get to 500,000–600,000 points. The Flea comes down only if there aren't lots of mushrooms in the bottom half.

The Centipede moves down slowly because there are no mushrooms to run into on the top half of the screen. So you have plenty of time to shoot the Centipede.”

To apply the strategy Eric says “you raise your gun as high as you can to nail mushrooms in the top half. You don’t fire at the Centipede [when you destroy a Centipede section, it is replaced by a mushroom] until it’s five or six rows above you. That makes it leave mushrooms in the bottom area.” To prevent the appearance of the Flea early in the game, Ginner adds, you need five or six mushrooms in the bottom half of the screen. Ultimately, he says, you need a whole block of mushrooms.

Okay. Now get out there and fight off those insects. No fair using Raid.

• TEMPEST

Dave Theurer, a thirty-two-year-old native of Fergus Falls, Minnesota, has passed the test. This is the test you hear about every once in a while as you meander through the offices and computer labs of the video game industry. It is a test mentioned by realists: “Sure, a lot of programmers can design one hit game,” they say. “But the test that a great programmer must pass is to design *two*.”

Dave Theurer, a programmer at Atari, created Missile Command, one of the most challenging and popular machines in video game history. Now he has given us Tempest. Tempest is the first coin-op game to be a guaranteed success before even being available to large groups of players: Even before Tempest could generally be obtained by operators, Atari sold more than 20,000 of the machines to distributors, and all the orders were noncancelable.

Not only has Dave designed two unusually successful machines, he also spent two hours with the author to explain Tempest. This chapter, then, comes to you almost directly from the mind behind Tempest. Dave’s description is supplemented by tips from Eric Ginner, the twenty-year-old Mountain View, California, college student who finished first in Atari’s October 1981 national coin-op video tournament in Chicago (a competition contested on Centipede). On the date of the Theurer interview Ginner had the top score Theurer had heard of outside of Atari itself: 572,000 (Theurer himself had reached 520,000).

Platforms in Space

Borrowing from *Play Meter* magazine, Theurer (pronounced “TOY-rer”) calls each Tempest playfield a “platform in space.” Sometimes he calls them “surfaces.” There are ninety-eight different platforms, and you earn your way from the easier ones to the hardest ones. If you ever get to number 99, you will face an encore appearance from a platform from number 63 to number 94. Then continued survival means more encores from that range.

Each Platform is a different shape. It may be round, rectangular, V-shaped, or otherwise. Lines (Dave calls them *rails*) divide the Platforms into lanes, also termed *channels*. Though this machine must be seen to be fully understood, you will sort of have the picture of the Platforms if you think of highly symmetrical, computer-drawn spider webs.

Each lane is long and narrow, has four sides, and is widest on the outside edge, tapering away to almost nothing in the center of the Platform. You, the player, are represented by a weapon that is shaped much like a tall and narrow C made out of straight lines. Here it will be called your *C-Shooter*. This weapon grips onto the outside edge of the Platform, with the inside of the C facing down one of the lanes.

You operate your C-Shooter with three controls: a Fire button, a Superzapper button, and a Rotary Control. When you push the Fire button, your C-Shooter fires shots, which look like tiny flowers, down the lane to which it has temporarily adhered. If you hold it down, it fires fast and automatically, like a machine gun. You fire at a variety of very tough enemies that move up the lane in an attempt to kill you.

Your Superzapper is your ultimate weapon. It can be used at full power only once per Platform. It’s like Defender’s Smart Bomb: If you’re lucky, it will wipe out every enemy currently visible on the platform. Dave Theurer notes, however, that it nails each enemy one after another, with one enemy destroyed about every one tenth of a second. So if you’re about to be killed by one enemy, you’d better pray the Superzapper doesn’t nail that enemy last. Unknown to most players is the fact that the Superzapper can be used twice in one Platform; the second time you use it, however, it will be very weak and will waste only one enemy. Which enemy it gets varies, but it’s usually one of the enemies known as Fuseballs (more on them later).

You spin the Rotary Control—a small, round knob—to move

your C-Shooter. Though it happens so fast you won't likely notice it, the C-Shooter goes through eight positions as it moves from the top of one lane to the top of the next one.

If you survive all the enemies in a Platform—either by blasting them away or evading them as they rocket up the lanes—you move to the next, more difficult platform. First you speed down the platform you've conquered, then you flash through space. The screen announces SUPERZAPPER RECHARGE, meaning your Superzapper is back at full power. Immediately, in the distance, you see the small outline of the next Platform. As you rapidly thrust toward it the Platform becomes larger and larger, until you land on its edge. At the end farthest from you, you see tiny red dots. These are the enemies you will meet in the new Platform. They are about to land on the Platform. "If you're really good," Dave Theurer says, "you can send some shots down there to greet them as they land."

Flippers

You have a choice of which Platform to deal with first. If the machine has been left alone for the space of one "attract sequence"—one set of all the images it displays when no one is playing—you can choose Platform 1, 3, 5, 7, or 9. If you (or whoever the most recent player was) have made it to a harder Platform than 9, you can select to start at any Platform from 1 to a Platform just below the one just completed. You select from available Platforms by spinning the Rotary Control until a box appears around the desired Platform and then pushing the Fire button.

If you begin with the first platform, which is round, the first enemy you will see is the Flipper. It is like an elongated, two-dimensional red X, similar in appearance to those big paper clips used to hold together many sheets of paper. The Flippers are nowhere near the toughest enemies in Tempest, but they are nearly impossible for a beginner to consistently defeat. Flippers ride up the rails toward you, firing the same shots as all enemies—shots that look much like yours.

The shots are easy enough to dodge, and if you get your C-Shooter to the Flipper's lane before the Flipper gets to the top, you can easily shoot it for 150 points. The problem is that one or more Flippers will eventually get to the top of a lane. Then they flip toward you. One "leg" of the paper clip X holds on to a rail

top while the rest of the X flips above it until the opposite leg has grabbed on to a rail top closer to you.

One more flip and the Flipper will be on your back. Let Dave Theurer continue the gruesome tale: "It takes you down to the bottom. I don't know what they do to you down there: They may kill you or they may take you as a prisoner of war. Whichever it is, it's the same for you: You're out of order." Since you get only three C-Shooters to start (with more awarded every 20,000 points), you can't afford to be out of order very often.

But that Flipper is about to get your C-Shooter. Dave! Dave! What do we do now? "Wait till he's sitting on the channel next to you. When he begins to move, you fire down the channel you're on. It's like if you're accosted by a robber and you instantly shoot him: It happens too fast to see."

Tankers

Whew. Glad we got out of that one. But in every Platform except the first two there is not only more than one of each enemy; there is also more than one *kind* of enemy. "The next enemy you see," says Dave, "is the Tanker." It first appears in Platform 3. Each Tanker is a fat purple diamond with a square in the center. In the square is a tiny picture of another enemy: a Flipper, a Fuseball, or a Pulsar.

Tankers can fire at you, but they can't change lanes. When one gets to the top of a lane or when you shoot one, for 100 points, it breaks into two copies of whatever enemy was represented inside it. Early in the game, it's two Flippers. Later, when the game is harder, it can be any enemy except a Spiker.

Spikers

Spikes and Spikers come together. They make their first appearance in Platform 4. Spikes are thin green lines that grow up lanes toward you. They never reach the end of a lane, and you get only one to three points for hammering them back toward the center of the platform by hitting them with shots (the more you hammer them down, the more points you get). So no big deal, right?

Wrong. Spikes present two big problems. One is the Spiker. A Spiker is a green spiral that moves up and down a spike. As it moves up, it extends its Spike toward the player. Then it moves

back down and switches to another lane, choosing one with no spike at all or, if all lanes have spikes, the lane with the shortest spike. There it industriously starts building the local spike to a greater length. Despite all its heavy construction work, it still finds time to fire at you.

The Spikers are a nuisance, but the chief problem presented by Spikes is that once you have completed a Platform and are on your way to a space flight to the next one, a Spike can impale your C-shooter, breaking it into fragments. You will be impaled on a Spike if there is a Spike in your lane as you speed along the Platform on your way to space. Even after you have begun streaking down the Platform, you can evade destruction by either changing to a safe lane or by making your lane safe by hammering down the Spike to nothing at all. Since you move down the Platform very rapidly, you can hammer down only Spikes that are already short.

Using the machine-gun automatic-fire option is best in most phases of Tempest, and it is unquestionably the thing to do when you need to hammer down a Spike. This is true whether you're on the edge of the Platform or racing across it on your way to space. As the game progresses, you move faster and faster across the Platform you've just completed, making it more and more likely you'll get spiked.

Fuseballs

Fuseballs, which first show up in Platform 11, are made up of three thin, squiggly white lines that cross in the center of each. They look a lot like extremely tired asterisks or extremely emaciated starfish. They move up the lanes toward you. If a Fuseball touches you, it blows you to pieces, as though it were the fuse for a stick of dynamite.

To move up a lane, a Fuseball must be on a rail. It can switch rails by floating from one to another across a lane. When it is between rails it is vulnerable to your attack. But shoot it fast: It moves more rapidly than any other object on the Tempest screen. If you hit it, you get 250, 500, or 750 points; which number you get is random.

Dave Theurer says Fuseballs are "really dangerous" when you are on a Platform shaped so that you can't spin continuously around it but must go from side to side and when all the tiny red dots (representing enemies yet to land) are gone. In this case,

Dave says, a Fuseball can force you into a corner and fatally dynamite you.

Pulsars

Making their debut in Platform 17, Pulsars are expanding and contracting sawtooth wave forms. They alternate between white and yellow. When they contract all the way, they look like lines. When they expand all the way, they look like a young child's drawing of a mountain range.

When a Pulsar has flattened into a line, Theurer says, it is "innocent." To take advantage of the Pulsar in its ingenu stage, Dave says, "Go over to its channel when it's not pulsing, shoot down the channel, and get out of there. You don't want to be there when it pulses." If you hit it, you get 200 points.

When it pulses, the wave form extends across a whole lane until each end touches a rail of the lane. Like a switch that closes an electrical circuit, the Pulsar electrifies the entire lane. If you're on the Pulsar's lane, it electrifies you and breaks you into fragments. To borrow again from the Theurerese, you are "out of order."

Keep in mind that all Pulsars on the Platform pulse in unison. So in your haste to escape one Pulsar-occupied lane before the Pulsar expands, don't land on another channel that has a Pulsar in it. As a warning to players, Theurer programmed into Tempest a little signal: When a Pulsar is in a lane whose end bar is occupied by the player, the end bar disappears. When you see your end bar vanish, spin the Rotary Control in order to escape before the Pulsar pulses.

How It Gets Harder—But More Profitable

Each Platform is harder than the one before. In general there are more kinds of enemies and a greater number of enemies. Enemies get faster, fire more frequently, and can have more shots on the screen at once (up to four; you can have up to *eight*). And the dreaded Pulsars pulse more frequently.

The harder the Platforms you survive, the more points you receive. You earn points by shooting or Superzapping your enemies. The big points, however, are gained by starting the game on the toughest Platform you can handle and getting the bonus points for surviving it.

Bonus points are awarded only once: for that initial Platform.

Dave Theurer and video tournament champion Eric Ginner agree that a player can always get more points by conquering his initial Platform than by gradually progressing to it by shooting and Superzapping his way through the Platforms that precede it. For starting with number 3 and surviving it, you get the minimum bonus: 6,000 points. The most points you can get for making it through an initial Platform is for surviving number 81. For this you get a tidy 898,000. For perspective consider that the highest score Theurer knew of on the day of the interview was 670,000.

Tempting Tempest Tricks

Keep 'Em Coming Dave says the more of a particular kind of enemy you shoot, the more will come out. So if you can handle them, fire as much as possible at Fuseballs: They're worth the most points (up to 750).

Watch Your Score You ordinarily get a bonus C-Shooter for every 20,000 points you accumulate, and also for surviving through the initial Platform you choose. But if you survive that first Platform and, in so doing, also pass one or more 20,000 point intervals (20,000, 40,000, and so on), you get only the one extra C-Shooter for conquering the Platform. The trick here (remember the similar strategy in Missile Command?) is to end your initial wave just below, not just above, a 20,000-point interval. If you are in your first Platform and you are nearing a 20,000-point level, don't shoot anything for the sake of points: Just shoot enough to survive. Try, for instance, to end up at about 59,000 points, not 61,000. Once you're at 59,000, it's an easy chore in the next Platform to shoot your way past 60,000 and gain a bonus C-Shooter.

Two Ways to Choose Your Platform There are two schools of thought on which Platform to choose. If you want to maximize your points in any given game, choose the hardest Platform you can survive. That way you get maximum bonus points.

If, however, you are an inexperienced Tempest player and want to improve your game, start several Platforms lower. In the easier Platforms less happens, and what does happen occurs more slowly than in later Platforms. Therefore you can more easily study the game and work on your skills.

"The game should be very easy to learn if you choose the right

level," Dave Theurer says. "The problem is that many players go for the gusto and don't get to take advantage of the learning waves of the game: Platforms 1 to 7. If you can restrain yourself you should be able to learn fast."

When You Must Pound Spikes According to Theurer, the "worst situation" in Tempest is when you are faced with both a Pulsar and a long Spike in one or more lanes. It's critical to blow away the Pulsar, but every shot you fire hits the tip of the Spike instead. In the moments when the Pulsar has contracted into an innocent line, machine-gun the spike until it is so short that the Pulsar is closer to your C-Shooter than the Spike tip is. Then plaster the Pulsar.

Advice from the Champ Tournament winner Eric Ginner has some tips to add. He says the Platforms shaped so that you can't spin around them are easier than the others. In these Platforms, Eric advises that you "sit in a corner"—wait on the edge of the far-left or far-right lane. Here, he says, "you can't be ambushed": You have to repel attacks from only one side.

Eric also says to *always* use your Superzapper at least once per Platform. Use it when you're under the most severe attack of the Platform, such as when four Flippers are chasing you at once.

When a Fuseball has trapped you in a corner, Ginner recommends a last-ditch, risky move that he admits is "desperate." He says, "If you spin the knob real fast you often can go right over or under the Fuseball."

And a Note for the Novice If you're ever going to be any good at Tempest, you will have to learn to quickly analyze what to shoot and when to shoot it. But when you are first trying to learn this game—which is quite different from anything you've seen before—careful targeting is *not* the way to maximize your points. In your first five or ten games you will almost always run up a much higher score if you simply hold the Fire button down (for machine-gun effect) and spin the Rotary Control as fast as you can. And you can do even better if you briefly stop spinning, in order to target the dangerous Flippers, and if, when you are about to be overwhelmed, you blast the enemies with your Superzapper.

But take advantage of the easy Platforms to study the machine and hone your skills. You don't have as much time as you think: Dave has already been working for months on his *next* game.

• DONKEY KONG

Donkey Kong, a video version of the film classic *King Kong*, was one of the strongest hits of the October 1981 Amusement Machine Operators Association show in Chicago. By show time it had already set a *Play Meter* magazine record of \$288 per week in earnings. The game is the first star from Nintendo, a Japanese toy-and-game manufacturer with facilities in both Japan and the US. The company expects to build a mammoth 50,000 Donkey Kongs for America.

The Japanese word for donkey also can be used to mean *crazy* or *stupid*. Donkey Kong's big brown gorilla fits the bill. He grabs a young woman, climbs a ladder to the top of the set of girders of a partially completed building, then rolls barrels down at a courageous carpenter who is clad in red overalls with matching cap and who climbs up in an attempt to save the woman. Obviously this is not the behavior of a gorilla who is either sane or bright. Not only is he committing a series of felonies, he also has chosen for his abduction a woman so plain-looking (tied-back hair, long flannel dress) that she seems more fit for chopping wood on *Little House on the Prairie* than for love, marriage, or interesting conversation.

Nintendo calls the gorilla Kong and the carpenter Mario (he does look Italian), but has no name for the girl. The reason for this may be fear of copyright infringement: This babe is obviously the sweet and chaste Nell from the old Dudley Do-Right cartoons that used to appear along with the adventures of Rocky and Bullwinkle.

There are four kinds of structures on which Kong, Mario, and Nell play out their melodrama. The order in which these structures appear varies between the original Japanese versions of the game and the game as manufactured for the US market. In the US, where the game costs a quarter, more difficult structures appear earlier than in Japan, where the game costs about forty-five cents in American money.

Girders

This is the first structure in both the US and Japan. Kong grabs Nell, climbs up a ladder past five long, horizontal purple girders, and stands on the top of the highest long girder, the sixth. He sticks Nell on a slightly higher, short girder. The girders are perfectly horizontal and parallel, and are connected by blue ladders,

but then Kong stomps on his girder six times, damaging each long girder, one at a time, until none is parallel to the ground.

Mario, whom you control with a joystick (left, right, up, down) and a Jump button, stands at the left end of the lowest girder. You control Mario in his attempt to save Nell. Your task is twofold: to survive and to run up points.

You score points if you get to the top. Once you get to the top, Kong stops hassling you and you reach Nell's girder. A heart appears on the screen between Mario and Nell. You can almost hear wedding bells, but then Donkey Kong grabs Nell and takes her to a higher structure. The heart literally breaks (it cracks in two). It would have been a lousy marriage anyway: Nell is about twice as big as Mario; it would have been like a woman basketball player marrying a jockey.

Even so, by getting to the top, you get the number of points shown in a box at the top marked BONUS. The number of points rapidly declines, by hundreds, from 5,000 (it starts at a higher level at later points in the game). If you don't get to the top before the bonus points run out, Mario loses one of his three lives.

You also get points by jumping over or hammering barrels that Kong rolls down at you and by jumping over or hammering fireballs that rise from an oil can on the bottom girder. Each time you jump a barrel you get 100 points. Sometimes two or three barrels are rolling near each other or so close together that they touch or even overlap. *You can jump over more barrels if you take a running start or if the barrels are moving toward you at a fast pace.*

At two places on the screen during this and all later structures except those with elevators, there is a hammer above a girder. You jump up to get the hammer. To hack up an oncoming barrel, just run into it; Mario will automatically do the hammering. This time, instead of the 100 points you would get for jumping a barrel, you get 300 to 800 points (the exact number is random).

There are two kinds of barrels: blue and gold. Both are worth the same number of points. But when the blue ones ram into the oil barrel, each one causes the barrel to flame up and one fireball to begin running around the structure. Mario must deal with the fireballs just as he handles the barrels: jump them or hammer them. Jumping again is worth 100 points, hammering 300 to 800. But fireballs are harder to jump than barrels, especially since they randomly go back and forth: You can jump above a fireball coming toward you, only to have it reverse directions and burn you to death.

Whether Mario is killed by a barrel or a fireball, he twirls

around, then falls on his back with his feet in the air. His courageous and selfless behavior earns him a halo that appears over his head. But he's like a cat, more or less: He gets not one life but three. So if he's killed once or twice he still gets to try again.

In the first structure and every other one, *you will achieve the greatest success if you balance climbing speed with the accumulation of points for dealing with objects on the structure.* You will not achieve maximum points if you simply ascend to the top as fast as possible. Try to hammer barrels and fireballs instead of jumping over them. The hammer has a short life, about eight seconds, but this period is extended with use of the hammer. So *wait to grab the hammer until many barrels or fireballs are coming toward you:* You can run up a lot of points nailing these objects and can at the same time extend the life of your hammer.

Mario climbs not only by ambling along girders but also by climbing ladders between them to shorten his route. There are ladders in every structure. You make him climb by simply positioning him under a ladder and then moving the joystick up. Once his hand is on the girder above, an oncoming barrel will almost always roll right over his hand, causing him no harm. Just 5 percent of the time, the barrel will roll down the ladder, murdering Mario. But don't relax: As far back as November 1981, Nintendo was working on new computer chips that would make the barrel roll down the ladder 75 percent of the time.

Some ladders are broken. Mario can't climb all the way up these, but he can climb up part of the way to evade an oncoming barrel or fireball.

Rivets

In the US game the next structure is a series of girders that is held together by eight gold rivets, four on a side. (In Japan rivets don't appear till the fourth structure). Donkey Kong again has taken Nell to the top. Fireballs pop out by themselves (the oil can has disappeared), but the barrels are gone.

Mario does better at this structure if he is a good Pac-Man player: The main object of the game at this point is to simply run over the rivets, thereby causing them to disappear. Once all eight rivets are gone, Kong beats his chest, flips over, falls the length of the screen onto his head, and stays there with his eyes spinning. Mario and Nell stand on the top girder and the heart appears. It doesn't break, but Mario still doesn't get his hands on her. In fact, in the whole game, he never touches her: He just works hard to

get to the top, then finds himself at the bottom again. Intellectual readers are referred to Camus, *The Myth of Sisyphus*.

Nell may or may not be losing her mind during the Rivet structure, but she is losing her possessions. Strawn at various points are her purse, her umbrella, and her hat. Mario, being both chivalrous and point hungry, tries to grab these items by simply running over them. Each is worth 300–800 points (Pac-Man again comes to mind: The bonus possessions are like the older game's bonus fruit and keys). The bonus items show up in all structures except the original girder structure and those that look just like it.

Girders Again

The third structure in the US is just like the first. The only difference is that it is harder because Kong flings barrels at Mario at a faster rate.

Up and Down

The fourth structure in the US (and the third in Japan) is made up of girders equipped with an up elevator on the left and a down elevator in the center. Kong is again at the top with Nell. Now Mario is faced with new and dangerous objects: the I-beams. These are small pieces of steel that look like thick versions of the letter I. The I-beams start from just to the right of Kong, then bounce along the top girder, then fall off it and streak downward. In this structure there are neither barrels nor fireballs.

Rivet, Rivet

The fifth structure is a repeat of the riveted set of girders that made up structure number two. It is harder than its earlier version because the fireballs come out more frequently.

Girders Make Another Encore

Structure six is just like one and three, with barrels moving still faster than the last time you saw this structure and fireballs appearing more frequently.

Conveyor Belts

The seventh structure in the US is the same as the second in Japan. On the bottom is a girder. Above it is a conveyor belt that

is about as long as a girder. Continuing the construction-work theme of Donkey Kong, there are tubs of sand on the conveyor belt. The belt sometimes moves right and sometimes moves left. Mario must jump over the sand tubs as they approach him, or hammer them away, or stand between them until he reaches a ladder.

One level up is another girder, but it is broken into three parts. Mario must avoid the gaps in the girder: If he steps into a gap, he fatally falls. He must also deal with fireballs, but there are no barrels to barrel into him.

Between the third level (the broken girder) and the fourth there is a flaming oil barrel. The fourth level is made up of two sand-carrying conveyor belts, each of which is independent of the other and each of which sometimes moves right and sometimes moves left. Between the two belts is the flame from the oil barrel. Mario must of course avoid being carried by a belt into the fire.

On the fifth level Mario again gets near Nell. The old heart appears again, it breaks again, and Donkey Kong again carries Nell up to a new structure.

And So On

The game continues through each of the four structures you've seen by now: Girders, Rivets, Elevators, and Conveyor Belts. The order in the US goes like this:

- 1 Girders
- 2 Rivets
- 3 Girders
- 4 Elevators
- 5 Rivets
- 6 Girders
- 7 Conveyor Belts
- 8 Elevators
- 9 Rivets
- 10 Girders
- 11 Conveyor Belts
- 12 Girders
- 13 Elevators
- 14 Rivets
- 15–19 and each later set of five Girders, Conveyor Belts, Girders, Elevators, Rivets

The game continues to get harder through structure fourteen, then remains at its maximum difficulty. It gets harder through increases in the number and speed of barrels, fireballs, and I-beams. Despite the change in difficulty, the basic strategy remains to balance point accumulation and speed of ascent: As the game gets harder, the bonus points for reaching the top increase, but so do the points that can be collected through walking, jumping, and hammering on the structure.

The other thing that never changes is that you never get the girl. But who wants her? She may be bigger than Mario, but she's only about an inch tall: a real embarrassment at any party. Better to bone up on strategy and on the way the game works, to practice, and then to run up so many points on Donkey Kong that you impress a *real* girl. If you *are* a girl, you can impress a real gorilla or a real boy, depending on how kinky your tastes are.

• QIX

QIX is the most promising game produced by Taito America, the US arm of the Japanese company that brought you Space Invaders. It was one of the leading hits of the October 1981 Amusement and Music Operators Association show in Chicago. The adjective many industry executives use to describe this game is *cerebral*, and at the AMOA show two of the biggest brains in video games—Nolan Bushnell, the father of the industry, and Lyle Rains, Vice President of Coin-Op Engineering at Atari—were reportedly fascinated by this new product. Bushnell is alleged to have played a cocktail-table version of Qix for forty-five minutes, often kicking the machine in frustration.

Designed by the rhyming husband and wife team of Randy and Sandy Pfeiffer, Qix (pronounced “Kicks,” not “Quix” or “Q-9”) is nothing more than a computerized, combative version of the classic Etch-a-Sketch line-drawing toy. With a four-position joystick (up, down, left, right), you draw lines, beginning from a boundary of a rectangle that fills the screen. To draw slowly, you push the Slow Draw button; to draw fast, you push the button marked Fast Draw.

Each time you draw lines that complete a “box” made up of four or more lines connected at right angles, you get credit for the percentage of the full-screen rectangle that you have enclosed. If you have drawn with the Fast Draw button, the area you have

enclosed fills in with powder blue color. Boxes drawn with the Slow Draw control are filled in with gold and are worth twice as many points. To conquer a given wave, you must fill in 75 percent or more of the screen. As soon as you have done this, the screen clears and a new wave begins.

Although the exact properties of these enemies are too complex to explain here, the diamond-shaped cursor with which you draw is chased at one time or another by Sparx, Super Sparx, and Fuses. Most important, you are attacked by the Qix itself. The Qix is a series of colorful lines that rotates and moves about on the screen. If the Qix comes in contact with the line you are drawing before you have reached another line and thereby completed a box, it will destroy you.

Quick Qix Tips

Here are some keys to competent Qix combat, supplied mostly by Dave Poole, Taito America's Vice President for Engineering. All of them will make more sense once you have seen this unusual machine in action.

- The Qix (a word used with the same spelling whether singular or plural) is sufficiently ineffective in the first wave that you can take the time to enclose large areas of the screen at a time. In the second and succeeding waves, however, they are so tough that you are better off conservatively making small boxes that you can rapidly finish as the Qix approaches.

- Once an area is filled with color, the Qix can't cross it. Remember this and try to box the Qix into one area so that you can more safely fill in the remaining area.

- You get 1,000 bonus points for every percentage point of area *over 75 percent* that you fill in by making your box that brings your area total to 75 percent or more. So try to set up a pattern of boxes that allows you to safely draw a final box that takes your percentage total as far over 75 percent as possible.

- Since you get twice as many points for drawing with the Slow Draw button as with the Fast Draw button, try to set up patterns that allow you to fill in a great deal of space by safely drawing a Slow Draw line.

- Patterns that set up large scores from bonus points or from Slow Draw boxes generally start with a series of small, narrow, vertical, Fast Draw boxes that combine to form what look like abstract trees.

- A key advanced strategy applies in the third and succeeding waves, where there are two Qix. If you separate them by a box or set of boxes that divides the screen in two, you suddenly win the wave.

- If you have any tendency to spend more quarters on video games than you should, leave most of your money with a friend before you go and try Qix. The game looks so simple but is in fact so complex that players have great difficulty accepting defeat. Taito America's Poole says, "Qix is very addictive. Play seeds play."

• ELIMINATOR

A signal event in video game history occurred on November 9, 1981. It was a gray, rainy day in the San Francisco Bay Area when two titans of the video world accidentally met at the game room of the University of California, Berkeley, a notorious hang-out for video stars. Their names were KQB, the technical adviser on this book, and Mark Cerny (a.k.a. MEC), the multigame expert who was the first known player in the world to break 1,000,000 on Defender.

KQB was about to drive to nearby Albany Bowl, a famous test site for new games, to study Sega/Gremlin's Eliminator. Cerny jumped at the chance to explore new video vistas. They sped to KQB's car and raced to the bowling alley. Here, in brief, are their views on this new machine, one of the best two-player games ever invented. Incidentally, on November 9, KQB and MEC accounted for *every one* of the top ten scores on the Albany Bowl Eliminator screen.

The Game

The players operate V-shaped ships, one blue and one green, that attack the Eliminator, a space fighter housed in the yellow Eliminator Base, a rotating space station shaped like a doughnut with a narrow tunnel cut through one side. The players must destroy the Base, or Eliminators will continue to appear in its center, go through various colors, grow to a large size, thrust out the tunnel, and fire at the players' ships.

To destroy the Eliminator Base, the players must shoot one energy bolt into its center. Because the Base continually rotates, this

is no easy task. Also, if a player's ship runs into the Base, the player is destroyed.

Strategy from the Stars

- Remember that your energy bolt gun is like the Laser in GORF: If you don't like where your shot is going, re-press the Fire button and the shot will be stopped and replaced by another.
- Avoid accidentally shooting your partner: Shooting him will often knock his ship into the Base, thereby destroying the ship.
- In later waves (which are harder because the Eliminator grows faster and thrusts out earlier) one player should fire down the tunnel while the other waits to the side. Once the Eliminator thrusts out, the waiting player acts as bait, leading the Eliminator away from the tunnel and allowing the first player to fire down it.
- Players with unusual talent can sometimes fire "bank" shots that strike one of the walls near the screen's perimeter and carom down the tunnel of the Eliminator Base.

• GALAGA

Since the author and technical adviser had little taste for the supersuccessful but superboring game known as Galaxian, they did not exactly have great expectations when they learned that Midway, the American manufacturer of that machine, had licensed a Galaxian sequel from Namco, the Japanese inventor of Galaxian.

But what a relief and surprise! Galaga (pronounced "GAL-aga") is a very attractive game—not as challenging as Defender, not as classically sublime as Asteroids, but a game that has beautiful graphics of intense color and a game that is a lot of fun to play.

The resemblance to Galaxian is there: You get a left-right joystick and a Fire button, and a swarm of winged beasts descend upon you. But this is no Galaxian clone, not even a brother or sister. It's more like a cousin who has a lot more style.

This time the aliens look not like Mooseheads but like colorful insects. One kind of alien in particular resembles a yellow jacket. Sometime the attackers dive down in an attempt to run into you and sometimes they not only descend but also drop bombs. But instead of taking only boringly repetitive C- and S-shape pat-

terns, the Galaga aliens often streak through breathtaking loops that would put the Navy's Blue Angels to shame.

At the top of the alien formation there are four "Boss Galagas." These are big, stocky, gray-green insects that must be hit twice to be destroyed. When hit once, they turn blue. They are distinct from the other enemies especially because each one is equipped with a powerful Tractor Beam. When a Boss Galaga makes its way down to just above the bottom of the screen it emits a beam that expands in width and envelops the player's ship.

The player's ship, which starts out looking like a heavily armed white jet fighter with red guns and red exhaust, is captured. The Tractor Beam pulls the ship up to the Boss Galaga, reversing the ship's colors and making it twirl. The Boss Galaga latches on to the ship and the duo ascends back to the top of the screen.

Now, if you have another ship left (you start with three), you must try to save your kidnapped comrade. To do this you must hit the Boss but not the captive ship. This isn't as easy as it sounds. Because this space Odd Couple rotates from time to time, a laser shot aimed at the Boss can hit your stolen ship. If you do hit the Boss, you get a 1,000 point award and your abducted friend drifts back down to the ground and automatically docks with the ship that saved it.

This doubles your firepower: Every time you hit the Fire button, both ships shoot simultaneously. And, here and at every other stage of the game, you can have two shots on the screen at once for each ship, instead of the single shot provided by Galaxian.

You'll need all the shots you can shoot in the stage of Galaga called the Challenging Round. Here all forty aliens swoop down upon you but can't fire on you or run into you. You get a generous 100 points for each one you hit, plus a huge 10,000-point bonus if you wipe out all forty.

Although most Galaga strategy is like that of Galaxian, the Tractor Beam feature of the newer game calls for one important addition: If you're a pretty good shot and you have at least one ship in reserve, you should *let* a Boss Galaga beam your ship up. Then you can shoot the Boss, thereby releasing your ship, receiving 1,000 points and doubling your firepower. If your increased offensive earns you the 10,000-point bonus for hitting all the aliens in the Challenging Round, you'll be well on your way to 20,000 points, when you receive a new ship. You get an additional ship for every 70,000 points thereafter. Even if the Galaga

insects dive down and sting you before you run up a lot of points, you will have seen a pretty good show for your quarter.

• TURBO

From Gran Trak to Sprint to Night Driver to Monaco GP, driving games have been a staple of the video world. In 1980 Sega/Gremlin introduced Monaco GP, a cockpit machine whose challenging game play and realistic visual and sound effects made it the best driving game in history.

The machine was so complete (it even featured night driving) and so exciting that the player had to ask whether in the near future it was even possible for a driving game to come along that would top it. That question was answered in early 1982 as players got their hands on the steering wheel and their feet on the accelerator pedal of Turbo, Sega/Gremlin's successor to Monaco GP. Great as Monaco was, Turbo is even better.

Though it was not available in large numbers until the first part of the following year, Turbo debuted in Chicago in late 1981. It was one of the sensations of the Amusement and Music Operators Association show in that city and was the clear consensus choice for top driving game of the show.

Turbo undeniably has its roots in Monaco GP. So if you know that game—from playing it or from reading about it earlier in this book—you have a pretty good feel for what it's like to drive Turbo. And the strategy that applies to Monaco and to most driving games applies to the new one as well.

The new game gives you a trimmer, sleeker, lower cabinet than its predecessor. It provides two functioning gauges, a heftier steering wheel, and more comfortable seating.

Turbo takes you through city streets, across bridges, inside dark tunnels, over snow and ice, and along a dangerous, winding mountain road. Its streets are wider than those of Monaco and its cars are bigger. Perhaps its best visual effect is a downhill slope. When you're on the flat, approaching this hill, you realistically can't see cars ahead of you that are already on their way down.

Sega/Gremlin has also improved the sound effects. Sounds come from a four-channel system. A bass-track speaker aimed right at the driver's stomach replicates the engine vibration of real driving. And, if you turn in one of the top runs of the day, a

wreath on the screen and a trumpet fanfare on the sound system replicate the glory of real winning. Gentlemen, start your engines!

• FROGGER

Even with Turbo and Eliminator, Sega's most successful game introduced in late 1981 may be Frogger. This game is cute and simple enough to appeal to people who don't ordinarily play video games, but is challenging enough to present an interesting contest for the accomplished video athlete.

In Frogger you are—no offense intended—a frog. You make the Frog leap by moving a joystick that moves up, down, left, and right. You start in a long, horizontal, purple bush at the bottom of the screen and must make it into one of five slots in a thick green bush at the top. To do this you must cross a heavily traveled highway, a thin strip of land, and a densely populated river. You do all this to the background music of classic American folksongs, including *Camptown Races* and *Yankee Doodle*.

Live or Let (Yourself) Die

If you get hit by any race car, passenger car, or truck on the highway, your Frog turns purple, swells up, and is transformed into a Frog skull. In other words you're dead. You also die if you come into contact with the snakes that occasionally appear on the middle land strip. In negotiating the river, you must avoid hopping into the water, where you will drown, and must hop only onto safe objects: logs, turtles that are red (when they turn green they are diving and you must jump off them immediately or drown), and the backs of occasional crocodiles. If you hop onto a crocodile's head or onto an otter, you also lose your life.

Sex Appeal

You get points for each safe jump (10), for making it "home" (to a slot in the bush at the top) (50), and for making it home when there is still time left as indicated by a diminishing bar on the bottom of the screen (10 points per unit of the bar). (If you don't make it home before the bar disappears, you disappear.) Like the fruits that occasionally appear in Pac-Man, a tasty fly

sometimes shows up in one of the slots at the top; if you make it into the slot before the fly flees, you get another 200 points. For filling all five slots with Frogs, yet another 1,000 points are awarded.

What really complicates your life as a Frog may be what also really complicates your life as a human: sex. The problem in this case is a very enticing purple Lady Frog who shows up from time to time on a log moving right or left on the river. She's worth a nice bonus of 200 points. To get that 200 you must—and this is the responsibility of the programmers at Sega/Gremlin, not the author—jump on her. Once you jump on her, you are connected to her (a common-law Frog marriage). If you and your new Frog bride make it into a slot, the extra 200 points are yours.

The Lady Frogger complicates your life because you must decide whether her 200-point companionship is worth the trouble she can cause you. It takes time to hop your way to her log, and so you will lose points for time lost and may not even make it to a slot in time. Also, the more leaps you have to make to link up with the lady, the greater the chance is you will make a leap that costs you your life.

Strategy, As It Were

Bob Rosenbaum, in the office of the President of Sega, succinctly summarizes the strategy for this game. "Frogger is Frogger," he says. In other words it's pretty obvious. Don't get hit, don't jump in the water or on dangerous beasts (except the *backs* of crocodiles), and pick up points by marrying Lady Frogs, eating flies, and making it to slots as fast as you can.

Four tiny tips are: (1) The best resolution of the dilemma posed by the Lady Frog is to go after her if you can do so without taking a lot of time or a lot of leaps. (2) When waiting for a Lady to appear, ride around on slow logs; they are less likely than anything else to carry you offscreen (another way you can die) and, unlike turtles, they never dive. (3) Move your first Frog into the far-left slot: As a wave continues, objects speed up and the far-left slot becomes particularly hard to reach. (4) When you are situated directly under a slot, jerk your joystick violently forward to get your Frog into the slot as fast as possible. Even a slight delay may mean that the log on which your Frog is riding will move far enough to the right that your Frog will run into the bush rather than into the slot. This is yet another way to commit Frogicide.



Coin-Op Quiz

So you think you know a lot about coin-op video games, huh? You've played for years, you're hot on some top games, you've read every word in this book about the electro-beasts who have been grabbing piles of your quarters every week.

Okay, let's see how sharp you are. The complete-the-sentence problems that follow are based entirely on this book, including the coin-op history section near the end. In some cases, however, they can also be answered from playing experience that any self-respecting video veteran ought to have. The problems are in approximate order of difficulty, with the easiest first.

If you get zero right, you are an illegal alien: You obviously know so little English that you haven't understood a thing in this book.

If you get one to three right, you can tell a video game from a refrigerator, but only in a brightly lit room.

If your correct answers number four to six, you think Galaxian is a first-rate video game and you still believe a player scoring 10,000 in Defender is someone whose autograph you should get.

If you get seven or eight right, you know something about video games. Either you're genuinely skilled on several truly challenging machines or you have studied this book with impressive diligence.

If you give nine correct answers, you are—in video ability and in recall of this book—cool, hot, bad, good, far out, awesome, and heavy. You're over 100,000 on a number of tough machines and have a memory superior to that of all but the most complex video games.

If you get ten right, either you have a weird sense of humor or you copied the answers on your sleeve before beginning this quiz.

The answers follow the last problem.

- (1) To make a coin-operated video game operate, you must:
 - (a) Threaten it
 - (b) Take it out to dinner and a show
 - (c) Send it to med school
 - (d) Insert a coin in it
- (2) The International Date Line is:
 - (a) An invisible line in Defender that affects Mutants
 - (b) A computer-dating firm serving El Paso, Texas, and Juárez, Mexico
 - (c) A financial newsletter for the dried-fruit industry
 - (d) An opening remark you might try on an attractive foreigner
- (3) The person who is more important to the history of coin-op video games than Christopher Columbus and Thomas Jefferson—combined—are to the history of the United States is:
 - (a) You
 - (b) Your brother, who's real good
 - (c) King Tut
 - (d) Nolan Bushnell
- (4) GORF is distinctive especially because it features:
 - (a) A hand that comes out and fondles you
 - (b) Five games within the game
 - (c) A hot tub attached to the back of the cabinet
 - (d) Not only video and audio, but smelleo
- (5) Atari engineers used to jokingly call the little enemy ship in Asteroids:
 - (a) Bugs Bunny
 - (b) Kermit the Frog
 - (c) Beaver
 - (d) The small saucer
- (6) The Pac-Man capital of the western United States is:
 - (a) Los Angeles, California
 - (b) Davis, California
 - (c) Pincrest, California
 - (d) Fatyellowface, Oregon
- (7) In the game that attracted widespread attention for Exidy, you get points for:
 - (a) Smart bombing the Aardvarks
 - (b) Running over the Gremlins
 - (c) Knocking down all the red drop targets, then hitting the center rollover that has been lit
 - (d) Using your heat-seeking missile on the Bats

- (8) In Space Invaders you are least likely to get wasted by a bomb falling from:
 - (a) A Toaster on the bottom shelf
 - (b) A slow-creeping pointy-head
 - (c) A speedy Skull
 - (d) Any invader in the middle of a row
- (9) Critical numbers in Sea Wolf and Carnival, respectively, include:
 - (a) 23 and 3250
 - (b) 240 and 10,000
 - (c) 9 and 10
 - (d) $99^{44}/_{100}$ and 86
- (10) You have never played Defender before. You have miraculously made it to the third wave, but a Lander has just hauled your last man to the top of the screen. Suddenly there is a shattering explosion. Now, on the screen, there are eighteen Mutants, twenty-four Swarmers, six Bombers, and five Baiters. You have one ship left and no Smart Bombs. The only sensible thing to do is:
 - (a) Fly at Mach 4 along the bottom of the screen, firing faster than you ever have before
 - (b) Politely ask the machine to give you eight dozen Smart Bombs
 - (c) Dial 911
 - (d) Wet your pants

ANSWERS

- (1) (d)
- (2) (a)
- (3) (d)
- (4) (b)
- (5) (c)
- (6) (b)
- (7) (b)
- (8) (a)
- (9) (c)
- (10) (d)

HOME VIDEO GAMES

Home Video Games

Purchases of home video games are snowballing. At the end of 1980, three and a half percent of US households had them; a year later the figure had more than doubled to eight percent. In 1981 each of the three major American manufacturers sold every console and cartridge it could manufacture. Home video games may soon have more impact on life in the United States than their more glamorous coin-op cousins. Already they are changing how much time Americans spend at home, how much time family members spend together, and how people spend their home hours.

Generally speaking, home video games present neither as much challenge nor as much entertainment as the coin-op machines. There are exceptions: The strongest home games are much better than the weakest coin games, and some home games are almost identical to their coin-op predecessors. Moreover, there are many advantages home games have that coin games cannot hope to match. While a serious coin-game player may well spend \$10 or \$20 a week on coin games, he can take fifteen weeks' worth of \$10 rolls of quarters and buy an Atari or Odyssey home console and the multigame cartridge that comes with it. For about twenty-seven weeks' worth of quarters he can get Mattel's Intellivision. For another twenty weeks of \$10 per week he can collect an impressive and diverse set of cartridges for any of the three systems.

The user of a home system can also play anytime he wants, not just when an arcade or restaurant is open and not just when a machine he likes is available. A novice can practice alone without fear of embarrassment. Anyone can play game after game after game without worrying about quarters spent or about the desire of a belligerent or pitiful other player to get his turn on the game. If you want to play without the possible distractions of cigarette smoke, jukebox music, or the exotic sounds of neighboring ma-

chines, you can make your home a video Fortress of Solitude where it's just you and the game.

Of course playing video games on the same TV set on which you watch *Dallas* and sports events can twist your mind. After playing game after game of home video football and then switching to a live telecast of a real football game, many a home video player feels like he can control the movements of Steve Bartkowski or Wesley Walker simply by pushing the joystick or disk on his home video controller. And, while watching the 1981 US Open tennis final in which John McEnroe was leading Björn Borg, it seemed fair for the author to ask a fellow home spectator, "How many Smart Bombs does Borg have left?"

For the history, status, and structure of the home video game industry, refer to the chapter near the end of this book. The section you are now reading covers many games and covers some in substantial detail. Because players are more likely to be interested in many of the games of one manufacturer—the maker of the system they own or are thinking of buying—than in the games of all three of the major home video companies, this section is divided first by company and then by game. Emphasis is on strategy that will make you a better player. As with coin-op games, there is not only basic advice for the beginner but also tips that will help even the expert. The information comes largely from top players and from the programmers who designed the games.

When they play a machine for the first time in order to check its quality, coin-op players risk only a quarter. Home video players, however, often must pay the substantial price of a cartridge—usually \$20 to \$40—before they can find out whether a game is worth playing. And to thoroughly evaluate a home video system, they often must buy it—for about \$150 and up. For these reasons, in this section more than in the coin-op one there is favorable and unfavorable criticism of individual games and of the whole system of each major company. It is given with the hope of steering players toward the better systems and cartridges and helping them to avoid the consoles and games they will play once and then throw in a closet—or out the window.



The Big Three: Atari, Mattel, and Odyssey

Three manufacturers dominate the US home video market. They are Atari, Mattel, and Odyssey. And Atari dominates the others, with a 1981 market share of about 80 percent. The big question in the minds of owners and prospective owners of home video systems, however, is not which company sells the most; it is which company is *best*.

Which company is best depends on what you're seeking. Each of the big three has its advantages, though the advantages of Odyssey seem for most players very trivial when contrasted with the strengths of Atari and Mattel. Let's compare the three companies in three key categories: quality of games, variety of games, and price.

GAME QUALITY

The only serious competition here is between Atari's Video Computer System and Mattel's Intellivision. Compared to these two, Odyssey's Odyssey², to make a long story short, is a joke. The realism and sharpness of its onscreen images are similar to those of Atari but dramatically inferior to those of Mattel, but the excitement and challenge of its best games fall far short of the Atari and Mattel leaders. Many Odyssey games are fun and some are challenging, but its best are surpassed by the best from the other two, and its worst games are terrible.

As a system Odyssey should cause no fear to Mattel or Atari, and in fact it doesn't. When you talk to Atari executives they mention Mattel with respect, and when you talk to Mattel its people refer respectfully to Atari. But both are about as worried about Odyssey as the Boston Celtics are worried about Boston College.

The Mattel-Atari competition in game quality is decided in Mat-

tel's favor if you look at realism of either pictures or sports play and is decided in favor of Atari if you are concerned about challenge and about similarity to hit games of the coin-op world. Mattel understands this. The company's understanding is demonstrated by its 1981 Intellivision ads, which may take the prize for Most Deceptive Print Ad of the Year.

These two-page, colorful advertisements appeared in *Newsweek* and other major magazines. They feature the noted video game player George Plimpton, who stands behind two TV sets. The one on the left displays Atari's Home Run Baseball, while the one on the right shows Intellivision's Major League Baseball. Big George says, "Atari versus Intellivision? Nothing I could say would be more persuasive than what your own two eyes will tell you. But I can't resist telling you more."

Then, on the next page, he does tell you more. The Mattel system, he says, has "more realistic graphics," "smoother and more lifelike movement," and a "hand controller [that] has 16 positions and 4 buttons," compared to Atari's eight and one (plus two other types of Atari controllers he doesn't mention). Then he says, "More about challenge. You can't see it here, but I have found that in many of the Atari programs, the game play is rather simplistic. . . ." And he finishes with "Both Intellivision and Atari have large libraries."

Almost all of this is true. But none of it is fair to the consumer. First of all, the two TV pictures, while demonstrating much more realistic graphics and game play for Mattel, show what was at the time of the preparation of Mattel's ad either its number one-, two-, or three-selling game of all time against what is clearly not one of Atari's monster cartridges. It's like an ad by General Motors comparing itself to Datsun by showing a Cadillac Eldorado and a Datsun B-210 instead of a Caddy and a 280-Z. Mattel could have put their baseball game up against Atari's Space Invaders, but then they wouldn't have printed the ad: Space Invaders is as realistic as it needs to be and, from the typical serious video player's point of view, is superior to any Mattel game.

Some of Plimpton's statements are unobjectionable, but when he gets to the sixteen-position, four-button Mattel controller versus the eight-position, one-button Atari controller, he's both dishonest and deceptive. First of all, coming with the basic Atari system, in addition to the Joystick Controller, is the Paddle Controller, which adds substantial capability. And for extra cost you can also get a Driving Controller and a small, hand-held keyboard controller. For the games to which they apply, the Paddle

and Driving Controllers give a level of control similar to that of the Intellivision controller. Second, Plimpton fails to mention that the sixteen-position Mattel controller is a disc whose sixteen positions are invisible to the player and must be learned—if ever—over hours and hours of careful play, while Atari's fewer positions provide less precision but can be learned much faster.

Indeed many of the Atari games are simplistic. But the heavy hitters—Space Invaders, Missile Command, and Asteroids—are not, especially when all their variations are taken into account.

And then he says both companies have "large libraries." At the time of the ad, Mattel had nineteen cartridges and Atari had *forty-three*.

Like most deceptive advertisers, Plimpton misleads not just by what he says but by what he doesn't say. What he omits is that Mattel is better for one kind of game and Atari is better for another. In sports games—such as baseball, basketball, and football—Mattel is *miles* ahead. Intellivision games have more players on the screen, the players look and move much more like real players, and the capabilities and rules of the games are much more like those of real sporting events. (Sound effects of each system are of similar realism.) But George doesn't mention the other games: the space games that have been not just the heart, but the brain, the spleen, the you-name-it, of the huge coin-op video game phenomenon. At the time of the ad Mattel had only three such games. By late 1981 only one—Space Battle—was among the company's top six sellers. All of Atari's top three games—Space Invaders, Asteroids, and Missile Command—are space games, and most video stars would prefer two or all three of these to the Mattel space game.

In general game quality the best of both Mattel and Atari are excellent. While Mattel has no bad cartridges, Atari does have a few.

So, as Mattel is saying between the lines, neither company is clearly superior in game quality. It depends on what kind of game you want. Sports, take Mattel. Space, take Atari.

VARIETY OF GAMES

Here is where Odyssey makes something of a comeback. While Atari now has about fifty cartridges, Odyssey takes second place with more than thirty cartridges (like Atari's, some Odyssey cartridges have multiple distinct games). Mattel now has about twenty-five. Each company has space, sports, and educational

games. But, unlike Atari, Odyssey comes with an alphanumeric keyboard (like a pressure-sensitive typewriter) and Mattel offers an expensive keyboard-console that can be purchased separately. Games involving the use of words or numbers are therefore more compatible with the basic Odyssey system than with the unsupplemented consoles of Atari or Mattel.

PRICE OF GAMES

Odyssey, the third-place finisher in the category of game quality, more or less ties for first place. For a maximum of about \$200, a typical price of about \$150, and a low of no more than \$129.97, you get a basic console that contains the alphanumeric keyboard, two controllers (each with an eight-position joystick and an "action" button), and a cartridge containing two driving games and one word game. Nearly all Odyssey cartridges cost about \$25 at more expensive stores and \$20 at lower-priced ones.

The basic Atari system costs about the same, doesn't include a keyboard, but provides two different sets of controllers. For a high of about \$200, a normal of about \$150, and a low of no more than \$127.88, Atari gives you a console, two joystick-and-button controllers, two paddle controllers, and a cartridge with tank and plane combat games. Cartridges are priced from about \$20 to \$40 at higher-priced stores (cartridges come in three basic price levels) and about \$17 to \$37 at discount houses.

Mattel's Intellivision, however, runs as high as \$325, usually sells for about \$275, and has been seen for as low as \$219 (almost a loss leader: The wholesale is \$210). It comes with no keyboard, but does provide a set of versatile controllers (each with twelve buttons and a disc on the front and two buttons on each side) and comes with one cartridge that allows you to play blackjack or poker. Mattel cartridges are all about \$30 at higher-priced stores and \$25 at lower-priced ones.



How to Play Home Video Games

In the chapters that follow, strategy will be given on individual home video games. Though each game requires a somewhat distinct approach, there are certain general strategies and guidelines that apply to almost every home video game. For that matter they apply to almost every coin-op video game as well. For this reason the reader is referred back to the earlier chapter, "How to Play Coin-Op Video Games." That chapter, as you will recall, sets out the eight basic Bylaws of the Awesome Player Society. They are:

BYLAW 1: Be Cool.

BYLAW 2: Defense! Defense!

BYLAW 3: Fire Furiously but Not Foolishly.

BYLAW 4: Pig Out When the Slop Is Handy.

BYLAW 5: Not Too Much or Too Little, but Just Right.

BYLAW 6: Be Ship-Centric.

BYLAW 7: Practice Makes Less Imperfect.

BYLAW 8: Keep Your Mind in Mind.

All of these bylaws apply about as well to home video games as to coin-op machines. One bylaw, in fact, applies even more to home games than to those you find in arcades. That's the most important bylaw of them all, "Practice Makes Less Imperfect." It's not that you *must* practice more for home games than coin ones; it's that you *can* practice more, or at least that you can practice more easily. It's hard to sacrifice lots of games to practice when you're in an arcade. Each game costs a quarter, you may have only one chance at a popular machine that many people are waiting to play, and you may not want to go through practice techniques in front of spectators.

At home, however, you can practice for free and practice as **161**

long as you want and practice without anybody laughing over your shoulder. And, since practicing is so important, you have a chance to master home video games much faster than you can the coin-gobbling monsters at your friendly neighborhood arcade.

10

Atari: The Video Computer System

Atari is the biggest. The only question is whether it's the best. Under its own name—the Atari Video Computer System—and at Sears stores under the brand of Tele-Games Video Arcade, Atari utterly dominates the United States home video market. It also sells many consoles and cartridges abroad after adapting both for foreign television sets. In the US, Atari at the end of 1981 held about 80 percent of the market. In that year it sold about 50 million consoles and 18 million game cartridges. With more than forty-seven cartridges, Atari also boasts the largest selection of games.

Whether the Atari VCS system is better than its competitors from Mattel and Odyssey depends on what you're looking for. Atari's strength is in replicating hit coin-op games, with an emphasis on those with a space battle theme. Atari holds the home video rights to Space Invaders, Asteroids, Missile Command, Pac-Man, Defender, Berzerk, and Galaxian. The first three of those games are by far Atari's lifetime best sellers. At the beginning of 1982, Space Invaders was number one; by the end of the year, Asteroids is expected to surpass it and Missile Command may do the same. Asteroids began the year as the cartridge with the biggest sales volume per month; by the end of the year Pac-Man, introduced in 1982, may be selling at the fastest rate. Defender, scheduled for June, will certainly sell very well once available.

Sales information comes from two executives in Atari's Consumer Electronics Division: Ron Stringari, Vice President of Marketing, and Steve Bengston, Manager of Marketing Administration. According to these sources, at the end of 1981 the number-four lifetime seller at Atari, far below Space Invaders, Asteroids, and Missile Command, was Breakout. Well below that were, in alphabetical order, Adventure, Bowling, Circus Atari,

Indy 500, Night Driver, and Video Pinball. Of course one other Atari cartridge is found in more homes than any of its more famous siblings. This is the Combat cartridge, which comes with every Video Computer System console.

Not all cartridges that can be used in the Atari VCS system are made by Atari. Activision, a Santa Clara, California, company, makes games that can be played in the Atari system. Most of these can be purchased for a high of about \$23 and a low of about \$17.

This Atari section will focus on the three giants of Atari VCS history: Space Invaders, Asteroids, and Missile Command. To a lesser degree it will describe many of the other popular games just mentioned. In addition it will deal with the Video Olympics cartridge, which is also remarkable, but not in a favorable way. For each home game that is adapted from coin-op hits that are covered in this book, the reader should also consult the chapter on the coin-op version.

Almost all Atari games offer three or more (up to 112) variations of the basic game, and almost all allow you to select between the "A" and "B" difficulty switches on the console. Opting for "A" always makes the game harder. To even up the competition between two players of different abilities, the weaker player can use "B" while the stronger one selects "A."

You can even change difficulty during a game. Taking a cue from the scenes in 007 spy movies where an evil international criminal attempts to fatally torture the hero by turning the speed of an exercise machine or an astronaut centrifuge up to a lethally fast level, you can always flip your opponent's difficulty switch from "B" to "A" during a game and watch him haplessly try to handle super-fast missiles or an utterly unsafe driving course. As you viciously switch from the manageable level "B" up to the brutally hard "A," you say: "Why don't you try *this* game, *Meeester Bond!*"

Atari is not content to rest on its VCS laurels. In January 1982 the company unveiled its new and dramatically improved console along with fourteen game cartridges. Ron Stringari, Vice President of Marketing for Atari's Consumer Electronics Division, says the new system will not replace the fabulously successful VCS console and cartridges. Instead it will offer consumers a choice between two different Atari systems.

Stringari, who demonstrates a strong reluctance to overrate Atari's products or market position, says that when consumers



Atari

compare Mattel's Intellivision system to the new Atari product, "Mattel's going to look like the Stone Age: Our new system damn near brings coin-op arcades into your living room." The new system has a suggested retail price of \$349.95, and Atari expects the typical price to be about \$325 (about \$50 more than Mattel). "1982," says Ron Stringari, "is the year of the Atari game."

• COMBAT

Combat is the biggest-selling home video cartridge of any manufacturer. Although the cartridge is an adequate one, the secret of Combat's success lies only in the fact that it is provided at no additional charge with every Atari console.

The cartridge brings to the home the highly successful 1974 coin-op game Tank, which was produced by Kee Games, a since-absorbed Atari subsidiary named for Joe Keenan, a Nolan Bushnell confidant who later became chairman of the company.

Tank accounts for the first five variations of the twenty-seven available in this cartridge. Other variations are four games of Tank-Pong (where shots rebound off walls), two games of Invisible Tank, three games of Invisible Tank-Pong, six games of Biplane, and seven of Jet Fighter. All these games involve combat between tanks or airplanes.

This is another game for the standard Joystick Controller. Difficulty "A" allows vehicles a shorter missile range than difficulty "B."

Tips

In all games a player who's leading can stall out the two minute sixteen second clock by keeping away from his opponent's shots. You can do this either by evasive driving/piloting or by hiding behind obstacles. In some of the airplane games you can actually hide *inside* of clouds.

Tank-Pong is much like billiards. Shoot a lot: You may hit your opponent even when you don't expect to.

• SPACE INVADERS

Contrasted to most home video games that attempt to copy major coin-op successes, Atari's Space Invaders does an unusu-

ally faithful job. So, since Taito/Midway's arcade Space Invaders was both exciting and a titanic commercial success, the home version is a challenging and enjoyable game that has recorded huge sales. It is the opinion of the author that it is the best home game of the approximately thirty-five he has sampled from the big three manufacturers.

If you are familiar with the coin-op Space Invaders, you will easily recognize the home version as basically the same game. If you do well at the coin machine, you'll immediately do well at this one. Still, there are many, many differences between the two, and some of them importantly affect how to play the game.

Differences

Changes in Population and Demography There are fewer invaders, they float in a new configuration, and they look different. The original Space Invaders has fifty-five aliens creeping down on you, eleven columns each with five invaders. Now there are six columns, each with six warriors. And none of the invaders looks the same.

On the top floor you now have six strange fellows who look like walking two-eyed cottages, each with floppy, beagle-style ears. On the next floor you have the only home-game invaders who resemble some of the coin-game boys. These fifth-floor dwellers look something like the walking Skulls of the original game except that they are huskier and therefore more powerful-looking, as though they have been doing a lot of bench presses.

On floor number four there are six skinny guys with uplifted arms; they may remind you of that annoying, wormlike pervert who shows up in the last stage of the coin game Phoenix. In the floor below you get what look like six walking flying saucers, each with two eyes.

Inhabiting the mezzanine are six dudes—big heads with little legs—who rapidly alternate between facing left and facing right. These space soldiers have two eyes too, but they show only one at a time. Finally, on the ground floor, there are what look like six floating jellyfish: little, two-eyed domes whose lower appendages look more like tentacles than legs.

At any rate these thirty-six make up yet another fine group of exemplary citizens. Not only are they good-looking, but they have wonderful manners as well: Their sole interest in life is to bomb you to eternity.

Partly because you start with fewer invaders, the aliens drop down faster and speed up sooner than in the coin game. For these and other reasons the basic home Space Invaders game ("variation number one"), if played with full-size Laser Bases (difficulty option "A"), is substantially harder than the coin Space Invaders machine.

Where's My Other Bunker? This is not a quotation from *All in the Family*; it's what a player might say when he checks out the screen. The home game has just three bunkers to protect you, not four. On the other hand you now have three bunkers to protect you against thirty-six invaders, which is a better deal than four against fifty-five, so quit whining. The bunkers now look like stubby rocket ships or old TV tubes.

Point Spread In the coin game you got thirty points for the pointy-heads, twenty for the Toasters, and, down at the bottom of the formation, ten for the Skulls. Now, from the sixth floor down to the first, each invader is worth thirty, twenty-five, twenty, fifteen, ten and five points, respectively.

The Mystery Ship makes an encore appearance but is now worth 200 every time you hit it. This simplifies the game: now, instead of having to count your shots, you just cream the Mystery Ship whenever it shows up and still gain two thirds of the maximum points you could have grabbed in the coin game.

Executions Outlawed Remember the coin Space Invaders strategy of waiting till the aliens were down on the lowest possible level, where they can't drop bombs, and then zipping under the creeps and cold-bloodedly executing them? Well, apparently somebody at Atari's against capital punishment, because executions are no longer allowed. In other words when the home video villains descend to the lowest possible level, they still must be considered armed and dangerous.

This, of course, changes strategy dramatically for the coin player who used to act as executioner. You can no longer afford to let the invaders get as low as before: Instead of becoming harmless they become super-dangerous, since there is almost no time to avoid a bomb dropped right above your head.

You can still create a window: a space among space invaders through which you can shoot the Mystery Ship. But just don't continue to use what used to be the related strategy of waiting for the invaders to descend all the way.

Details, Details There are several smaller differences worth mentioning. One has no impact on the game: It's the difference in sound effects. The sound of the explosion of your laser base when a bomb hits it is no longer like a grenade blast in a garbage can; now it sounds more like a whoopee cushion in embarrassing action.

The sound of wiping out an invader is a high-pitched, silly-sounding "wooop!" If you nail a Mystery Ship, you get four in a row: "Woopwoopwoopwoop!" Sounds just like old Curly of the Three Stooges.

Your laser is now an automatic weapon. In the coin game you had to release the button and press it after every shot to fire off another one. Now, if you just keep the button down, the Laser Base will continuously fire evenly spaced shots. This is a welcome feature when you need to rapidly machine gun your way through a bunker. More precise shooting, however, means going off automatic and returning to manual control.

A final variance between the coin and home versions of Space Invaders is that in the home game there are no special effects for the player skilled enough to make a rack's final invader one from the bottom two rows. No trail like in original Space Invaders, no trail plus rainbow like in Deluxe.

112 Variations One of the great advantages of Atari home games over coin-op machines is the number of variations the player can select to modify the basic game. Space Invaders offers an astonishing 112 variations. A chart in the center of the pamphlet that comes with this game quickly gives you the characteristics of each variation. Each variation combines the basic game and one to five changes you can choose. (Variation number 100, for instance, has one player moving, his partner firing, shields moving, and bombs zigzagging.) Here are the changes you can select to make the basic Space Invaders game more challenging or just different:

Alternating Turns This is like the two-player version of the coin game. The first player plays till he loses one base, then his opponent gets a turn.

Competing at the Same Time Here two players play, but they don't alternate: You try to run up more points than your opponent. This changes the game a lot. Instead of calmly plotting a

strategic course that depends on only you and the invaders, you must now take your opponent into account.

The high-point invaders—the ones from the top floors—are going to go fast. Try to nail as many as quickly as you can. If some of the valuable thirty- and twenty-five-pointers are just floating around with nothing between them and you to protect them, zip under them before your opponent does and wipe them out. If no high-point astro-army members are available, quickly blast through a whole column to expose the high-point invaders at the top.

Also pay attention to the Mystery Ship. In the head-to-head competitive versions of the game, you get only 100 points for blasting away this craft. But it's really still worth 200 points, since if you get the ship you gain 100 points on your opponent but if you let it go and he nails it, he gains 100 points on you.

Even though you will concentrate on offense—porking out on the points as fast as you can—don't forget defense. You can be ahead by thousands of points, but if you lose all three of your bases before your opponent does, he can still catch up to you and pass you.

If you're the sneaky type, you can intentionally lose against the invaders in order to win against your opponent. Say you're ahead and you have a chance to shoot an invader who, if not hit, will drop past the lowest level in which you can shoot him and will thereby overrun you and your opponent and end the game. Just sit back and let the invader do his work. The game will be over, but you'll have more points than your opponent, and, according to some people, winning is the only thing. You can display even worse citizenship by pretending to go after that last invader: If you have a better shot at him than your opponent does, your unsuspecting rival will usually concede the shot to you, but of course you're such a sweet person that you won't take it. Remember what all this means if you're *behind*: Do whatever you can to avoid being overrun by invaders and (especially if the other player has been reading this book) getting fatally faked out by your opponent.

Competing at the Same Time, Alternating Shots Here each player gets only one shot at a time. Whether it hits or misses, once it is fired the next player gets his turn. This means that, more than ever, you must make every shot count. Be careful to select shots promising the highest possible points. But beware that the computer doesn't let you sit around awaiting a

fat-point shot. Instead, if you don't fire fast, it will shoot for you. It won't, however, *aim* for you; it will just bang off a laser blast from wherever your base is sitting, exactly 2.7 seconds after your opponent's shot has hit something or disappeared off the top of the screen.

One Player Moves Right, Other Player Moves Left This is one of three "partnership" changes: modifications you can make in the game that require you and another player to *cooperate* to increase success for each. In partnership games only one score is kept—a team score.

The left player can move the laser base only to the left; the right player can move it only to the right. If both try to move it at the same time, it will remain motionless. Both players can fire, but after a shot is fired by either player, it must clear the screen or hit something before either player (you need not alternate) can fire again.

The key to success in game variations allowing each player to move only one way is to be a Siamese twin. Most Siamese twins think remarkably alike; so, if you have such a twin, the two of you will play pretty much like a single well-coordinated player.

If you are not a Siamese twin and are not interested in fusing yourself with a friend who looks a lot like you, you must try to coordinate yourself and your partner to such an extent that you play much like a single player would. Since a single player is not confused by conflicting demands from two brains, the first thing to do is appoint a team captain. If you feel like it, you can alternate captaincy from game to game. If you're the older brother, just tell your little brother that you're the captain unless he wants to get punched out.

The captain takes all shots. Equally important, he shouts commands during the game so each player moves at an appropriate time and doesn't surprise his teammate. Only two commands are needed: "Go!" and "Stop!"

Before a game gets under way, huddle with your teammate and decide your strategy. In taking on the invaders in this cooperative mode, your approach really is much like that of a football team. You consider the strengths and weaknesses of the opposing team (they differ from one variation of the game to another) and come up with an effective plan.

A good play to call before the game as your basic strategy is "31-Streak-Mystery Option." This means that after the kickoff you first blast away column three (third from left), then waste col-

umn one (three and one, 31, okay?). Then you streak along the bottom of the screen, nailing the bottom invader from each of the remaining columns.

The "Mystery Option" part of the play calls for the team captain to decide whether to attempt to plug the Mystery Ship. When the ship appears, the captain, if he chooses to go for it, yells "Mystery Option!" If the captain calls this signal, the player with the ability to do so immediately runs the Laser Base to the nearest big window in the invader force and the captain fires at the Mystery Ship. If your team scores the big 200-point touchdown, *do not* spike the controls.

Just like in football, the team captain can *audible* (shout out changed plans), if necessary. If, for instance, under the "31-Streak-Mystery Option" play the team would ordinarily go after column one at a certain point but that column is blocked by a bunker shield, the captain may audible "Shift—four!"—which means to move under column four and blast away at it.

Alternating Firing and Control Here you get to move and shoot, then your partner does, and so on. As soon as one player has fired, he can't move again until the other player has shot. As before, cooperation is critical and a football approach is fun.

One Player Moves, Other Player Fires In this situation, only one player can move and only the other player can fire. As in the games where one player moves right and the other moves left, a merger of two players into one is especially important.

With the addition of football-style play-calling and audibles, game variations with one player moving and the other firing can provide more fun than any other Space Invaders variation.

Other Changes In addition to variances in the responsibilities of the players, there are four more changes that you can select: Moving Shields, Zigzagging Bombs, Fast Bombs, and invisible invaders. All of these changes heavily affect the game.

With *Moving Shields* the bunkers move back and forth horizontally. They are harder to hide behind than stationary bunkers and, more importantly, they get in the way of a lot of your shots. Waste the shields.

With *Zigzagging Bombs* the bombs move right and left on their way down, often making three changes of direction during their short descent. This makes them harder to evade.

With *Fast Bombs* the space explosives drop much more quick-

ly than usual. This makes the game much more difficult.

With *Invisible Invaders* all the aliens are invisible until one is hit. When this happens, all the remaining invaders briefly flash onto the screen. You will want to shoot invaders not just to run up points but also to find out where the hell they are. It makes a lot of sense to make a window to hide under.

There is one more change you can make. Taking it into account, you might say there are 224, not 112, variations of this game. If you flip the difficulty switch to "A," your Laser Base will be large, similar in size to that of the coin game. If you switch to "B," it will be about half that size and therefore not so easy for the invaders to hit. For a variety of reasons Atari's Space Invaders, even in its basic "number one" variation, seems too hard for all but near-superstar players if option "A" is chosen. Option "B" makes the game more similar in difficulty to its entertaining and fabulously successful coin-op parent, and therefore, for most players, a better game.

So give "B" a try. You can always switch back to "A" if you're too cool. Combine the large Laser Base of "A" with variation 80, 96, or 112 (players cooperating, shields moving, fast bombs that zigzag, invisible invaders) and you'll have a game so tense and dangerous that for a relaxing break you can try skateboarding on the San Diego Freeway at night. Blindfolded.

• ASTEROIDS

Atari's Asteroids game for the home is at once the most successful and the most disappointing home video game in history. Most successful because *every one* of the cartridges in its huge initial production run was committed to consumers who signed up on waiting lists months before the game went on sale in July 1981—before one of these consumers had even *seen* the game. Most disappointing because the game looks and plays a lot differently from the uniquely successful coin-operated Asteroids machine after which it is modeled.

So players in love with coin-op Asteroids would say the home game is nowhere near as good. And players who have bought the cartridge thinking they would be making their home TV into a coin-op Asteroids machine without the coins have been unhappily surprised.

Still, this is a game that is outstanding by home video standards

and is one that (though it sounds obscene to say it) is in some respects *better* than the coin-op version. Better not in attractiveness of screen objects, ease of control, or challenge of game, but better in variations available to the player. And better because it's in color and because for the habitual player it's a lot cheaper: An Asteroids cartridge costs about \$40; a coin-op Asteroids addiction can cost that much *per week*.

Let's look at the similarities and differences between the game to which you feed quarters and the game you hook up to your TV. (Before reading further, become familiar with the earlier chapter on the coin-op game.)

A Joyless Joystick

The most important difference between the coin-op game and the VCS (Atari Video Computer System) version is in the controls. This is also the biggest disappointment: The controls are slower and less precise.

Instead of having five distinct buttons allowing the player to rotate left, rotate right, thrust, fire, and Hyperspace, the VCS Asteroids pilot must control his ship with the less refined Atari home hardware introduced in 1977. The VCS controls were made not for Asteroids but for a wide variety of games. The controls used in home Asteroids are a black lever, called a joystick, and a red button on the stick's base. The joystick is pushed forward for thrust, left for rotate left, and right for rotate right, and is pulled backward for Hyperspace (or one of two other defenses, depending on the option selected). To fire, you hit the button.

The problem is that the player wanting to steer his ship or to disappear into Hyperspace can't move the home video joystick as fast as he can press a coin-op button. The problem is also that, since thrusting and rotating require different movements of the same stick, he can no longer do both at once.

To compensate for controls that make the home game harder than coin-op Asteroids, there are other differences that make it easier.

Sherbet or Asteroids?

The VCS asteroids themselves look and act differently from their coin-op kin. Instead of clean, white outlines the home video rocks are fuzzy, filled-in shapes. They come not in white but in a

variety of pastels; green, pink, and blue to be exact. To tell the truth, they look a lot more like scoops of sherbet than like asteroids. The game could in fact be called Sherbet Shoot, but Atari may have figured more people would buy the game if they called it Asteroids.

When you shoot a big rock, it breaks into two medium ones. So far just like coin-op. But when you hit a medium rock, it doesn't break into two little ones. Disobeying the laws of physics, it breaks into *one*. When you hit a small rock, it vanishes.

Instead of moving in almost every direction, as in the coin-op game, most VCS rocks move quite vertically. (In the even-numbered variations, however, the medium and small rocks do take markedly diagonal paths.) Also unlike the asteroids of coin-op, two rocks never float in tandem.

The VCS Asteroids programmer, Brad Stewart, would have preferred rocks that acted like those in the coin-op game, but he was limited by the amount of information the single chip in the VCS cartridge could store. Even though the Asteroids chip has the largest number of bytes in VCS history—6,000, compared to the 2,000 or 4,000 of other games—it has far fewer than the 10,000 of its coin-op predecessor.

The generally vertical movement of the rocks changes the player's strategy. It is now much safer than before to move vertically, and more dangerous to move horizontally. To drive home this point, it should be noted that when Stewart was demonstrating the game to the author and wanted to show what happened when the player's ship was destroyed, he simply sent it in a horizontal direction. It didn't last long.

Despite the reduced safety of horizontal flight, most players still follow the classic coin-op strategy of hunting Beaver by saving a rock or two and lurking in an upper corner. But the Circus-Circus option of flying more or less vertically is now even more attractive than before.

More Ships but with Fewer Shots

The player begins home video Asteroids with four ships, one more than in the arcade-style game. Like the less-varied direction of the rocks, this makes the game easier. To make the game harder, Atari gives the player a less potent ship. Instead of being able to shoot about three fifths of the screen's width and four fifths the height, you can now shoot only about half the screen in

either direction. More important, you get only two, not four, shots at a time (so it becomes less wise to hold one shot in reserve).

Wally Gets Equal Billing

Once you get past several thousand points in coin-op Asteroids, you hardly ever see Wally. It's Beaver over and over. In VCS only Wally shows up until 7,000 points have been scored. After that, Wally and Beaver each appear 50 percent of the time. Which one comes out at a given moment is more or less random. Both the portly pest and the slim savage show up more frequently as the game proceeds.

Wally Still Blind, Beav Still Brutal

Wally shoots randomly. Beav always shoots in your direction. Of sixteen possible shooting angles, Beav will compassionately take the four most likely to blow up your ship. The encouraging news is that he does not become more accurate at any point in the game and that he cannot shoot aimed wraparound shots. So if you're out of his range, he will shoot at you but his shots will fall short. *What a shame.*

A Similar Rock Collection

As in the machine found in amusement centers and pizza parlors, the living room game starts with four asteroids and moves on to six and then eight. VCS, however, never gets to ten.

The Option Clause

While the most important difference between coin-op and home Asteroids is in the controls, the VCS version provides one other distinction of vast significance: *sixty-six variations of the game.* Although Atari likes to say each of its cartridges contains a large number of "games," in most cases the company is talking about variations. Such is the case with VCS Asteroids. Every one of the sixty-six alternatives is an Asteroids game, but the differences are broad.

There are six options, which can be combined to produce the many game variations: The pamphlet that comes with the car-

tridge explains how to select a desired game variation.

One Player or Two: Play by yourself or make a fool of yourself in front of your friends.

Hyperspace: The old standby. You pull the joystick back and your ship disappears, then comes back in a different part of the screen that you hope is safer. Unlike coin-op Hyperspacing, making this move in VCS never results in explosion on reentry. Still, Hyperspace remains risky, because the ship may reappear right next to an onrushing rock.

Shields: Now when you jerk the stick back you get a shield around your ship instead of disappearing into Hyperspace. When your ship is shielded, rocks harmlessly pass through it. As in the Asteroids Deluxe coin game, you can't fire through the shield. The VCS shields last much shorter than in Deluxe: about two seconds. But they recharge when not in use.

Flip: Still another defense that comes when you pull back the stick. In this case, instead of Hyperspace or shields, you get an immediate 180-degree change of direction of your ship. If you have only a split second to get away from an oncoming rock, this defense can save you without presenting the risks of Hyperspace or shields.

No Defense: Want to make the game harder? Want to give yourself no safety valve if you screw up and get into trouble? Then this option is for you. Pull the stick back and all you get is a little exercise for your forearm.

New Ship Time: Another way to vary the nature and difficulty of the game is to change the number of points you must achieve to earn a new spaceship. The options are 5,000, 10,000, 20,000, or never. As in coin-op Asteroids, you can store ships, but here the number is limited to nine. Up to nine can be displayed on the screen, but when you earn the tenth, it is neither displayed nor credited: In other words you don't get it. Unjust? Sure. So file a protest with Atari.

Scoring

Scoring is just like in coin-op. You get 20 points for wiping out a big rock, 50 for a medium, 100 for a small. Wally is still worth 200, and the price on Beav's ugly head remains 1,000. A good score? For an experienced coin-op Asteroids athlete playing the home "game one" variation, 20,000 is an impressive early score. Keep practicing and you can do it. The price is right.

• MISSILE COMMAND

Many players think Atari's Missile Command is the best home game ever. Its first sales, in May 1981, were very big, though smaller than the record initial sales of Asteroids, whose coin-op parent was then the biggest hit in American history. In its short time on the market, Missile Command has become one of Atari's top three lifetime sellers.

The reason for the glowing success of VCS (Video Computer System) Missile Command is that it admirably reproduces most of the characteristics of its popular, unique, and ultrachallenging parent of the same name. The player who wants to master the home version should therefore first refer to this book's section on the coin-op original. This chapter will deal mostly with the differences between the two versions. It will concentrate on variations that are critical to strategy or that do not always meet the eye.

First, it is pleasant to report that the VCS version of Missile Command is not quite as humiliating as the coin-op edition. Oh, it still makes you feel like a jerk, but it delivers its message a little more subtly: like pointing at you with a finger instead of knocking you down with a baseball bat.

For one thing, when the player finally loses all his cities, there is no thundering atomic Armageddon announcing THE END. But to be sure you don't get away without some embarrassment, there's a flashing, eerie-sounding nuclear whoosh that proclaims your failure.

Also Atari has made a feeble attempt to get the player to believe he is defending not the good old USA but rather some silly planet somewhere called Zardon. "Zardon is the last of the peaceful planets," Atari's Missile Command pamphlet explains. "The Zardonians are skillful and hard-working people. Their cities are built-up and rich in resources. It is truly a planet void of crime and violence."

Still, Atari advises, the Zardonians are no pacifistic pansies ready to hand over the keys to their "built-up" cities to any punk with a few missiles in his pocket: "Zardon has built a powerful defense system. Several antiballistic missile bases have been established within the cities of Zardon."

The virtuous but macho Zardonians are supposedly under attack not from Moscow but from some phony planet known as Krytol. The Krytolians are mean mothers: "Aliens from the planet of Krytol have begun an attack on the planet Zardon. The Krytolians are warriors, out to destroy and seize the planet of Zardon.

"As base commander," the pamphlet continues, "it is your responsibility to protect and defend six cities on the planet of Zardon. The Krytolians have begun firing interplanetary ballistic missiles. They are aiming at your cities and missile bases. Your only defense is to fire back with antiballistic missiles. But watch out, the Krytolians are sly, they also have cruise missiles."

So, if the player chooses, he need not believe he is defending the United States and need not feel, at the end of the game, that his whole country has been blown to bits due to his incompetence. But really! Do you *believe* this stuff about "Zardon" and "Krytol"? Of course not. These are phony planets with phony names. Any honest player will readily admit the six cities of VCS Missile Command are exactly the same six that millions of patriotic US citizens have defended in the coin-op version. These six cities are inhabited by red-blooded, cola-drinking, baseball-playing Americans, not just a bunch of funny-looking green aliens who might as well die in the first place.

So you're still protecting the US. You can stretch things a little and say it's NATO if you're in Europe or pro-West Asia if you're in Japan, etc., but forget this Zardon stuff. And since you're defending the West, logically it's the Russians who are again your opponents.

Just like in the coin-op game, you not only defend your nation, but you also run up points. For the attackers and possessions that exist in both games, the points are the same:

Device Destroyed

Smart (or Dumb) Missile	125
Attack Missile	25

Possession Saved

City	100
Defense Missile	5

For the player already experienced in coin-op Missile Command, a good score in game one (there are thirty-four games, actually variations, in all; except for game seventeen, which is for children, game one is the easiest, but still is tough) is 30,000 points.

Here are the key differences between coin-op and VCS Missile Command and strategies and techniques for dealing with these differences.

REGULATION VCS-001: Fonda and Reagan Have Abandoned Mays In coin-op Missile Command there are three bases, known in this book as Jane Fonda (left), Ronald Reagan (right), and Willie Mays (center). In the home version only the middle base remains. Also, though it's fast, it's not as fast as it was in its coin-op days.

You get thirty missiles, the same as in coin-op. The difference is that all of them are fired by the single base. You start with ten. When these are exhausted or blown up by the Soviets, ten more are transferred from a nearby silo. You don't have to make a phone call or anything: They just *materialize*. When these ten are gone, a final ten are supplied. What all this means is that strategy is simplified. There is no more careful choosing of which base to use. Also, you need to protect only one base. Unfortunately the player gains the advantage of simplicity by giving up the blinding speed of the coin-op Willie base and by losing the greater proximity to left and right attackers provided by Jane and Ronnie.

REGULATION VCS-002: Bye-Bye Ball, Say-Hey Stick Cartridges for each home video game must be playable with few, if any, modifications of the expensive system the player has purchased. The Atari VCS unit comes with two controllers, each of which has a joystick and a button. The company would have had to charge players a large amount to provide them with a Trak Ball as used in the coin-op version of Missile Command. So the VCS game has been adapted to use the joystick instead.

Operating the joystick is simple: Move the stick forward, back, left, right, or in one of the four diagonal directions between these to move the cursor on the screen in one of eight directions. (The cursor this time, by the way, is a flashing dash instead of a stable cross.)

While the joystick works easily, it is not nearly as quick and precise as the coin-op Trak Ball. With the ball, the player can move the cursor in any angle. With the stick, however, to reach any point that is not exactly in one of the eight directions of the joystick, the player must move the stick in at least two different angles. So speed is reduced.

Precision is decreased because of the limited data space in the single silicon chip that programs the game. Even as a relatively complex home game, Missile Command has only 4,000 bytes of computer-coded information, about a third of the bytes in its coin-op parent. As a result, the VCS cursor cannot move to abso-

lutely every tiny point on the screen. More importantly, precision is also reduced by the joystick. Most players find that just touching it moves the cursor quite a distance. It therefore often takes several pulls back and forth to move the cursor to the desired area, and getting the cursor *exactly* where one wants is next to impossible during the fast action of the game's more challenging phases.

To compensate for the difficulty in placing the cursor precisely where desired, an effective strategy is to *press the fire button while the cursor is in motion and when it is passing an ideal target position*. Your cursor leaves target marks and then explosions, like a plane leaving aerial mines in its wake.

REGULATION VCS-003: No More Matchbooks In coin-op Missile Command one explosion can touch off another, so that a single, well-placed ABM can ignite several blasts that together destroy a half-dozen creepy attackers. In the VCS version there are no chain reactions: To meet its maker, an enemy device must enter the explosion of an ABM. The device cannot be destroyed by a secondary explosion of one of its fellow attackers because when an enemy device is destroyed it does not explode.

It therefore becomes even more important than in coin-op Missile Command to blow up as many attackers as possible with each ABM explosion. So the player must continue to lead his enemies like a quarterback leads a receiver. But, in choosing his targets, there is no longer any reason for the player to take into account the possibility of exploding additional devices that cannot be reached by the blast of the ABM itself.

Because each missile can no longer use the matchbook effect to wipe out many enemies that may have been missed by previous ABMs and because targeting takes more time than in the coin-op game, it is more important than in the coin-op game that each missile launch be as carefully selected and as accurately targeted as possible.

REGULATION VCS-004: Bombers, Sputniks, and MIRVs Retired from Service Also due to limitations in the amount of information on a silicon chip, planes and killer satellites have not been included in the home version of Missile Command. For the same reason, single enemy missiles no longer split into multiple ones (MIRVs). These are additional factors simplifying the task of the home player trying to defend his country.

REGULATION VCS-005: Only Three at a Time, Please Coin-op Missile Command allows so many ABM shots to appear at once—eight—that the player rarely notices there is any limit. The limit can't be missed in the VCS edition: It is *three*. Once the player has fired three shots, he cannot fire again until at least one of the resultant explosions has ended.

Still, this limit can be seen as an advantage in that it makes the game more challenging than it otherwise would be and therefore helps balance other differences that make the VCS game in some respects easier than the coin-op one.

The limit of three missiles is yet another factor requiring the player to choose shots more carefully than in coin-op and to shoot more accurately: *It is no longer possible to spray missiles across even half the screen and it is no longer possible to miss a lot of shots and still do well.*

But here's a bit of good news: Your defensive missile explosions are bigger than in coin-op, so you can more easily wipe out one or more attackers with your ABM blast.

REGULATION VCS-006: A Video Ocean with Fewer Waves In coin-op Missile Command the game gets harder with every attack wave through the eighteenth, after which it remains at the most difficult stage. In the VCS program the worst wave is number sixteen, and all succeeding waves are equally hard. The toughest coin-op waves are more brutal than the worst ones in VCS—more total attackers plus bombers, Sputniks, and MIRVs—but the limitations of the VCS controls make the worst VCS waves at least as hard to handle.

REGULATION VCS-007: Pity, Pity, You Can Lose Every City Despite its relative simplicity, VCS Missile Command is no generous, kindly game. It has its own vicious ways that compare with the worst crimes committed by its coin-op predecessor. Of all its vile characteristics its most devastating is its ability and willingness to wreck every one of your cities in a single attack. You can begin an attack wave with as many as six cities and end it with precisely zero. In coin-op Missile Command, of course, you can't lose more than three at once.

This means, among other things, that in the home version you can never relax once you've lost three cities: The remaining towns are no longer immune from attack. So you no longer can

redirect all your defensive attention to amassing maximum points by protecting only your missiles and blowing up the attackers.

REGULATION VCS-008: You Have a Choice—Arsenic or Cyanide The biggest entertainment advantage of home games over coin-ops is that they present the player with a wide variety of options. In Missile Command these options let you choose how you want to get destroyed. Considerate game, isn't it? The manual that comes with your cartridge tells you how to inform the executioner, the home video unit, of your choice. The easier options, of course, are a good way to get used to the cartridge. As you improve, you can increase the game's difficulty.

Choice A: Smart Bombs or Dumb Ones: You can select bombs that, as in coin-op Missile Command, annoyingly sneak around your defensive explosions or you can opt for bombs that stupidly keep falling toward their target even though you have ignited a fat explosion right in their path.

Choice B: Cursor as Ferrari or Cement Truck: You can choose the ability to move the cursor the standard distance with a given movement of the joystick or the ability to move it twice as far (and therefore twice as fast) with the same motion. But there's a trade-off here: Moving twice as fast means you move with about half the precision.

Choice C: The Time Machine: In coin-op Missile Command you must always start with attack wave one. This can get a little boring for the ace player who is not challenged until, say, the tenth wave. In VCS Missile Command, however, you can choose to move into the future, starting at wave seven, eleven, or (if you're crazy) fifteen.

Choice D: Missiles That Fly Versus Missiles That Crawl: Cursor quickness is not the sole speed option. You can choose the normal speed for your defensive missiles or you can elect to have them move at only half this velocity. To balance a game between players of varying ability, the stronger player can use slow missiles while his opponent fires fast ones.

REGULATION VCS-009: Know Your Numbers The number of ICBMs and bombs (smart or dumb) is fixed for each attack wave. You will play better if you know what's coming: You can ready yourself to use the defensive techniques appropriate to the attackers still to come. Also, knowing how many more of each

type of enemy device to expect, you can efficiently budget your remaining missiles.

Here's what happens, wave by wave:

Wave	ICBMs	Bombs	Wave	ICBMs	Bombs
1	12	0	9	13	3
2	15	0	10	16	4
3	18	0	11	19	4
4	12	0	12	12	5
5	16	0	13	14	5
6	14	1	14	16	6
7	17	1	15	18	6
8	10	2	16	20	7

& add'l

And don't think because one wave has fewer devices than a preceding one that you get a breather here and there. You must remember that waves not only generally contain more and more devices, *they also get faster and faster*. Waves get so tough, in fact, that Atari didn't have the heart to tell you that there are such things as waves fourteen through sixteen that are meaner than waves one through thirteen: "Wave 13 is the most difficult wave in this Game Program Cartridge," the pamphlet says.

Well, this book may frighten you, but at least it tells you the raw truth. But why are you still looking at this book? By now you've read what you must know to intercept the nuclear invasion from the East, to defend the Statue of Liberty and the St. Louis Arch and the Golden Gate Bridge from atomic destruction. And now—that noise!—it's the air raid siren! Get to your video bunker! The Russians are coming! The Russians are coming!

• PAC-MAN

Pac-Man, introduced by Atari in March 1982, is similar in appearance and play to the Namco/Midway coin-op monster of the same name. The coin game is the biggest seller in US history, and so the home version will do very well. In fact, it may displace Asteroids as the monthly sales leader among the many Atari cartridges. The game uses the standard joystick controller.

Despite its similarities to the coin-op game, home Pac-Man is

harder. The biggest difference affecting difficulty is that the Pac-Man now can no longer escape from Monsters that barely touch him: now the slightest contact is lethal.

One point that should be made, however, is that although home video Pac-Man is just as much a "pattern" game as the coin-op Pac-Man, the patterns that were so successful on the original machine are utterly worthless in the home edition. But don't despair: When the glorious GET Brothers—who invented the awesome Pac-Man patterns printed in this book—started playing coin-op Pac-Man, they had no patterns at all. They *invented* them. All across America, in fact, players invented their own patterns, many of them highly effective. You can do the same with home video Pac-Man. In the long trial-and-error process you must undertake, at least it won't cost you a quarter a game.

• DEFENDER

Atari's cartridge for June 1982 is the one every deadly-serious coin-op video star who has a VCS console would most want to add to his home game library. Atari's June 1982 cartridge is called Defender.

This game demonstrates more clearly than any words can explain that although Atari's console is limited by 1977 technology, its cartridges can still improve as time goes on. Defender quite simply is a quantum leap above the early VCS cartridges and may well be the finest home game the company has produced. Considering the limitations of home game technology, Atari's Defender is an astonishingly faithful replication of 1981's number one coin-op game.

The similarity between the Williams arcade game and the Atari home cartridge is so great that to know most of the strategy for handling the home game you simply (perhaps *simply* isn't quite right—coin-op Defender is *very* complex) must remember the strategy explained in the extensive previous chapter on the coin game.

All your old "friends" are back to greet you: Landers, Bombers, Pods, Swarms, Mutants, and Baiters. And you get Humanoids to protect and shots and Smart Bombs with which to protect them. And you get a Scanner to view what's happening in the area off your main screen.

Changes in Appearance and Controls

Still, there are some differences. Instead of mountains and valleys, the bottom of the screen is made up of the buildings of a city.

Atari programmer Bob Polaro has done an impressive job of compressing the entire, five-button, one-lever coin-op Defender control panel into the compact Atari Joystick Controller. To move your ship up or down, you push the joystick forward or back. The joystick also moves your ship left or right, and when you change directions it reverses the ship so it's pointing in the direction it's going. To fire shots, hit the red action button. To hyperspace, ascend to the very top of the screen, then press the action button. You will go into Hyperspace, returning somewhere on the screen. If it's time to detonate a Smart Bomb, drop your ship below the city skyline and press the button: All enemies on the main screen are wiped out.

Changes Affecting Strategy

There are also changes in the behavior of objects on the TV screen:

- The number of enemies on the main screen cannot exceed eight.
- When you return from Hyperspace, you are never destroyed due just to reentry, but you still can be destroyed if you land right on an alien.
- You begin with just five, not ten, Humanoids, but only one at a time can be attached to any other object. So if a Lander is pulling a Humanoid upward or if your ship has saved a Humanoid and is carrying him along, no other Humanoid can be snatched. (The implication for strategy is that if you want to keep Humanoids from being abducted, let one get grabbed by a Lander, shoot the Lander, then hang on to the Humanoid and don't let go.)
- You cannot intentionally or accidentally shoot Humanoids dropping from the sky or standing on the surface. (So much for the expert coin-op strategy of shooting all but one of your own men in order to keep them from turning into Mutants.)
- When you lose all your Humanoids, the world blows up, just like in the arcade game. But, unlike the case in the coin-op machine, in VCS Defender the planet is *never restored*. This of course makes it even more important than in the coin machine to

save your Humanoids from being turned into Mutants: When the last one is taken and transformed, you're out in space forever.

Choices, Choices

Perhaps the biggest difference between the Defender you play at the pizza parlor and the Defender you play in your living room is that the home video game gives you many variations of the game from which to choose. There are ten different one-player games and twenty different two-player games. In addition, placing the console difficulty switch in the "A" position makes your ship's ascent and descent speed slower than when the switch is in the easier "B" position.

The Ultimate Test

Given the limitations of hardware and software in its VCS console and cartridges (which, after all, cost a tiny fraction of the price of an arcade game), Atari, before the introduction of its home video Defender, had already produced admirable versions of coin-op hits in its Space Invaders, Missile Command, and (to a lesser extent) Asteroids cartridges.

But excellent as these other arcade-born games have been, none ever has seemed so close to the coin-op version that it could be confused with it. But Defender, at least for the author, passed that demanding test: While playing one of his first games on a sample cartridge of VCS Defender, he for a brief moment actually thought he was playing the awesome monster from the coin-op arcades.

• BREAKOUT

This game is the home version of Atari's successful 1976 coin-op machine of the same name. It requires the skills basic to games such as Atari's coin-op and home video Pong, Exidy's coin-op Circus and Atari's home video Circus Atari, and Odyssey's Blockout! and Breakdown!: all games where the chief challenge is to move a thick line segment of one sort or another into position so that a moving object (ball, clown, and so forth) will bounce off it rather than zip by it.

In Breakout you use an onscreen paddle to cause a ball to re-

bound against a multicolored wall, breaking away blocks of it. The climax—really quite a joy for a player who has lost game after game before getting to this stage—comes when the ball breaks all the way through the wall and then bounces up and down between the top of the screen and the top of the wall, creating a noisy windfall of high-pitched electronic tones, broken blocks, and accumulated points.

Here the Paddle Controllers must be used. Turning the knob to the left moves your paddle left; turning it to the right moves the paddle in that direction. Despite statements in the cartridge pamphlet (which gets things backward), a difficulty switch position of "A" shrinks the paddle to three quarters the size of the "B" paddle, making it harder for the player to hit the ball. There are twelve variations, including four of Breakthru, in which every ball reaching the wall crashes all the way through.

Tips

The game is fun but takes practice.

If you're playing a one-player mode you should, in order to maintain your rhythm, "serve" right after losing a ball.

You should aim at weak spots in the wall: spots where damage is already in progress. You can aim because hitting the ball on the left side of the paddle will make it go left and hitting it on the right will make it go right. Moreover a ball striking the paddle in the center will go straight up, while balls rebounding farther toward a paddle's edge will fly up at smaller angles from the paddle surface. As noted in the pamphlet, the angles become smaller and smaller after the third, seventh, and eleventh hit, then return to normal after the twelfth.

• ADVENTURE, CIRCUS ATARI, AND VIDEO PINBALL

All three of these games are popular, but all will be treated cursorily, each for a different reason.

Adventure

This game is so complex that a thorough treatment would require more space than is appropriate for a game that is not one of

Atari's superstars of sales. Take a look at the detailed instructions in the pamphlet that comes with the cartridge and you'll get the idea. The game is at least loosely based on the cult-game phenomenon Dungeons and Dragons. It has mazelike pathways, dungeons, dragons, and both good and bad magic. For this and other reasons it is a video game quite unlike those most players are accustomed to seeing.

Circus Atari

Circus Atari is very similar to Exidy's coin-op game Circus (1978) and certain other arcade games. In all these games you operate a seesaw with a clown standing on the end. Another clown falls from the air, and you try to position the seesaw so the falling clown hits the unoccupied end of the seesaw, sending his colleague skyward. Points are scored each time a clown hits the seesaw (rather than missing and consequently squashing his head on the floor), and lots of points are received as the clown gets high enough to pop the colored balloons that run back and forth in three rows at the top of the screen. There is little to say about this game except that you must learn through experience to get the seesaw in the right place at the right time and then to get good enough that you can take advantage of the fact that the nearer the edge the clown lands, the higher he will send his associate.

Video Pinball

Video games can't be played on a pinball field, and pinball can't be played on a video screen. This is a pale version of Atari's 1979 coin game of the same name. The quality of play is similar only to the least creative pinball machines, and the game lacks the feel, gleam, metallic clatter, and raw reality that are the essence of pinball.

• BOWLING

KQB, the technical adviser on this book, sums up Atari's bowling cartridge: "This game is pretty realistic; it's almost as boring as real bowling."

Therefore, if you like bowling, you'll like this game. If you think

bowling is boring, you'll play this cartridge once and then use it as a paperweight.

You play this game with the standard Joystick Controllers. Flipping the difficulty switch from "B" to "A," Atari says, "makes it more difficult for you to roll strikes and spares" (it does not explain how). There are six variations: one and two player versions of a game where the ball can be rolled straight, a game where the ball will curve moderately, and a game where the ball's path can be varied even after release.

You control a little man who rolls the ball. The left player's bowler has a light blue shirt and the right player's man has a green one. Pushing the joystick away from you moves the man to the left on the alley (upward on the screen); pulling the stick toward you brings the man to the right. Pressing the button releases the ball. Ten pins wait at the end of a narrow alley.

If you get a spare, the man's shirt and pants flash on and off (just like in real bowling) and he jumps up and down and squeals. If you get a strike, the little fellow leaps four straight times.

The game is somewhat unrealistic in the way the pins fall and in the limited variety of splits that occur.

Tips

In determining the position of the bowler, realize that, when the ball is released, the bottom of the ball will be at the same level as the bottom of the little man's shoes.

A bowler position that often, but not always, results in strikes (in the straight ball games) is one achieved by first locating the bowler so the very top of his head is as close to the top line as it can be without touching it or being above it, then lowering the man the smallest possible distance (just *touching* the joystick), then lowering him that tiny distance twice more.

• INDY 500

This is a third-person car racing game. You drive a car without sitting in it. Of the fourteen variations (they range from normal racing to a game where you try to crash into a moving box to an ice-racing competition) most require the player to complete as many laps as possible of a simple and unchanging course.

The separately purchased Driving Controllers are needed for this game. Difficulty option "B" results in slower cars than option "A."

Tips

Due not to geometry but to the nature of this particular game, the fastest route is not the shortest—which would require all right-angle turns—but the slightly longer course you take if you steer your car smoothly in a diagonal direction at each turn.

This is a very enticing game for players who like to cheat. You don't have to go around a whole lap to get a whole lap's credit. All you have to do is cross the start/finish line, then cross the invisible extension of this line halfway around the track, then cross the starting line again. You can do this not only in the normal, honest way, but also by running through the barrier at the center of the course. Or you can try this: First, from the left side of the starting line, you go straight down, moving offscreen. Coming back on the top, you steer down, to the right, and up, through a "U" path, crossing the invisible line and driving right off the top of the screen, returning on the bottom to the right of the starting line. Once there, you drive in an upside-down "U" pattern, crossing the starting line and continuing off the bottom of the screen yet another time.

Fortunately cheaters do not generally prosper in Indy 500: You can drive off the course, but only at a slower than normal speed. So the nice guy does not usually finish last in this video game.

• NIGHT DRIVER

This is a very strong home video game and a very faithful adaptation of the Atari coin-op star of the same name. A previous chapter describes the coin version, which was the first sit-down game in video history. Both Night Drivers are first-person games: You feel like you're in the car.

Here the player uses the Paddle Controller to speed and steer his race car through an endless series of short white pylons that mark a night racing course. The red button on the side of the controller is your accelerator; the round knob is your steering wheel.

Although the game lacks the realistic steering wheel of the coin machine, it adds green trees, white houses with red roofs, and cars speeding in the opposite direction. If the difficulty switch on the left side of the console is placed in the "B" position, the approaching cars honk an instant before they appear on the screen. In the harder "A" position their horns are disconnected. On the right side of the console a change from "B" to "A" increases your car's speed.

Tips

The oncoming car is always in the opposite lane.

Take care to avoid oversteering.

In your early games, slow down coming into turns.

Crashing reduces your score: Each collision delays you for two seconds.

The tracks in all variations except numbers four and eight are identical game after game. So you can pick a track and memorize its curves and straights.

• VIDEO OLYMPICS

This cartridge is not one of Atari's most popular, and for good reason. Although all other Atari games covered have been among the company's sales leaders, this one must be covered in the name of consumer protection. The cartridge is called *Video Olympics* and purports to have fifty different games in one, namely various types of Pong, Super Pong, Soccer, Foozpong, Hockey, Quadrapong, Handball, Volleyball, and Basketball.

In fact the games in this cartridge are about as similar to the true diversity, athletic excellence, and thrills of the Olympics as the Des Moines City Council is like the United Nations. And there aren't really fifty different games, or even fifty distinct variations. Instead of presenting various modifications of nine different games, all this cartridge gives you are (1) Pong, (2) Son of Pong, (3) Grandson of Pong, (4) Great-Grandson of Pong, (5) Great-Nephew of Pong, (6) Sister-in-law of Pong, (7) Next-Door Neighbor of Pong, (8) Co-worker of Pong, and (9) Some Weirdo on the Subway That Pong May Have Brushed Shoulders With.

If you like Pong, fine. Buy this cartridge and play Pong, Pong, Pong. But don't expect most of the other "games" in this car-

tridge to be much different or even to be any good. When the author and the technical adviser had finally finished an hour and forty-four minutes of trying one or more variations of each of the nine Pong-style games in this so-called Video Olympics, they felt like they'd just finished a marathon or completed a slow reading of the Budapest phone directory or been through hazing in a college fraternity run by a campus's leading nerds.

So-called "Volleyball" (actually Pong) and so-called "Basketball" (actually Pong) came at the end of the session and were also weaker than any other "game" within the cartridge. As a result they were received with special verbal abuse.

Mattel's Intellivision

At the end of 1979 Mattel introduced Intellivision and twelve video game cartridges. Mattel said the new product was "Intelligent Television." This claim stemmed largely from plans to market a compatible computer keyboard that would use cassettes.

The keyboard finally came out more than a year later than planned: in late 1981, and then only in severely limited quantities. It retails for between \$500 and \$600. The nine original cassettes include video games as well as programs for financial management, education, and physical fitness.

Mattel's serious video game effort, however, remains the "Master Component" console that can be bought and used by itself or can fit into the keyboard module. With the recent introduction of about six new cartridges, the number in the Master Component library now stands at about twenty-five.

All of these Intellivision games can be played with the two hand-held controllers that come with the console. Each controller is a thin panel that has twelve gold buttons near the top, two black buttons on the left side and two on the right, and a gold disc near the bottom. Durable, colorful plastic cards are provided with each cartridge and are inserted over the twelve buttons to customize them for the particular game being played.

The disc has sixteen positions, twice the positions of the joysticks from Atari and Odyssey. Rather than turn it, you push the disc down at one point or another to move a screen object in the desired direction. With more positions comes greater precision of movement but more difficulty in obtaining the exact angle you want (by pushing at one point on the disc): Often you will get a different angle directed by a nearby disc position. The fact that the disc has no markings makes control particularly hard.

What is not hard is deciding which of the big three video manufacturers has the best graphics: the most realistic pictures of people and objects and the most realistic movement of those pictures. Mattel wins by a landslide. The people of Intellivision



INTELLIVISION™ INTELLIGENT TELEVISION—MATTEL ELECTRONICS is entering the market with its new INTELLIVISION™ Intelligent Television home computer system. When the system's Keyboard Component (available in 1981) is combined with the compatible Master Component (currently available), it forms a complete center for family entertainment, education, personal improvement and financial management. (Components, cartridges and cassettes each sold separately).

video games look more or less like people, while those of its competitors look more or less like robots or salamanders.

Intellivision's strength is sports. In late 1981 its top lifetime sellers were, in order, NFL Football, Space Battle, Major League Baseball, US Ski Team Skiing, Sea Battle, and NBA Basketball. Other sports cartridges include Tennis, NASL Soccer, PGA Golf, NHL Hockey, Auto Racing, Boxing, Horse Racing, and PBA Bowling. Every one of Mattel's sports cartridges is dramatically superior to cartridges for the same sports by Atari and Odyssey.

On the other hand Intellivision's weakness is in the space games that have dominated both the coin-op arcades and the sales of Atari cartridges. Mattel's only space games are Space Battle, Astromash, and Space Armada. All have strong graphics, but graphics are not nearly as important in space games as in sports games. (For one thing who knows what an alien attacker is supposed to look like?) The games are adequate, but are not the equal of Atari's Space Invaders or Missile Command.

Mattel's sports cartridges are strong not only in their realistic pictures but in the relatively precise control offered by the six-

teen-position disc and in the (relatively) realistic play—from movement to rules—of the games themselves. But the disc, which requires precise movement by the player, and the complexity of games that are realistic make the Intellivision games much harder to learn than the simpler, less realistic sports cartridges from Atari and Odyssey. James Young, a thirty-three-year-old Bank of America computer analyst who likes Mattel's sports games so much and is so uninterested in space games that he bought an Intellivision console and sold his Atari system, says it took him *five hours* with the Mattel football cartridge to get used to calling plays and controlling the players. Atari's Football, he says, took him only a matter of minutes.

The Intellivision cartridges that will be covered here are its three sales leaders—NFL Football, Space Battle, and Major League Baseball—as well as the cartridge that comes with the console, Las Vegas Poker and Blackjack.

• LAS VEGAS POKER AND BLACKJACK

Because everybody who buys an Intellivision console has a chance to play this cartridge, it must be covered. Still, there isn't much to say about it once you've said that it presents video game versions of five-card draw, five- and seven-card stud, and blackjack.

Like Atari but unlike Odyssey, Mattel provides blackjack and poker in the same cartridge (Odyssey has no poker game in any cartridge). The graphics are a little more attractive than those of the Atari and Odyssey gambling card-game cartridges, and the numbers and suits on the cards are much easier to read than those of Atari.

All three of the cartridges operate by gambling rules similar but not identical to the most typical house rules of Nevada. Particularly realistic in the Intellivision poker game is the opportunity to "split pots": When one player has insufficient funds to "see" a previous bet, other players can split the original pot, betting as much as the low-funds player in one pot and betting against each other in a second one.

As in the games from the other companies, players are dealt cards and then asked by the screen what they want to do: "HIT?" and so on. Here, in addition to the words on the screen, there is a shifty-eyed dealer at the top who looks reasonably similar to the

more worldly-wise card shufflers of Vegas and Reno. As in the other gambling cartridges, cards are periodically shuffled with sound effects that are moderately realistic.

Tips

The Intellivision blackjack dealer, like the invisible dealers of Atari and Odyssey, shuffles only every once in a while, not after every hand. Therefore you can count cards to improve your chances. And, unlike the employees of Nevada casinos, the little video dealer won't throw you out of the building for using this time-honored technique.

• NFL FOOTBALL

This cartridge, as of late 1981, was the leading lifetime seller of all the Intellivision cartridges. It is a noble video effort to replicate the plays and action of what has now become the true national pastime.

This game is sufficiently complex that with each cartridge Mattel provides a twenty-four-page instruction manual plus two fold-out eight-page *Playbooks*, one for each player. To underline the relative simplicity of the far less-realistic Atari and Odyssey football cartridges, it should be noted that Atari provides just a six-page fold-out instruction booklet and Odyssey furnishes a manual of only ten pages.

The complexity of this cartridge is also illustrated by the fact that to choose and execute a pass play, you must make at least *ten* moves. You must press key "9" (pass play), press a numbered key determining your formation, press a numbered key to choose your intended receiver, and press a fourth numbered key to select the zone into which you will throw. Then you must press the Enter key, push a Hike button on the edge of the controller to center the ball, then must touch the disc in two different places to make your quarterback first drop back and then aim his pass; to release the pass, you must push a button on the edge of the controller. Finally you must touch the disc again to move your receiver into a position where he can catch the ball.

You can pick one of four levels of play for this game, namely "high school," "college," "semi-pro," or "pro." Each level is faster than the previous. "Remember," the manual says, "faster

playing speed means *everything* is faster—running, passing, tackling, etc. At Pro Ball speed, your reactions will have to be very fast.” Quite true.

You get five players on a team. The home team is orange, the visitors light blue (it could be Denver against Dallas at Mile High Stadium). Each human player controls one player on each team; the rest are robots. Don’t worry: The robots have all been trained by Bear Bryant and play very solid, fundamental football—better football, in fact, than you are likely to get out of the single player you control. They also never ask to renegotiate their contracts.

Realism in the Mattel cartridge is enhanced by a field that is a full one hundred simulated yards long (twenty yards seen at a time) and by the fact that you get four downs in which to make ten yards. Atari has just a bunch of stripes of indeterminate yardage; Odyssey has a ninety-yard field; and both Atari and Odyssey require you to make a *touchdown* within four plays.

There are many other features that make Intellivision NFL Football amazingly realistic for a video game. There are 160 offensive plays and nine defensive formations. There are four fifteen-minute quarters; after each quarter the teams automatically jog in opposite directions in order to change sides. If a ball carrier goes out of bounds, a whistle blows and the clock is stopped. Each team gets three time-outs per half. You can run, pass and punt. You can score touchdowns (all seven points, no conversions), field goals, and safeties. Both teams huddle before each play. The crowd cheers. About all that’s lacking is pompon girls.

Tips

Take plenty of time (hours, not minutes) to familiarize yourself with the controls—which must be precisely used and carefully coordinated—as well as with the eighteen basic offensive and defensive formations and the nine passing zones that help turn the nine offensive formations into 160 plays. Start out at the easiest level (“high school”). Don’t plan on slapping in the cartridge and playing like a Heisman Trophy winner in five minutes.

Employ strategies similar to those that real coaches and quarterbacks use. You may want generally to follow traditional methods: Establish the run, don’t pass from deep in your territory, and so on. But you may also want to surprise your opponent by occasionally taking the risks associated with the more exciting teams—like throwing the bomb on first down from your ten-yard line.

If you want to retain a run-pass option, choose a pass play. You can always make your quarterback run instead of pass, but if you choose a running play, passing becomes impossible.

• SPACE BATTLE

Mattel doesn’t specialize in space games, but this is a strong one. It has significant similarities to the coin-op hit Tailgunner. Both are first-person games, where you feel like you’re in a space fighter rather than just controlling one, and in both games your shots fire right out from you, rather than from some ship on the screen.

As in the Intellivision football cartridge, you can select one of four speeds of play. Once you have made your selection, your TV screen will become a radar screen. In the center, inside an oval of dots, is the Mother Ship. Arrayed around it, some distance away, are five Alien Squadrons. Each is a different shape and each contains a number of dots, with each dot signifying the approximate number of enemy fighters in the squadron (there are often around fifteen).

Your mission is to keep the enemy from getting its filthy hands on your mother (Freud would have loved this cartridge!). To defend Mama you have three squadrons yourself: a blue one, a white one, and a gold one. Each good-guy squadron contains three fighters.

Your press the Alien key on your controller overlay until the enemy squadron you want to attack changes color to reddish brown. Then you press another key to assign a specific friendly squadron to fight off the chosen group of enemies.

Finally, to really get into action, you press the Go to Battle key (calm down, all the details are in an eleven-page manual Mattel gives you). This switches you to a “cockpit close-up view.”

In this view there is a pair of green semicircles that make up an oval cursor, or targeting device. You fire laser shots toward the cursor by pushing any of the four buttons on the sides of the controller. Blue alien fighters, which look sort of like airborne tanks, fire at you. Their shots look like two red hyphens in a row. If either hyphen hits your green cursor, you lose a ship. If your fire strikes an enemy fighter, the fighter is destroyed.

When either your squadron has wasted all members of an enemy squadron or the enemy has wiped out all fighters in your

squadron, the radar screen will automatically return to the TV screen. During the time of your close-up battle, the enemy squadrons you have not engaged will have inched closer to the Mother Ship.

You must nail all five enemy squadrons before they severely damage the Mother Ship either by getting it before you arrive to protect it or by eliminating all three of your fighter groups and then firing on the now-defenseless ship. If you get the enemy before they get your mother, Mattel gives you a little victory ceremony: "When all five alien squadrons have been destroyed, you will automatically be returned to the Radar Screen. You will hear a VICTORY HORN. Computer will print out an ALL CLEAR message. Game is over."

Pretty thrilling, huh?

Tips

As with other Mattel games this one takes a lot of practice before you know all the rules and can master the controls.

You must take special care to aim your shots not where an enemy fighter is but where it *will be*. Leading your target is more important in Space Battle than in most games where targets must be led.

Fire almost continuously: Enemies will often move into your line of fire.

Experiment with varying numbers of fingers on the controller disc to determine which set gives you the most control.

Carefully study the pamphlet that comes with the cartridge: Among other information, it contains nine useful guidelines on strategy.

• MAJOR LEAGUE BASEBALL

This game is about as realistic as Intellivision's extremely realistic NFL Football, but is less complex. This game is simpler primarily because, at least on the surface, baseball is a simpler game than football (one important reason being that in baseball there are relatively few plays).

In this nine-inning video game the home team is blue and the visitors are red. Maybe it's the Dodgers against the Red Sox in

the Series. There are four speeds, from Spring Training to Major League Speed.

You get nine men, who look more or less like people. They are represented both on the field and on the plastic overlay you slip onto your controller. In fact, to throw the ball to any defensive player, you push down on the player's picture on the overlay. When you're up, you push the upper of either the left- or right-side buttons if you want to swing away. To bunt, you push one of the lower buttons. When you swing away, you can, by timing your swing, pull the ball or hit to an off-field.

The gold disc is used at various times to pitch, to move runners forward or backward along the basepaths, and to send defensive players running after a hit ball.

Like the Intellivision football cartridge, this game has many features that help make it realistic. There are sound effects: the bat hitting the ball, the bat *missing* the ball, the umpire croaking "Yer Out!" and the cheers of the crowd. There are no fly balls, hit batters, wild pitches, passed balls, or balks. And you can't send in a reliever for a starting pitcher who's getting shelled. But there are singles, doubles, triples, home runs, walks, stolen bases, strike-outs, force-outs, double plays, and triple plays. The pitcher has a big-league repertoire: fastballs, fast curves, slow curves, outside curves, inside curves, and change-ups, all determined by positions on the disc. The pitcher can also pick off a man who has led too far off a base. There are even pitch-outs (the pitcher throws to the catcher, who steps in front of the plate to catch the ball and then fires it to second or third to nail a would-be base stealer). You can even catch a base runner in a rundown. For home video game players who are weary of sports cartridge boxes with flashy, realistic pictures on the box and then a screen full of tramping, two-legged hippopotamuses playing some game only vaguely like the real thing, this cartridge (and any other Mattel sports cartridge) is a pleasant relief.

After each half-inning the team that was in the outfield runs back to its dugout and is replaced by the team that was at bat. The crowd cheers.

Tips

As with other Intellivision games, this one takes some study and some practice. Carefully read the pamphlet that comes with the cartridge and start out on the slow Spring Training speed.

Partly because of the realistic variety of options open to you, you can often succeed through sudden offensive and defensive moves that catch your opponent off-guard. So try stealing, picking off runners—anything that may be unexpected.

Where the cartridge allows, just employ good old traditional baseball strategy, such as taking risks when there isn't much to lose and "hittin' 'em where they ain't."

12

Odyssey, Odyssey²

Poor old Odyssey. Poor in quality of cartridges when contrasted to its two competitors. Old because it was the first company to bring video games to the home. In 1972 Magnavox introduced the game Odyssey. It was "dedicated": it provided several Pong-style paddle-and-ball games, but could not be "programmed" with a number of highly distinctive cartridges.

In 1978 Magnavox unveiled Odyssey², its entry in the programmable video game market. Now that system has more than thirty cartridges. Unlike its competitors Odyssey provides a keyboard as part of its console. In 1981 Odyssey began dropping the Magnavox name and now identifies itself as part of Magnavox's parent, NAP Consumer Electronics Corp. NAP is North American Philips, itself part of Philips Gloeilampenfabrieken of the Netherlands, the tenth largest company in the world outside the United States.

Despite its early entry into the programmable market and despite its parent's financial heft, the company, to quote *Fortune*, "never attacked the market with gusto." A highly placed Odyssey executive told the author, "North American Philips wanted to milk profits instead of reinvesting, but has reversed that."

But inadequate corporate willpower is not Odyssey's only problem. Market attack or not, Odyssey² is an inferior product. That doesn't mean none of its games are entertaining or challenging: Some are indeed competitive with those of Atari and Mattel. But typical high-ranking games from the Odyssey sales chart are simply not as good as representative leaders from Mattel and Atari. In a nutshell Atari's top games are better because they are home video adaptations of exciting and demanding success stories from the coin-op world, and Mattel's are better because both the objects on the screen and the capabilities of the games are much more realistic than Odyssey's.

About all that can be said in Odyssey's favor is that it (like Atari) is substantially less expensive than Mattel, that it offers the



Magnavox, the originator of video games, designed this computerized video game system to be complete. It's control center includes a 49 character alpha-numeric keyboard and two hand held controls. Most Odyssey² games have several skill levels to accommodate the younger or less experienced player. There are now more than 35 educational, sports and arcade games available for Odyssey².

fun, game capability, and computer-orientation educational advantages of a computer-style keyboard, and that it is beginning to venture—perhaps more seriously than its competitors—into video adaptations of board games. Its first, Quest for the Rings!—which comes in a special large box, complete with a folding game board and symbols to use on it—draws heavily on Dungeons and Dragons. It retails for as much as \$50.

Odyssey games differ from the others not only in general quality but also in variations available. Atari specializes in lots of variations for the great majority of its games. Mattel features games that emulate sporting events and therefore are not as appropriate for variations as the more fantasylike Atari cartridges. Odyssey, like Atari, offers a library full of both space and sports, but each cartridge has very few variations. Also, like Mattel, its console has no switch for varying the basic difficulty of the game or for permitting one player to play at a more difficult level than his opponent. (Mattel's controller allows a change in difficulty, but only for both players at once.) In addition Odyssey, more than its com-

petitors, tends toward games only for one player at a time, rather than games involving head-to-head competition or requiring cooperation.

This section will cover three Odyssey cartridges in some detail. These are Speedway!/Spinout!/Crypto-Logic! because it comes with every Odyssey console, and UFO! and Alien Invaders—Plus! because at last report these were the company's two hottest sellers. Also mentioned will be Computer Golf! to demonstrate just how bad Odyssey cartridges can get.

All the games require only the controllers that come with the console. Each has an eight-position silver-and-black joystick and a red action button.

• **SPEEDWAY! SPINOUT! CRYPTO-LOGIC!**

This is certainly the most diverse cartridge to come with the console of any manufacturer. Atari offers all sorts of Combat games and Mattel gives you a choice of Blackjack or Poker, but Odyssey provides two distinctively different types of driving games plus a word game.

Speedway!

This is a poor man's Monaco GP: a third-person driving game on a route of which only part is onscreen at a time. You drive a red Indy-style car on a blue track against yellow cars controlled by the computer. Unlike the coin-op Monaco (which, after all, costs well over \$3,000 new) there is no steering wheel, no accelerator pedal, no slick road areas, no narrowing of the road, and no night driving.

Tips Read other chapters on driving games in general and about specific driving games. This is a pretty basic driving game: Go as fast as you can without causing so many crashes that you don't go as far as more cautious driving would have taken you. Remember: Crashes take about two seconds each.

Avoid maximum speed until you get used to the game.

Spinout!

This game is much like Atari's home video Indy 500 and any other third-person driving game in which you maneuver a car around a track whose entire course is always on the screen.

For some reason when you hit a wall (only squarely, not diagonally) there is a crash sound, but if you hit another car there is a little beep melody. And when cars collide, only one spins.

Unlike the Atari game, Spinout! doesn't allow cheating by getting a lap's credit without driving a lap's distance. You can, however, get credit for a lap by driving from the starting line to the line halfway around the track and back again. This comes in handy if you want to collide with your opponent's car.

While the Atari game offers fourteen variations, this one has four: a clear track at slow and fast speeds and a "barrier track" at both speeds. The barrier track is identical to the simple, clear track except that four vertical lines partially block the backstretch.

Tips Though it will result in a slightly longer course, use diagonal routes when cornering. Using right angles causes small delays.

If you're losing to your opponent, you can employ the desperation technique of running into him. Only one car will spin; hope that it's his.

Crypto-Logic!

This is a scrambled word game with big, colorful video letters. One player uses the keyboard to tap in a word of up to fourteen letters. He presses Enter on the keyboard and the computer then scrambles the letters into a nonsensical order. ODYSSEY might become YESYODS. The other player then tries to guess the first letter, then the second, and so on. He does this by tapping the letter on the keyboard. If he's right, the letter will remain on the screen. If he's wrong, it will be displayed briefly and then disappear.

This game is fun, especially because it gives you a feel for computer use.

Tips If you don't know any words, learn some. There are thousands right here in this book; feel free to borrow a few.

• UFO!

Of the ten Odyssey cartridges that the author and KQB (the technical adviser on this book) tried, UFO! was KQB's favorite.

He and the author agree that this game could be at least a moderate success as a coin-op machine.

Here you command an Earth Federation Cruiser. The Cruiser looks like a flying saucer and "is armed with a laser cannon and protected by an energized force field." The Force Field is an oval series of dots, which are blue when the field is fully functional.

You fire the Laser Cannon with the action button on the controller. It fires in the direction determined by a single white dot in the Force Field. The white dot is oriented in the direction your Cruiser is moving or last moved. The joystick controls the direction of the Cruiser.

All over the screen are UFOs: colorful, little objects that look like fat asterisks or bits of Purina Cat Chow. They revolve slowly and float randomly. Sometimes two of these link together and begin to spin much more rapidly; this means they have become "hunter-killer" UFOs that go after your ship.

Then there's the Light-Speed Starship, which looks *literally* like a flying saucer: a saucer as used with coffee cups. These Starships are by far the chief threat among the three types of UFOs. Starships fire powerful missiles at your Cruiser. Very accurately.

Your Force Field will waste any UFO that comes in contact with it. But whenever a UFO touches the Force Field and whenever you fire a shot, this shield temporarily vanishes, losing all its power. It gradually starts up again. First it is more or less black and hard to see. Then it becomes blue again. It doesn't work at full power until almost fully blue. While your shield is recharging, your ship moves at only half its normal speed.

You cannot fire shots that go offscreen and return on the opposite side (wraparound shots). As the game continues, it gets harder due to a population explosion among the Purina-style UFOs. You get only one Cruiser per game, but you can always start over for free. When your ship is hit it's a sad but amusing occasion: The Cruiser spews out lots of little droplets or particles in three directions. The poor thing looks like it's sweating in frustration.

Tips

It's very hard to aim your shots. Instead of trying to target UFOs, it's better to run into them with your Force Field. If you want to use your laser, let the UFOs cross your line of fire: This is more effective than going after them. Also, firing into a crowd of ten reaps lots of victims. Still, KQB, speaking at least to players

who have not mastered the difficult art of aiming shots, says "Never fire."

Watch out for the Starship. He is *bad*. First he fires at you and blows away your shield, then he fires again and blows away you. Stay out of his range or waste him *fast*. Remember that the Starship fires only at 45-degree angles; your best move, therefore, is to get on a horizontal or vertical line with him, then *ram* him at maximum speed.

Use chain reactions: One exploding UFO will blow up another one right near it. Wait till UFOs come close to each other, then nail one and hope you start something.

When you're not sure your shield is totally back in business, don't barrel into UFOs. Instead gingerly run into them with just the edge of the shield. That way, if the shield isn't yet fully functional, your ship won't run into the UFOs and be destroyed.

Unless the Starship is on the screen, go after the Hunter-Killer UFOs first. They present more of a threat than the regular UFOs and provide more points when destroyed (three, contrasted to one for standard UFOs and ten for the tough Starship). Also, by leaving the regular UFOs alone, you give them a chance to combine into three-point Hunter-Killers.

• ALIEN INVADERS—PLUS!

This game is called Alien Invaders—Plus! The idea Odyssey is trying to get across is that this is really *Space Invaders—Plus!*: a superior version of the world's biggest seller in both the coin-op and home video markets. The company's intent is clear from the statement on the cartridge box: "A fiendish new dimension comes to one of the most popular arcade games of all time." But calling this game Alien Invaders—Plus! makes about as much sense as calling Phyllis Diller "Catherine Deneuve—Plus!" What they *should* have named this cartridge is *Space Invaders—Minus!* The game is vaguely like *Space Invaders* and is mildly entertaining, but is clearly inferior to both the coin-op and home video versions.

Here you have a blue triangular Laser Cannon that you can shift behind three square Laser Shields. You move with the joystick and fire with the action button. Above you, in three rows from bottom to top, are eight round green shields, eight yellow Enemy Cannons that look like mushrooms, and eight pink Enemy

Robots that look like enemy robots. Most of the time, floating above the three rows is what Odyssey calls the Merciless Monstroth, the supposed commander of the enemies. It is deep pink, much bigger than any other enemy, and has four short tentacles plus a single huge eye that opens and closes. As it opens its eye, it fires.

You win a point each time you knock out all eight of the Robots. Because the Cannons are firing down on you, and because the Shields get in the way of your shots, it's hard to nail all the Robots. Neither the enemy's shields nor yours can be destroyed by shots. You *can* destroy the cannons, but you get no points for doing so. What you *do* get for hitting the cannons is a reduction in enemy firepower.

When your Laser Cannon is hit, the Cannon disintegrates and a pink Robot Defender—who was supposedly firing your Cannon—stands defenseless where the Cannon used to be. Using the joystick, you rush the Robot under one of the Laser Shields. Then you press the action button and your Robot and the Laser Shield disappear, replaced by a new Laser Cannon. Since there are only three Laser Shields, you can do this only three times.

Whenever a Robot Defender is exposed to the world, the Merciless Monstroth will open its ugly cyclops eye and swoop down from the top, firing in the general direction of the Robot. But since it has just one eye, it has lousy depth perception and fires with little accuracy. Also it's so large that once you've moved your Robot back into a Laser Cannon you can pretty easily waste this ophthalmologist's nightmare.

You get only one Robot Defender. You can usually preserve this faithful employee as long as you have Shields to convert to Cannons. But once he's out there alone, with no Shield, it's just a matter of time before the Merciless Monstroth drifts down and blows him away. Since your man is defenseless, you might as well just get this part over and start a new game.

Unlike Atari's *Space Invaders*, which has 112 one-player, competition, and cooperative games, "*Space Invaders—Minus!*" has only one game for only one player.

Tips

Though to win a point you must eventually nail all the Enemy Robots, first go after the Enemy Cannons. These weapons rain shots down on you and make it hard to get at the Robots. Knock

out at least two Cannons in a row to make a safe window through which to shoot. *Then* fire at the Robots.

Unlike the case in *Space Invaders*, here it's best to hide a lot behind the Laser Shields. Still, since control is imprecise and your Laser Cannon is slightly wider than each Shield, attempting to hide is no foolproof defensive maneuver. You use the Shields in the classic Ali technique of stick-and-move: Stick (fire at the enemy) and then move (under a Shield). When you're away from the Shields or all your Shields are gone, still use the stick-and-move moves.

• **COMPUTER GOLF!**

This is another Odyssey cartridge that is misnamed. It shouldn't be called *Computer Golf!* It should be called *Computer Golf?*

This game isn't one of the company's most popular, but it requires review just to show how terrible an Odyssey cartridge can be and to demonstrate to consumers that they should take care when buying the company's cartridges regardless of the claims made about them.

On the box for this game the consumer sees a picture of a real live golfer following through on his swing, as a real live dimpled golf ball is blasted off his club. The abstract outlines of nine golf holes are shown. At the bottom of the box it says **COMPUTER GOLF!** *An extremely realistic nine hole electronic golf course!*

So, the consumer thinks, this is going to be like playing golf, or at least like watching golf on TV and controlling the golfers.

Not so, buddy. Odyssey chose its words carefully. Maybe after advice from legal counsel. It said the *course* is extremely realistic. It said nothing about the game, the golfer, hitting the ball, or anything else.

In fact—you find after forking over about \$20 and bringing the cartridge home—each hole is no more realistic than the drawing of a first-grader who is about to be held back. But the golfer! But hitting the ball! Here is where the Yiddish language is of great value. *Oy vey!*

The golfer doesn't look anything like Lee Trevino or whoever that golfer was on the box. He looks like a thick salamander made out of bricks, or a two-legged hippopotamus, or a very abstract Fred Flintstone.

His club isn't that shiny eight iron you saw on the box. It looks like a thick white pipecleaner that can bend into various odd shapes, none of them looking even remotely like a golf club.

With your joystick you walk this Robot Salamander and his pipecleaner through each unrealistic hole. The Salamander walks about as realistically as any rudimentary video game robot—as though he's tramping through soggy sand in combat boots.

You line up the "toe" of the pipecleaner with the ball. Then you press down on the action button, causing the Salamander to start his backswing. The longer you hold down the button, the longer the backswing and the more powerful the swing. You let go of the button and the Salamander hits the ball. What you don't know yet is that it's very hard to make shots go just where you want and—a real embarrassment to Odyssey—you often have to make the Salamander hit with the pipecleaner "head" above him, as though he's serving in tennis or hammering a nail in carpentry (Atari's *Golf* suffers from the same defect).

When you get a ball onto the green, the game goes into a close-up. Only the ball isn't where it was before the close-up. And every green is very similar to every other and is rectangular. Like they said, this is "An extremely realistic nine hole electronic golf course!"

Home Video Quiz

Now it's time to see if you have understood anything at all that you've just read. Even if you have the reading comprehension of a termite, home video game play itself may have given you enough knowledge to get a few problems right. If you have paid no attention to either this book or to home video games, take the Massachusetts Bar Exam instead. You'll do better on it.

The complete-the-sentence problems below can all (with the possible exception of number ten) be answered with information in this book, including the home video history section near the end. They are in more or less their order of difficulty, with the last being the toughest.

If you get zero right, see a doctor: Your pituitary gland is no longer functioning.

One to three, you may or may not know that *home video game* does not mean a telecast of the local football team playing in its own stadium.

If you get four, five, or six right, you know a little about home video games but may believe that the games are just as good as their boxes say they are.

If your correct responses number seven or eight, you can speak to small audiences on at least the basic differences between the Atari, Mattel, and Odyssey systems and you have mastered three or more games.

If you get nine right, you are a learned home video scholar, a star on several home games, or, more likely, both.

If you submit correct answers to all ten questions, you either lucked out or wrote the quiz yourself.

Following the last questions are all the answers. Not *your* answers; the correct ones.

(1) To play a home video game, you need not only the console and everything that comes with it but also:

- (a) An electric can opener

- (b) An Erector Set
(c) A chemistry set
(d) A television set

(2) Atari is:

- (a) What a karate master screams when he attacks an aggressor
(b) The dominant force in the home video market
(c) The name of a sixties movie about Africa or something
(d) The kind of engine in Isuzu cars

(3) The name of the first home video system was:

- (a) Iliad
(b) Odyssey
(c) The Catcher in the Rye
(d) Beowulf

(4) The key difference between the original video games systems and those of today is that:

- (a) The old ones, if they have been sitting around in storage, have lots of dust on them now
(b) The new ones are cuter
(c) The old systems electrocuted one in five users
(d) The new ones are programmable

(5) The set of metaphors that fits the three biggest home video game manufacturers is:

- (a) Atari, the frog; Mattel, the lizard; Odyssey, the turtle
(b) Atari, the commander of space; Mattel, the king of sports; Odyssey, uh well . . .
(c) Atari, the video Ted Nugent; Mattel, the video Deborah Harry; Odyssey, the video Lawrence Welk
(d) Atari, the cheeseburger; Mattel, the fries; Odyssey, the onion rings

(6) Of the games covered in this book, the worst two are:

- (a) Mattel's Space Battle and Odyssey's UFO!
(b) Atari's Asteroids and Mattel's Las Vegas Poker and Blackjack
(c) Odyssey's Packing House! and Mattel's Sewer Cruise
(d) Atari's Video Olympics and Odyssey's Computer Golf!

(7) To max out on points in Atari's Missile Command, it's important to:

- (a) Shoot with precision, in fact more precision than in the coin-op version of this game

- (b) Select your left, center, or right missile base when each is the most appropriate to use
 - (c) Save your Smart Bombs till enemy missiles are about to overwhelm you
 - (d) Spray six to eight defensive missile shots across the screen in the later, more challenging waves
- (8) In Odyssey's UFO! you must be careful not to run into objects that look like Purina Cat Chow if:
- (a) Your Laser Cannon has temporarily overheated
 - (b) Your Energized Force Field isn't fully blue
 - (c) You are unable to warp out
 - (d) Your altimeter readings are fluctuating
- (9) In Mattel's NFL Football:
- (a) You can kick field goals but not conversions
 - (b) You can pass on a running play but not vice versa
 - (c) You can make a receiver spike the ball but can't move him into the path of a pass
 - (d) You can throw into various passing zones but can't take time-outs
- (10) George Plimpton, in his ad contrasting Mattel and Atari, is about as candid and fair as:
- (a) Attila the Hun
 - (b) H. R. Haldeman
 - (c) The Tobacco Institute
 - (d) The best preppy money can buy

ANSWERS

- (1) (d)
- (2) (b)
- (3) (b)
- (4) (d)
- (5) all are correct
- (6) (d)
- (7) (a)
- (8) (b)
- (9) (a)
- (10) (d)

MISCELLANEOUS CRITICAL INFORMATION

Great Video Game Arcades in the United States and Canada

To list every remarkable video arcade in North America would require hundreds of pages. As *RePlay* publisher Ed Adlum notes, the coin-op amusement game industry that a mere fifteen years ago was embarrassed by tawdry center-city game rooms now prides itself on countless clean, attractively decorated, spacious video and pinball centers that sport wall-to-wall carpets; prohibit smoking, drinking, and offensive conduct; and are in general acceptable to families as well as to individual players. Plenty of sleazy dives still exist, but they no longer dominate.

Here is an informal, incomplete list of some of the best and most attractive places in the United States and Canada in which to play video games. To compile the list, the author consulted eight knowledgeable members of the video game industry and also visited more than a few arcades himself. To earn a place on the list, an arcade must have special character, be uncommonly large, have an extraordinary assortment of very new or very old amusement machines, have striking decor, or attract players who are unusual in their ability or their celebrity. Most on this list satisfy several of those criteria.

First on the list are arcade chains that operate excellent arcades in multiple states. Then come video centers listed by major metropolitan area in the US. At the end of the list are arcades located outside of massive urban areas.

CHAINS

- Aladdin's Castle (and game centers that are owned by Aladdin's Castle but have other names such as Time Zone)

- Barrel of Fun
- Dream Machine
- Funway Freeway
- Nickels & Dimes
- Pizza Time Theatre
- Showbiz Pizza Place
- Time Out Family Fun Center

ARCADES IN MAJOR METROPOLITAN AREAS

Atlanta

- Electronic America
- Hartsfield International Airport

Boston

- Fun & Games (Framingham)

Chicago

- Aladdin's Castle (Chicago is the headquarters for the chain.)
- Mother's Pinball (Mount Prospect; awesome players, a test site for machines not yet in production)
- Rubus Game Room

Dallas

- Nickels & Dimes (Dallas is the chain's headquarters.)

Denver

- Celebrity Sports Center
- Cinderella City Shopping Center

Detroit

- Renaissance Center

Houston

- Malibu Gran Prix

Kansas City

- Showbiz Pizza Place

Los Angeles

- Castle Games
- Golf & Stuff
- Redondo Beach Fun Factory (Redondo Beach; perhaps 300 videos and pinballs)
- Sega Center (especially the one in Fox Hills Mall)
- Westworld Amusement Park of the Future (where Hollywood plays)
- Westworld Amusement Park of the Future (Marina Del Rey branch; very big and very plush)

Miami

- Omni Shopping Center

Minneapolis—St. Paul

- Minneapolis—St. Paul International Airport

New York

- Broadway Arcade (a hefty hunk of Big Apple pie)
- Electro-Port (Kennedy Airport)
- Whistle Stop (Penn Station)

New Orleans

- The Fun Arcade (Metairie)
- Fun World
- New Orleans International Airport
- Penny Arcade (French Quarter; includes old amusement machines)

Philadelphia

- Galaxy Arcade
- Space Port

Phoenix

- Golf & Stuff (looks like the Taj Mahal)
- Spaceship Fantasy (nothing but video)

Pittsburgh

- Pittsburgh International Airport

Riverside—San Bernardino

- Castle Park Arcade (Riverside)

San Diego

- The Aztec
- Yellow Brick Road (La Jolla)

San Francisco—Oakland

- Musée Mecanique (under the Cliff House; fabulous collection of ancient amusement and music machines)
- Musée Mecanique (Fisherman's Wharf branch)
- Pier 39
- University of California (Berkeley; hot players, a test site for machines not yet in production)

San Jose

- Merlin's Castle
- Pizza Time Theatre (Sunnyvale is the chain's headquarters.)

Seattle

- Goldie's (near the University of Washington; avid players, up-to-the-second machines)

Toronto

- The Undercurrent (in the basement of the Canadian National Tower, tallest structure in the world; very modern decor: neon, chrome, mirrors)

Washington, D.C.

- Time Out (Springfield Mall, Springfield: two stories)
- Spaceway Raceway (Springfield Mall)

ARCADES OUTSIDE OF MAJOR METROPOLITAN AREAS

Cameron Park, California

- Sam's Town

Las Vegas

- Circus-Circus Hotel and Casino (watch world-class circus acts as you play)

Oklahoma City

- Cactus Jack's
- LeMans Speedway

Omaha

- Gizmo's (in the old section of the city; includes old amusement machines)

Reno

- Circus-Circus Hotel and Casino (same entertaining story as Vegas)

Santa Cruz, California

- Boardwalk (The main arcade has an amazing assemblage of ancient amusement machines plus probably the world's most complete collection of video machines from the early days of Atari and other manufacturers.)

Treasure Island, Florida

- Treasure Island Fun Center

Video Game Etiquette

Video games, especially those of the coin-op variety, bring players into contact with other competitors and with spectators. But this important new social activity has no firm rules. Emily Post died before *Space Invaders* was born, and Letitia Baldrige is too busy with such trivia as how to behave at White House dinners.

A cute little handbook of suggestions might be fine for matters as insignificant as how to compose a wedding invitation, but video games are serious business. Infractions of video etiquette shouldn't result in just polite criticism or rude smirks. No: Violations of the video code of ethics are a matter for the criminal courts.

The bleeding-heart civil libertarians out there may say criminal penalties are too harsh for video violations. Even law-and-order conservatives may think civil lawsuits are enough. But let one of them be 500 points from their first 100,000 game in *Defender* and then have some stupidly grinning ten-year-old awkwardly put a quarter on the machine's control panel so that the kid knocks the player's hand. As that hand uncontrollably runs his last ship into a *Mutant*, *then* ask him if the kid shouldn't be thrown in jail.

Still, there are etiquette violations and there are etiquette violations. The less serious ones should be misdemeanors, punishable by up to one year in the county jail, a fine of 500 quarters, or—in the more severe cases—suspension of the right to play video games for up to one week.

The more serious video crimes must be felonies. There can be no coddling of video criminals who have the audacity to commit the most harmful violations. All of these creeps must be subjected to the most severe punishment: They must be forced for ten straight hours to play *Galaxian*. If that doesn't teach them a lesson, nothing will.

VIOLATION OF ANY OF THE FOLLOWING RULES SHALL BE DEEMED A MISDEMEANOR

Be considerate of players waiting to play: Don't hog the machine. If you are playing and someone else is waiting, let the next player on at the end of your game.

If you are playing a coin-op game, do not put more than one quarter (or token) in the machine (two for doubles). If you do you will get two or more credits, permitting you to play one or more games after your current one. If you have innocently deposited more than one quarter, thinking no one else would want to play while you were there, and someone else does begin waiting for the machine, offer to sell him the first of your remaining credits.

If you are alternating games with a markedly inferior player, let him play two or more (shorter) games for every (longer) game you play.

If you are a great player, and, when another person demonstrates a desire to play, you are in the midst of a game likely to run up a lot of points and therefore take a lot of time, advise the waiting player that he may have to cool his heels for quite some time. A simple "I'm awesome" should suffice. If that doesn't make your intent clear, just say, "It'll probably be awhile."

Remember, the next time you're at the arcade or the next time the home system is in use, you may be the one waiting to play.

VIOLATION OF ANY OF THE FOLLOWING RULES SHALL BE DEEMED A FELONY

Never interfere with the player currently playing a game. He's got enough trouble without you adding to it.

To reserve a coin-op machine for future play, place a quarter (two for doubles) on the appropriate place on the machine. The appropriate place is where your coin will be readily visible, where it will not likely fall even if the machine is jostled, and such that placing the coin there will not interfere with the current player's war efforts. In most games—including *Space Invaders*, *Asteroids*, and *Defender*—the appropriate place is on the control panel, preferably just above a bolt that will help prevent slippage. On *Asteroids Deluxe* it's in the black lip next to the screen; in *Missile Command* it's on top of the cabinet. It's your turn to play when your quarter has been on the machine longer than any other and the preceding player has relinquished the machine.

Do not put your quarter up during a particularly difficult phase of the game. Do not reach from one side of the machine to place a quarter on the other side. *NEVER* touch the player's hand while placing your coin on the machine. Do not leave the coin where it will distract the player's attention or where it may interfere with his use of the controls.

Do not speak to the player unless spoken to first. Do not offer advice unless it is clear that the player doesn't mind you talking and would benefit from your counsel. (There are reports of cases where a mediocre Asteroids Deluxe player has watched the beginning of a great player's game and said, "Hey, watch out for that snowflake thing: It breaks up into these little pieces and they chase you all over the screen!" This is utterly disgusting, no better than a cabdriver talking to A. J. Foyt about Indy cars and saying, "You have to be careful with the steering—those babies are awfully quick!")

In addition to not talking, make no other sound. Don't laugh, don't say "Whooooooooo!" The player can do just fine without your subverbal commentary. Don't burp. Don't make any other sounds associated with gas. Don't cough or sneeze: If you wanted to play Scramble, would you go to a hospital? If you have a cold, don't go to an arcade.

Unless the current player is smoking during the game (smoking in this context is defined as consuming a lighted cigarette, cigar, pipe, or similar device, and is not defined as playing an ultra-hot game on the machine); do not smoke close enough to the player that he can see or smell your smoke.

Take care not to crowd the player so badly that he cannot freely move his arms to manipulate the controls, so that he cannot readjust his legs and body to assume a more effective or comfortable position, or so that he begins to believe your heartbeat is one of the sound effects on the machine.

Remember how important it is to you not to be disturbed when you're on the machine.

Here are three rules for potential juvenile felons: Do not run into or bump into a player. Do not stick your cute little face so close to the screen that the player can see the reflection of your nostrils better than he can see the spaceships on the screen. Do not breathe, spit, or sneeze on the player's arm.



Video Songs

Many songs are especially suitable as video background music. Some are appropriate due to their beat (similar to the pace at which the player should shoot aliens and saucers) or their general inspirational quality. Others seem right due to their video-related titles or lyrics.

SONGS RECOMMENDED FOR BEAT OR INSPIRATION

Free Bird / Lynyrd Skynyrd
Hot Stuff / Donna Summer
Jumpin' Jack Flash / Rolling Stones
My Sharona / The Knack
Satisfaction / Rolling Stones
She's So Cold / Rolling Stones
Theme from Rocky (Gonna Fly Now) / Bill Conti
Train Kept A-Rollin' / Yardbirds
Twenty-Five or Six to Four / Chicago
Whip It / Devo
William Tell Overture / Arthur Fiedler and the Boston Pops

SONGS RECOMMENDED DUE TO TITLE OR LYRICS

A Man Alone / Frank Sinatra
Another One Bites the Dust / Queen
Don't Stand So Close to Me / The Police
Fire / Jimi Hendrix
Help! / Beatles
Hit Me with Your Best Shot / Pat Benatar
Hyperdrive / Jefferson Starship
I'm a Loser / Beatles
It's My Turn / Diana Ross

Master Blaster / Stevie Wonder
Never Give Up / Barbra Streisand
Not to Touch the Earth / Doors
Pac-Man / Buckner and Garcia
Pinball Wizard / The Who
Push Push / Brick
Ready to Take a Chance Again / Barry Manilow
Shoot Your Shot / J. Geils Band
Shot Down in Flames / AC/DC
Space Cowboy / Steve Miller Band
Space Oddity / David Bowie
Starting Over / Tammy Wynette
Stayin' Alive / Bee Gees (the ultimate video games song)
Theme from Star Wars / John Williams and the London
 Symphony Orchestra
Theme from The Empire Strikes Back (Darth Vader's Theme)
 / John Williams and the London Symphony Orchestra
Theme from 2001: A Space Odyssey (Thus Spake Zarathus-
tra) / Karl Böhm and the Berlin Philharmonic Orchestra



All-Star Video Villains

Perhaps the most important factor in how much of a challenge a video game presents is the fearsomeness of the evil enemies that are pitted against the player. Like it or not, the heaviest of the bad-dude attackers deserve special mention in this book. Here, then, are two five-villain teams—one for coin-op and one for home video—comprising the worst that the video screen has to offer. For no good reason at all they are modeled after all-star basketball teams.

COIN-OP

Forward	Beaver, University of Asteroids
Forward	Cruise Missile, Missile Command College
Center	Evil Otto, Berzerk Tech
Guard	Baiter, Defender University
Guard	Final pointy-head, Space Invaders A&M
Most Valuable Villain:	Evil Otto

HOME VIDEO

Forward	Light-Speed Starship, UFO! University
Forward	Final Two-Eyed Cottage, Space Invaders A&M
Center	Fire-Breathing Dragon, Quest for the Rings! Teachers College
Guard	Beaver, University of Asteroids
Guard	Alien Fighter, Space Battle College
Most Valuable Villain:	Light-Speed Starship

The Bushys

Since 1928 the Academy of Motion Picture Arts and Sciences has presented the Academy Awards—known as the Oscars—to actors, directors, producers, and others associated with motion pictures. In the music industry top recordings are acknowledged with Grammys. Because coin-op video games have surpassed both movies and records in annual earnings, it's about time a wide variety of awards was given for achievement in this area of American culture as well.

This is the author's dream list of the first annual Academy Awards of the Academy of Coin-op Video Game Arts and Sciences, the Bushys—named after the father of coin-op video games, Nolan Bushnell.

In this, the first year of the Bushy Awards, eligible games include all machines introduced by January 1, 1982. Except for the first two categories, which are of special magnitude, all categories are listed in the alphabetical order of the underlined key words in the category names.

Ladies and gentlemen, may we have your attention, please. The envelopes have been opened. The winners are:

GREATEST GAME	Space Invaders
BEST GAME	Asteroids
MOST ADDICTIVE	Space Invaders
DEMANDING MOST AGGRESSION FROM PLAYER	Rip Off
MOST ANNOYING ENEMY	Star Castle: Flies
MOST ANNOYING GAME	Moon Cresta
MOST BORING	Pong
MOST CONSUMING	Asteroids
BEST CONTROL PANEL	Space Tactics
CUTEST	Pac-Man

BEST WITH WHICH TO BE
STRANDED ON A DESERT
ISLAND

BEST DRIVING GAME

MOST FEARSOME ENEMY

BEST EXPLOSION: AUDIO

MOST FUN

HARDEST AFTER MANY GAMES

HARDEST IN FIRST GAME

BEST MISCELLANEOUS GAME

MOST MORBID

BEST MUSIC

BEST OVERALL SOUND

BEST SINGLE SOUND

BEST SPACE GAME

BEST SPECTATOR GAME

BEST SPEECH

SWEATIEST

BEST TWO-AT-ONCE
COMPETITION

BEST TWO-AT-ONCE
COOPERATION

MOST EFFECTIVE
PLAYER'S WEAPON

MOST FEARED
ENEMY WEAPON

WORST SUCCESSFUL GAME

Asteroids
Turbo, cockpit version
Defender: Baiter
GORF: Flag Ship
Carnival
Missile Command
Asteroids
Carnival
Death Race
Phoenix
Sea Wolf
Defender: Baiter
sizzle
Asteroids
Defender
Astro Blaster
Football (Atari version)

Tie: Tank and
Space Wars

Rip Off

Defender: Smart
Bomb

Missile Command:
Cruise Missile
Galaxian

THE FUTURE

Video Games: The Future

Both coin-op and home video games have changed dramatically since their introduction a decade ago. But what of the future?

People in the video game industry say that sales executives take care of today and that marketing executives take care of tomorrow. Also home video game themes and technology seem generally to follow the trends of coin-op machines. So whom better to ask about the future than the chief coin-op marketing executive for Atari, the company that has produced coin-op video games the longest, is still number one or two in annual sales, and is the undisputed leader in home video games? The man with whom to talk, then, is Frank Ballouz.

Frank Ballouz is Vice President of Marketing for Atari's Coin-Operated Games Division. He joined the company in 1975, during the height of the Nolan Bushnell Dynasty. Since then, according to his opposite number at Midway, Stan Jarocki, Frank "has come along faster than men with fifteen years in the business." You also hear about Frank in other kingdoms of the video empire. One question after another—to manufacturers and magazine publishers—is met with "Ask Frank Ballouz at Atari" or "You might also check with Frank Ballouz."

And what does Frank think about the future of video games? More and more companies, he says, will be going to "x-y" color (color versions of the ultrasharp Vectorbeam-style or Quadra-scan-style projection system). Asked about speech in games, he says Atari is "looking at it, but not just for ha-ha's: We're thinking about making it an integral part of the games. The industry will definitely come to that."

Another direction the industry may take, Frank says, is toward "sit-down games that will provide a total environment, possibly through mirrors or multiple monitors." The player will be surrounded by the game. Also, he says, "There is definitely an application for holography."

In some ways, however, the industry will remain the same: **233**

“There may be no change in the percentage of games that allow two players to play at once. It probably will remain more one player at a time: The main competition for players will remain against the machine and against themselves.”

The cost per game, Frank says, “will get to fifty cents. It’s moving there more and more. Sit-in games are often fifty cents now. These games cost the operator more and players perceive it as a value to sit down. The sit-in games have a twenty-five-inch monitor, compared to the usual nineteen-inch, and they take up more floor space.”

When Atari tried in 1980–81 to make fifty-cents-per-play the standard setting on *Missile Command* and *Battlezone*, Frank says, “The players didn’t seem ready. The majority of the machines were converted to a quarter.

“Many operators,” he explains, “have tried increasing the price per play by using tokens, such as three for a dollar. There’s an arcade in San Jose where it’s thirty-five cents for one play, three plays for a dollar, twenty for five dollars.

“Still,” he says, “it’s hard to go from twenty-five to fifty cents in increments: All the pieces out there now from virtually all the manufacturers can take only twenty-five cents or fifty. But fifty cents may not be reached until 1983.

“You have to understand,” he adds, “that video has been out about nine years and there’s been no price change. Pinball has changed: Generally it’s twenty-five cents for three balls; it used to be three games for a quarter, with five balls for each game.”

From others in the industry—from manufacturers to operators—you hear nothing that conflicts with Ballouz’s statements. In particular you hear about the inevitability of the fifty-cent game becoming standard. Gary Stern, President of Stern Industries, has been the most vocal proponent of the move to fifty cents, saying that as manufacturers’ production costs increase, the higher price per game will be the only way for operators to maintain their incomes.

Occasionally you hear rumors of great innovation. Stan Long, Arcade Operations Manager for the Scandia Fun Centers in Northern California, has heard that some company somewhere is experimenting with a video game that the player can affect not just by pushing buttons or moving levers but also by *talking to the machine*, which will “understand” his words.



How to Handle Future Games

How do you approach video games introduced after this book was written? First you can use this book even on games never mentioned in it. You will find that the eight Bylaws of the Awesome Player Society apply to almost every video game in both the arcade and the home. And the more specific advice on individual games will often apply to other games as well. In addition the book’s strategic tips on coin-op games will be useful in playing any new home games that are similar to the coin-op hits.

You can watch other players play a new game. You should concentrate on players who are running up unusually high scores or are using strategies and techniques you haven’t seen before. Between their games, ask them questions on how and why they made particular moves. Watch not only players in the arcades and restaurants that you frequent, but also make a point of visiting places—even in other towns—that are known as hotbeds of coin-op video activity. The best players are usually observed in major metropolitan areas.

Most obviously you can play the new game yourself. Play it over and over the first time you try it: This will quickly give you a “feel” for the game, and in each game you will efficiently build on what you learned in the previous one. Experiment with the game, not worrying about the score you will run up. Determine the limits of each control: How fast can you go, how high, at what angles; how long does the shield last? Determine the characteristics of each object on the screen: What happens when you shoot it (does it totally disappear, does only part of it break off, does it explode into a swarm of even more dangerous objects?), what happens if you don’t shoot it (does it attack you, is it joined by other enemies?)?

Whether you’re watching others play, questioning other players, or playing yourself, make careful mental notes of what you learn. If you’re willing, even take written notes. Don’t laugh: The first known player to exceed 1,000,000 points on *Defender* not

only was smart and quick; he also took pages of notes on small details of the game.

In addition to points already mentioned, here are some important questions to answer about each game:

(1) *What are the objects in the game (bases, ships, missiles, bombs, beings, obstacles)?* What are the offensive capabilities (such as shots and bombs) and defensive capabilities (such as evasion and Hyperspace) of each object? What are the limits of each offensive and defensive capability (such as number of shots at a time, range of shots and bombs, lifetime of shields, percentage of times in which Hyperspacing ends in destruction on reentry)? How many points are awarded for each enemy object's destruction? How many of each object are there in each wave? Do the objects have sensitive and insensitive parts (for instance the tip of the player's ship in coin-op Asteroids can be struck by a rock with no ill effects)? At what point are you awarded a new base or ship or additional weapons? What happens when all of one type of enemy or friend is eliminated: Is the wave over, are all of a certain type of enemy suddenly reincarnated (as in the fifth stage of Phoenix), is there a catastrophic transformation of enemy forces into a far more fearsome group (as in Defender)?

(2) *In what ways does the game get harder as it continues?* Is there more of each enemy object in each rack after the first, do new enemies show up for the first time, do obstacles increase, does everything move faster? What is the number of the hardest wave? Is there any wave that is easier than an earlier one (like every fifth wave in Defender, when you return from space to the planet to find all ten of your men back in place)?

(3) *What are the video displays and audio warnings that help you know how you are doing and what to do next?* Where and when are points displayed? Are there digital displays on the screen or cabinet that tell you how many bases or ships you have or how many of each weapon or other object are left or that tell how much time or fuel remains? Is there a radar screen or other small screen informing you about the area not appearing on the main section of the screen, what does it show, how accurate is it? Are there sounds (like the squeak of each abducted man in Defender) or spoken warnings (like "Laser temperature critical!" in Astro Blaster) that warn you of an impending major or minor disaster that you can avoid?

(4) *In the game's program, are there any "bugs" or other characteristics a player wouldn't expect to find?* Are there give-away periods, as in Defender or coin-op Missile Command,

where the machine suddenly awards vast numbers of ships, weapons, bases, or cities for no reason at all? Does the game have vulnerabilities that may not have been intended by the designers but that can be exploited by the player (like coin-op Asteroid's weakness against the strategy of hunting Beaver)? Are there surprising video or audio effects you can cause in order to gratify yourself or impress your friends (like chasing right behind dangerous Monsters by using a certain pattern in coin-op Pac-Man or like knocking off coin-op Space Invader aliens in the right order to create a rainbow)?

(5) *Most important: How do you inscribe your name or initials on the screen of the machine in order to proclaim yourself as the greatest video star ever to play it?*

The Dream Video Game

So much for what people say the industry is going to give us players. How about the question of what the perfect video game would be from the player's point of view? Here, in the view of the author, are the elements that must be considered for inclusion in any video game of games.

Total Environment: When the industry uses this phrase, it means a cockpit-style game in which the player is surrounded by screens or mirrors as well as by speakers. Well, that's a start. But it shows inadequate imagination as to *size*. The ultimate game would be played in a room at least as big as a movie theater, with images on screens at least as big as movie screens. Screens all around: every side of you, on the ceiling, on the floor. (Who said this had to be commercially feasible?)

Realism: The pictures would be clear and colorful and sharp. Where animation is required, it would be in the sharp etchings of a color Vectorbeam-style system. Better, however, would be ultrarealistic images like those of motion pictures. Plus 3-D effects through holography or at least through mirrors, animation, or 3-D glasses.

The sound would be from sixty-four speakers totally surrounding the player. Each speaker would have a different, Dolbyized, low-distortion, high-bass or high-treble track. Audio effects would include exotic Moog-synthesizer artificial sounds as well as music and, of course, human speech. Computers would be programmed so the player could have intelligent conversations back and forth with any narrator for the game as well as with friends and enemies on the screen. "Take that, you turkey!" you would scream at a vicious enemy flying saucer as you launched missiles at it. "Sorry, Earth wimp, I just flipped on the force field," an eerie alien voice would reply.

Theme: And what about the theme of the game itself? It should combine the strong points of several outstanding coin-op video

games. The narrator of the game as well as the aliens should be instilled with the humor of Berzerk's "Chicken, fight like a robot!" and the motivating barbs of GORF's "Bite the dust, Space Cadet!" You should be under attack from enemies who combine the threat of Missile Command (it's the USSR, not some fantasy aliens you can rationalize don't really exist), the power of a giant, low-flying Space Invaders formation, the evasiveness of the Baiters from Defender, and the kamikaze dedication of Berzerk's killer Robots.

And the alien enemies ought to be beings that you can really sink your teeth into. That is, human beings. In particular, human beings who've been asking for heavy fantasy retaliation for years now. Ideal candidates for enemy aliens are the most annoying local TV advertisers in major cities. You know, those shameless sellers of cars, furniture, and stereos.

These avaricious clods have been irritating us for years. Now it's *our* turn. Stick them up in a little flying saucer that's just as exasperating as they are: Asteroids's laser-firing Beaver. Modified to include the awesome capability of aimed wraparound shots.

Now, it's only fair that you, the player, have a ship and weapons equal to the task. Not three ships or five, but one ship. This game has to be realistic, remember? (If your ship gets hit in a *real* space battle, it isn't magically replaced.) But your ship has to be more durable than the usual disposable ones you get in the twenty-five-cent games. This ship should be simple, classic, highly maneuverable: the player's ship from Asteroids. It should be able to take at least two full-force laser rounds from the advertiser-enemies. For protection it should be equipped with the radar screen from Defender and the electrified force field from Phoenix. For offensive work it should have the unlimited high-speed laser from Defender as well as about six all-powerful Smart Bombs from the same game. It should have the realistic capability of ground support: namely all three missile bases from Missile Command. Most important, of course—need this even be said?—your ship must be able to *Hyperspace*.

To add realism, your ship must also have a limited fuel supply that can be replenished during brief returns to Earth. To check your fuel and other essential information, you should have screen readouts and occasional spoken advisories on fuel units remaining, enemies damaged or destroyed, and damage sustained by your ship.

If you wipe out the enemies before they get you, you should

be rewarded by the best in video and audio effects from the history of video games—the rainbow from Deluxe Space Invaders (enhanced to look like a real one)—plus music—perhaps the Beethoven harpsichord piece from Phoenix. Or, if you prefer, the Rolling Stones hit of your choice. Performed *live*, of course.

UNCONFIRMED REPORTS

Videomedicine

In November 1980, when this book was just a proposal, it included a section on videomedicine that was, well, not quite factual. To tell the truth, it was all made up. Since then, however, fantasy and fact have begun to merge. In June 1981 San Francisco CBS affiliate KPIX-TV broadcast a report about an orthopedist who was treating a number of patients who had injured their wrists playing video games. In the same month Victor Lim—a Davis, California, optometrist—told the author that when he has a child patient with reading and writing problems caused by inadequate eye-hand coordination, he prescribes the purchase of a home video game unit. Lim reported that patients following a prescription of video games and other therapy have in general shown marked improvement.

Still, unconfirmed reports abound, just like they did back in 1980.

Just as sportsmedicine has grown into a new medical specialty as jogging and running have become a national craze, so has the new specialty of videomedicine recently been established to treat the injuries, illnesses, and psychiatric disorders associated with video game play. All major medical schools now require students to take at least one course in videomedicine. Large, well-equipped videomedicine clinics have been established at the New York Hospital-Cornell Medical Center in Manhattan and the UCLA Medical Center in Los Angeles. Surgeons at Chicago's Michael Reese Hospital recently transplanted the index and middle fingers of an Asteroids champion who had died in an automobile accident onto the hands of a young man who had no abnormality of the hands or fingers but was despondent over his inability to score more than 100,000 points.

Following are some of the more common problems seen by physicians specializing in videomedicine.

ASTEROIDS FINGER

Many Asteroids players report pain and weakness in the firing finger. While physicians have found that the rare case is associated with stress fracture or early-onset arthritis, most cases of Asteroids Finger have been found to have been caused by simple lactic-acid accumulation that is the normal bodily response to the fatigue and overuse resulting from the rapid firing necessary in Asteroids. Doctors and players report excellent results from a program of soaking the Asteroids Finger in ice water during the forty-eight hours following the injury, physical therapy to strengthen the finger, and the use by the player of two fingers at once on the Fire button when one finger becomes tired.

Related overuse injuries associated with coin-op games: Space Invaders Finger, Galaxian Finger, and Phoenix Finger (all identical to Asteroids Finger, except that they occur in a smaller percentage of players of the games in question, since such games do not generally require as much firing as does Asteroids), GORF Finger (from excessive use of the trigger), and Defender Fingers (calluses on the two Fingers used to operate the altitude lever). Also Asteroids, Space Invaders, Galaxian, and Phoenix Wrist.

JOYSTICK HAND

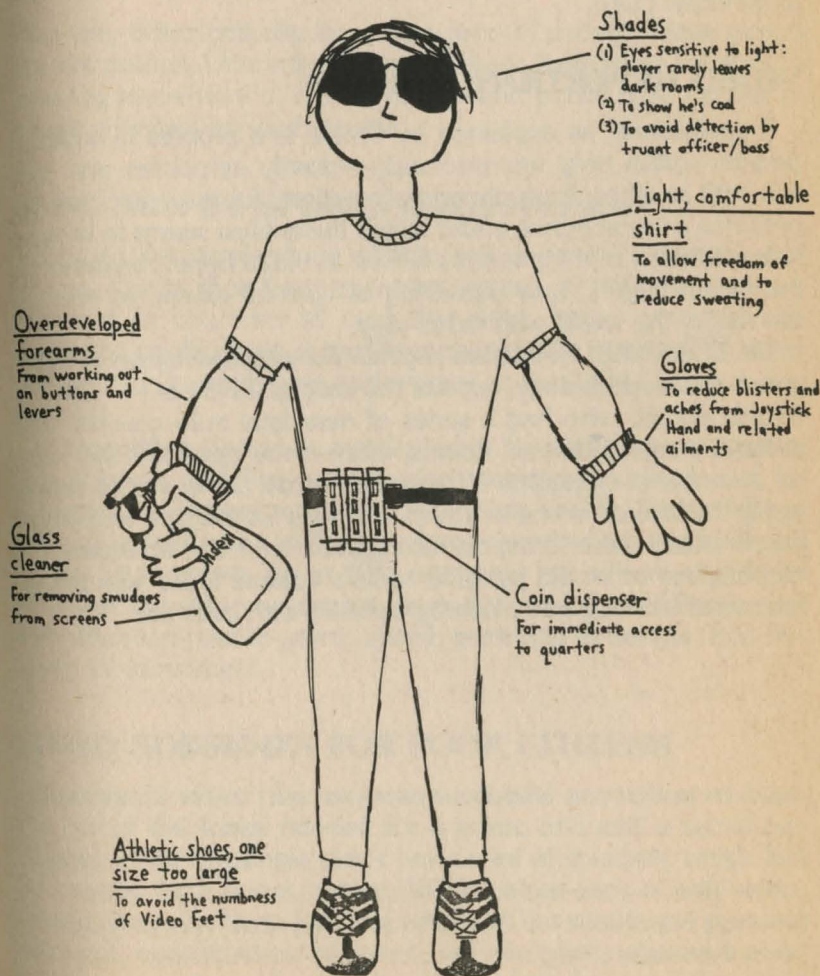
This malady is seen in players of home video games requiring the use of a joystick. The disorder is defined as a painful ache of the hand between the bases of the thumb and index finger. Joystick Hand has been observed in alarming numbers of players of games that require almost constant manipulation of the joystick. Such games include Atari's Basketball and Boxing.

Related overuse injury associated with home games: Joystick Wrist.

VIDEO EYES

This disorder involves protruding, "bug" eyes, with blurred vision being noted in a minority of cases. The condition results from continuous attention to small, bright objects in a darkened room over long periods of time. Rest and common eye drops have been found to be highly effective in treating this malady.

THE COMPLEAT VIDEO PLAYER



VIDEO FEET

Players who stand at machines for extended periods often report video feet—a numbness of part or all of one or both feet, sometimes accompanied by swelling. Players suffering these symptoms are advised to wear looser shoes, to wiggle their toes at regular intervals (such as with every new rack), and if all else fails, to sit down while playing (although sitting tends to reduce concentration and aggression, both of which are important to optimal video play).

VIDEO HYPERTRANSFERENCE

Transference, as explained by Freud, is a process in which a person—often only unconsciously—closely associates one person with another. A psychoanalytic patient, for instance, may experience a transference under which the analyst seems to take on characteristics of the patient's father. In video hypertransference, the victim begins, to a disturbing or harmful extent, to confuse the rest of the world with video play.

Dr. Emil Wiffo, a Houston psychiatrist who specializes in video game psychopathology, reports the case of Jason B——, an Asteroids addict, who had a series of near-fatal auto crashes. The patient, it seems, like all drivers, often came close to other cars, for example at stoplights. Where the normal driver would simply apply the brakes, come to a stop, and wait for the light to change, Jason would either bang on his cigarette lighter in an attempt to Hyperspace or would push his radio's volume knob with the intention of blowing away nearby vehicles with laser fire.



Video Reform

Like any other critically important area of society, video games are not perfect. Unconfirmed reports have been received about a growing movement to reform private and public policy in the interests of video-minded citizens.

SANCTION BY SPORTS AUTHORITIES

Due to the tremendous athletic skill needed to master video games, due to their huge spectator appeal, and due to their acceptance in countries all over the globe, video games clearly should be made a part of the Olympics. Ideally there will be video competition for both men and women at the 1984 Games in Los Angeles.

Competition should be conducted in the world's most popular five coin-op and five home video games. Medals should be awarded for highest scores by individuals and by teams (of five players) as well as for highest *style point* scores by individuals and teams. Style points, up to 10.0 per game per athlete, should be awarded for ship movement, laser fire, and Smart-Bomb use, with attention paid to grace, speed, proximity to danger, and creativity of movement.

VIDEO SUBSIDIES FOR POOR CITIZENS

Successful video play requires successful acquisition of quarters (or of the funds needed for a home unit and a set of cartridges). A lot of people don't have a lot of quarters, much less the money for a home system. Video games are not only entertaining; they also keep kids and adults off the streets and promote alertness, coordination, patience, self-discipline, obsessive-compulsive neurosis, and other important, time-honored American traits.

Federal, state, and local governments, as well as charitable

foundations—Rockefeller, Ford, Carnegie, etc.—should subsidize video play for the poor.

Each one of us must take personal responsibility for social reform. Take time to write your representatives and senators *today*:

Representative_____
House Office Building
Washington, D.C. 20515

Senator_____
Senate Office Building
Washington, D.C. 20510

Your Highness:

I am writing about an issue involving a lot of money and a lot of votes.

Now that I have your attention, I want to add my voice to the countless others crying out for federal assistance to millions and millions of truly needy Americans: video game players who don't have enough quarters.

Please introduce or co-sponsor legislation to provide federal financial support to these courageous fighters of video wars. Help may be given through grants of one roll of quarters per week to each player who is not independently wealthy, through tax credits or through coupons redeemable at arcades (the latter could be called "video stamps").

If you help us video players when we're standing at the machines, we'll help you when you're standing for reelection. But if you don't send us your aid, we'll send you into Hyperspace.

Sincerely,

(Your name)
Patriotic American

Appendixes

THE COIN-OP VIDEO GAME INDUSTRY: HISTORY, STATUS, STRUCTURE

MANUFACTURERS

When you talk about the history of video games—coin-op or home—you talk about Nolan Bushnell. Ralph Lally, founder and editor of *Play Meter* magazine, said in 1977:

There is a sort of on-going joke among engineers and designers that goes something like this: "In the beginning, God created heaven and earth. On the eighth day, He created Nolan Bushnell."

Nolan Bushnell is slightly more important to video games than Christopher Columbus and Thomas Jefferson—combined—are to the United States. In summary he invented and marketed the first video game, invented and marketed the first successful coin-op video game, and founded the company that was the first major manufacturer of coin-op video games and that became the largest manufacturer of home video games.

Who is Bushnell? He has more facets than the average diamond and more brilliance as well. One's opinion of him depends largely on which facets one sees. He was born a Mormon, with a father who was a cement contractor and a mother who was a teacher. But then again, when he was running the company he founded—a small business known as Atari—he and other top executives were known for informal dress, beards and mustaches, and a bon vivant life-style featuring beer, marijuana, and hot tubs.

Peter Bernstein, writing in *Fortune*, calls Bushnell “egotistical but exceedingly charming.” But when this book’s author interviewed Bushnell he seemed amazingly humble for a man of huge success (he even made a quick stab at fixing the author’s tape recorder when it suddenly broke down) but, though by no means discourteous, was about as charming as a large rock.

Bushnell was born in Ogden, Utah, on February 5, 1943, and was raised in nearby Clearfield. His parents are Mormons, though Bushnell now practices no religion other than business. He looks like a former serious athlete, and indeed he played high school basketball. He also was on the debate team and played tournament chess.

At the University of Utah, Bushnell received a B.S. in Electrical Engineering. More important for the history of the world, however, during all four years of college Bushnell worked at a Salt Lake City amusement park, eventually managing all its games, from the carnival-type to those of the penny arcade. In the arcade, he says, “I learned the economics of coin-op games. I was one of the few people with both an electrical engineering background and an understanding of the games.”

In 1971 Bushnell and Ted Dabney, both then electrical engineers at the Ampex Corporation in Sunnyvale, California, began a project to produce the first video game. With Bushnell in the lead, they worked in Bushnell’s daughter’s bedroom and came up with *Computer Space*, which Bushnell describes as “a cosmic dogfight between a spaceship and a flying saucer.” It was something like *Space Wars*, Cinematronics’s hit of 1977. Bushnell and Dabney sold the game to Nutting Associates, a Santa Clara firm best known for the *Computer Quiz* question-and-answer video game. Nutting put the game in a futuristic, curved black fiber glass cabinet and marketed it in November 1971. It was, Bushnell says, “a marginal flop.” He says it was too complex for 1971’s video game players, the patrons of bars and bowling alleys. It would do well now, he believes.

But Bushnell and Dabney hung in there. Putting up \$500 apiece and joining with another electrical engineer named Al Alcorn, they formed a company called Syzygy. Soon they had designed a little game called *Pong*, in which each of two players turned a knob to move a “paddle” up and down the right or left side of a screen to return a little white “ball.” They changed the firm’s name to Atari, and the new company put *Pong* on sale in November 1972. It was a *monster*. It was such a success that almost every veteran video player and even most veterans in the

coin amusement industry think of it as the first coin-op video game. It was indeed the first *successful* one. Atari sold about 10,000 *Pongs*. At least twenty-five other companies came up with copies or adaptations, and some 90,000 of these were sold in the United States. If all the 100,000 *Pong*-type games were taken together, the game would be the number one seller in American history, just ahead of *Pac-Man* and well ahead of *Asteroids* and *Space Invaders*.

Bushnell and Dabney were the sole original shareholders in Atari, and in 1973 Bushnell bought out Dabney’s minority interest. He remained the dominant shareholder until, in 1976, he sold the company to Warner Communications for \$28-to-34 million, according to how you value the debentures. He made this sale, from which he personally gained something like \$20 million, at the ripe old age of 33.

Bushnell stayed at Atari until 1979. Now he’s the chairman and sole or principal owner of three companies he has founded: *Pizza Time Theatre*, *Corporate Air Transport*, and *Magnum Microwave Corporation*. *Pizza Time* occupies more of his time than any other enterprise. Each *Pizza Time Theatre* has pizza, sandwiches, singing robot animals, and a huge, dark video arcade. The head animal—the master of ceremonies—is a six-foot gray rat named Chuck E. Cheese, who looks like the child of a marriage between Nolan Bushnell and Minnie Mouse.

Bushnell now sees himself as being out of the video games business and mostly in the restaurant business. But *Pizza Time* keeps him in the video business as well. There are already well over 100 *Pizza Time Theatres* all over the United States and in Canada, and Australia, about half company-owned and half franchises. And each one has about one hundred video games. Bushnell plans for 800 or 1,000 restaurants by 1985. That many outlets would make him by far the biggest video game operator in the country. In fact he may already be number one.

Bushnell is now worth about \$70 million. When asked why he has continued to work hard instead of retiring after making some \$20 million in the Atari sale and another \$50 million since, he says, “That would be boredom. Business is a challenge.” He attempts to explain himself further: “Some people are meant to build things.”

Nolan Bushnell is indeed a builder—of the first video game, of a giant video game company, of the video game industry, of a vast restaurant empire, of other structures in the future. “When I was a child,” he says, “my favorite toy was an Erector Set.”

• ATARI

Atari never would have existed were it not for Nolan Bushnell, but it's doing just fine without him. According to the *Fortune* article the company had financial difficulties in 1972 and 1976 but then rocketed to some \$415 million in sales in 1980. In 1981, the magazine said, "Warner insiders expect revenues to top \$900 million and operating profits to approach \$200 million." The \$900 million is a healthy chunk of the sales of the parent Warner Communications, which had 1981 sales of about \$3 billion.

About \$200–300 million of Atari's sales came from coin-op video games. The company made even more money from home video games and also was an important factor in the fledgling personal computer market.

This California company, founded in Los Gatos, now has several buildings in Sunnyvale as well as manufacturing facilities in Taiwan, Hong Kong, Ireland, Puerto Rico, and El Paso.

For a while Atari held about 50 percent of the US market for coin-op video games. It has produced such superstars as Pong, Tank, Breakout, Night Driver, Football, Asteroids, Missile Command, Centipede, and Tempest. Many of these games had special impact on the video games industry due to their popularity or their novel theme or both.

Unlike some US manufacturers, Atari designs and produces all of its own coin-op video games. Now under Chairman Raymond Kassar, Atari is also at the forefront of relations between the video game and personal computer industry on the one hand and vastly different fields on the other. The company is working with the US Army to adapt video games for use as informal training devices (a modified version of Battlezone is being used with tank commanders), and in 1981 Kassar met with French President François Mitterand to discuss the issue of computers for the Third World.

• MIDWAY

Midway Manufacturing Company is a wholly-owned subsidiary of the Bally Manufacturing Corporation, a company known for pinball machines (it vies with Williams for the title of world sales leader). Located in Franklin Park, Illinois, a Chicago suburb, Midway is Atari's only rival for the position of number-one

video game manufacturer in the world. In 1981 determining who was in first place depended more on how you asked and when you asked than on anything else. If you inquired as to who had produced more coin-op video machines in its corporate lifetime, Atari was the clear leader. But if you asked who was making more games per week, and you asked during the last six months of the year, Midway was usually far ahead of its California competitor.

Midway is important not only to the video present but also to the video past. Its Gun Fight and Sea Wolf games, introduced in 1975 and 1976, helped revitalize a weak industry that had overbought Pong-style games and then had nothing with which to follow them. Midway's Space Invaders, first sold in 1978, was the most important element making the video game industry the billions-per-year permanent success story it is today. Pac-Man, which debuted in 1980, has become the largest seller in US history, with about 100,000 games produced. Other Midway video success stories have included Galaxian, Rally-X, GORF, Omega Race, and Galaga.

Still, Midway's knockout games of the recent past have all been invented elsewhere. Its top three games—Pac-Man, Space Invaders, and Galaxian—all were originated by Japanese companies who licensed the games to Midway for US production. But industry outsiders and insiders who think Midway licenses all its games are incorrect. Its second early hit, Sea Wolf, was an original, as are some of its more recent games, such as Wizard of Wor and Omega Race. Three of the five games-within-the-game in GORF are Midway originals. The company employs engineering/programming staffs in two sites near Chicago and one in Florida and is very much in the design business as well as the licensing business.

Midway is the industry leader in the growing battle to protect video games from copyright infringers who illegally produce, distribute, or sell exact or close copies of video machines. Midway has taken a louder, stronger, more aggressive position than any other manufacturer in threatening to sue and actually suing infringing companies. In late 1981, according to Midway Marketing Vice President Stan Jarocki, the company was suing eighty different parties before the US International Trade Commission alone and was involved in fifteen different federal district courts in the United States. Its principal concern were "rip-offs" of Pac-Man, which could be found under some twenty different names, from Puck-man to Gobbler to Munchy Man, and whose numbers may

have been similar to those of the legitimate Namco/Midway Pac-Man itself.

Midway was founded in 1946 by two industry veterans who had worked at the now-defunct United Games Company of Chicago. They were Henry (Hank) Ross, who was the games designer, and Marcine (Iggy) Wolverton, who was the engineer. Before its 1972 acquisition by Bally, Midway manufactured electromechanical and other games. Now it makes nothing but video games.

Only five video games in history deserve to be called Monsters with a capital M. They are Space Invaders, Asteroids, Galaxian, Defender, and Pac-Man. With Space Invaders, Galaxian, and Pac-Man, Midway is the only company to have produced three of the five.

- **CINEMATRONICS** (a privately held company)

Cinematronics, in El Cajon, California, near San Diego, has had heavy impact on the industry for two reasons, both stemming from the same game. The game was Space Wars, introduced in 1978. Space Wars was the number-one machine of that year in sales of machines and earnings per machine. More important, it was the first game to use the video projection system variously called "Vectorbeam," "x-y," or "Quadra-Scan." These similar systems allow very precisely and sharply etched lines to be drawn on a screen at any angle, resulting in images that are clearer, more realistic, and more attractive than the fuzzier pictures available through the raster-scan system employed in normal television sets and most coin-op video games. These superior systems are the ones that have been used with exciting effect and great commercial success not only in Space Wars but also in games including Tailgunner, Rip Off, Star Castle, Armor Attack, and Solar Quest—all from Cinematronics—and Asteroids, Asteroids Deluxe, and Tempest from Atari.

Vectorbeam, as the system was named by Cinematronics, and Space Wars itself were both invented by Larry Rosenthal, who left the company and founded his own firm. Not surprisingly it was called Vectorbeam.

With Space Wars, Cinematronics "came out of nowhere." Before it almost no one inside or outside the industry had heard of

Space Wars, a game pitting two space fighters against each other, was innovative in one other area of great significance to the video game industry. It was the first hit game to use the space battle theme that has since dominated the earnings charts. Of the top five games of all time—Pac-Man, Defender, Asteroids, Space Invaders and Galaxian—all but one have space battle themes. Indeed Space Wars seems in some respects the father or at least uncle of the ultrasuccessful Asteroids: It had a similar projection system, one of its two spaceships looked much like the ship in Asteroids, it included the "Hyperspace" function that is important in the later game, and featured a single asteroid that drifted across the screen.

A number of other Cinematronics games have enjoyed unusual popularity, and some of these have been remarkable for other reasons as well. Tailgunner is the best "first-person" game of all time. (A first-person game is one in which you feel like you are in a ship or base, rather than simply operating a ship or base that you see on the screen.) Rip Off is by far the finest game in which two players cooperate to attain a mutual goal.

- **SEGA/GREMLIN**

This company sports an odd name because Sega Enterprises, Inc., acquired Gremlin, Inc., but wanted to preserve the other company's identity. In mid-1981 the company began calling itself Sega/Gremlin, though most of its well-known games were sold under the title of Gremlin/Sega.

Not only does Sega own Gremlin, but Gulf + Western owns the majority of shares of Sega. Gulf + Western, with principal offices in New York, ranked fifty-seventh in the 1981 *Fortune* 500, with 1980 sales of \$5.7 billion. Sega's main offices are in Los Angeles, its Gremlin manufacturing facility is in San Diego. Sega Enterprises, Ltd., a subsidiary in Japan, has manufactured S/G's cockpit games, including Monaco GP and Space Tactics, and Turbo, as well as upright versions of those games.

Important video games from Sega/Gremlin include Monaco GP, Astro Fighter, Carnival, Moon Cresta, Space Firebird, Astro Blaster, Space Fury, Frogger, Eliminator, and Turbo. Space Fury featured the first color version of Vectorbeam-type technology: S/G called it ColorBeam. Turbo, in the cockpit version, is the best driving game ever. Carnival, a colorful video version of an old-

time shooting gallery, probably provides more pure fun than any other video game. Astro Blaster and Space Fury were among the first games to use speech effectively: Astro Blaster to attract and instruct the player, Space Fury to get on his nerves through a snotty narrator who makes belittling remarks about the player's performance.

Still, Sega/Gremlin's greatest contribution to the video game industry may not be in marketing particular games or introducing ColorBeam but rather in producing a successful system allowing for various games to be interchanged in a single cabinet. The Convert-A-Game system, which debuted in 1981, allows the cabinet, picture tube, and control buttons and lever to remain while the internal computer program is changed by exchanging printed circuit boards and while the name and decor are switched on the cabinet. Though buying a new upright machine by any major company generally costs between \$2,500 and \$3,000, Convert-A-Game exchanges can be made for about \$1,000.

• STERN

Stern Industries is (along with Cinematronics) one of the only privately held companies of the big six major video game manufacturers. Its division, Stern Electronics, makes its video games. The chairman and founder of Stern Industries is Gary Stern.

Stern was born in Chicago in 1945, the son of Sam Stern, one of the patriarchs of the coin game business (he invented pinball devices including the drop target). Gary Stern attended Northwestern Law School and practiced in a downtown Chicago firm, where he learned bankruptcy law. Then he took what he knew about bankruptcy and put it together with what he and his dad knew about coin machines, added some luck, and became probably the fastest and richest mover in video games since Nolan Bushnell.

Stern Electronics was formed in December 1976 out of the ruins of bankrupt Chicago Dynamic Industries, a maker of pinball machines, arcade equipment, and video games. All the stock in the new, private corporation was held by Gary and his brother David, a surgeon. Father Sam, who had previously been a pinball designer and executive at Bally and Williams, provided advice and helped secure loans. Chicago Dynamics had been for sale at public auction, but there had been no takers. Gary Stern

purchased some of its assets, including what is now the ugliest headquarters building among the major video manufacturers, a glass block-and-brick monstrosity in an old industrial area of Chicago.

The new company began producing electromechanical pinball machines but recognized that the trend was toward microprocessors. It began dealing with Universal Research Laboratories, in Elk Grove, which was to design a microprocessor-based pinball system. But URL had financial trouble. Guess who piloted it through a bankruptcy proceeding and acquired 90 percent, and later 100 percent, of its stock? In purchasing URL, Stern Electronics also became the owner of URL's Electra Games subsidiary, which had manufactured about a dozen different coin video games, none of them big successes, as well as a home video system called Video Action. URL now designs and engineers Stern's video games.

Stern Industries, which owns Stern Electronics and URL, in 1980 acquired yet two more bankrupt firms, the famous Seeburg jukebox company and August Johnson, a cabinet manufacturing firm. In fiscal 1981 about 72 percent of Stern Industries's sales came from video games, 23 percent from pinballs, and 5 percent from jukeboxes.

Stern began making video games in 1979. Among the hits of its short video history are Berzerk, designed by Alan McNeil at URL, and Scramble and Super Cobra, both licensed from Konami Industry in Japan. Berzerk is just ahead of Scramble as the Stern sales leader, with about 17,000 machines produced.

The company also says it has introduced some service-related features never before seen in video games. In particular it has manufactured machines with "works in a drawer": components that slide out and in for relatively easy servicing.

The company is by far the least secretive of the major video manufacturers. All the others were reluctant to tell the author the names of their key game-designing programmers, most would not disclose the number of units produced per game, and none would discuss the prices at which its machines are sold to distributors. Stern, on the other hand, let its programmer Alan McNeil "autograph" each Berzerk machine, told the author the number produced per game, and provided exact wholesale prices for its three biggest games (\$1,955 for Berzerk, \$1,995 for Scramble, and \$2,029 for Super Cobra).

Gary Stern knows what he's doing, but he also knows fortune has been on his side. "We were in the right place at the right

time," he explains. "We're sort of like the old alchemists: We made gold out of lead. It takes luck and it takes a lot of hard work."

• WILLIAMS

Williams Electronics, in Chicago, is like the golfer who briefly tries the game, gives it up after middling results, then returns to it years later and hits a hole in one with the first swing of his club. Williams produced a couple of Pong-type games, Pro Tennis and Pro Hockey, in 1973, and a driving game, Road Champion, in 1977. None of these were big successes, and Williams stuck with what it knew best: pinballs.

But the company felt which way the wind was blowing, and the wind was blowing toward video. So Williams got together a group of engineers, headed by Ken Fedesna, and had them design a video game. The game was *Defender*, which rocketed to number one in both *Play Meter* and *RePlay* and became the fourth-biggest seller in US history. It was also a great game: challenging, interesting, colorful, unique. In late 1981, Williams introduced a sequel to *Defender*, called *Star Gate*.

Once a private company, Williams was purchased by a corporation called XCOR. XCOR was itself owned in part by Gulf + Western, the same giant that owns the majority of Sega. In 1981 Williams became a public corporation. Near the end of that year, no single person or enterprise owned even five percent of the company.

• OTHER AMERICAN COMPANIES

Dozens and dozens of US companies, active or defunct, have produced one or more coin-operated video games. Some have made games that have been fun to play, commercially successful, or controversial. The 1981 annual *Play Meter* directory issue lists thirty-one US video manufacturers, including the US subsidiaries and associates of Japanese firms. Some of the thirty-one are tiny and may never make a ripple in the video waters. Some—like Exidy, Centuri, and Taito America—have already tasted some success and need only one or two hits to be taken very seriously.

Others have excelled in other areas of the coin amusement world—for example, Gottlieb, known for its pinball games, and Rock-Ola, known for its jukeboxes—and have the money and facilities to rapidly produce thousands of machines if one of their games turns out to be a winner.

• FOREIGN COMPANIES

The three leading foreign countries that manufacture video games are Japan, Japan, and the group of islands whose capital is Tokyo. No country other than the US and Japan has been a significant factor in the American or world market, though several western European firms are giving it a try.

Without Japan the history of video games in the US would be radically different. Just think of the games coming out of that country: *Space Invaders* and *Deluxe Space Invaders* (Taito); *Pac-Man*, *Galaxian*, *Rally-X*, and *Galaga* (Namco); *Scramble* and *Super Cobra* (Konami); and *Donkey Kong* (Nintendo). Without these Japanese entries, three of the five top games in American history (*Pac-Man*, *Space Invaders*, and *Galaxian*) would never have existed and Midway might not have had a US-leading game since *Sea Wolf* in 1976.

Due to its contribution of *Pac-Man*, *Galaxian*, *Rally-X*, and *Galaga*, Namco—officially Namco, Ltd.—must be considered the Japanese leader in the US market. The owner and president of this Tokyo company is Masaya Nakamura, who not only is president of the Japanese Amusement Machinery Manufacturers' Association (JAMMA), but is also the leader of the International Association of Video Game Manufacturers. The IAVGM held its first meeting in Tokyo in March 1981. Attending were representatives from Atari, Exidy, and Midway from the US; Namco, Nintendo, Sega, and Taito from Japan; and Interflip from Spain. The organization vowed "to make continuous and tireless efforts" to protect games from unauthorized copying and to improve the image of the industry.

When you talk with executives of American video game firms, you get the impression the Japanese people aren't just from another country, but that they may even be from another planet: They are described as being markedly different from Americans. US manufacturers say Japanese companies are extremely secretive, that they make decisions slowly after consultation between

as many as fifteen to twenty executives, and that it is helpful to flatter them when seeking to acquire their products for manufacture in the US.

The American companies also say that Japanese players prefer a particular type of video machine: the kind that has a base or ship moving left and right along the bottom of the screen, with attackers descending upon it. The Japanese player, the Americans say, also prefers levers to buttons. In light of the remarks by the Americans it is interesting to note that the great majority of successful Japanese video games in the US have indeed featured the left-right action with descending enemies (such as *Space Invaders* and *Galaxian*) and have provided levers rather than buttons, at least in the original Japanese versions of the games (such as *Pac-Man*, *Space Invaders*, and *Galaxian*).

Despite the huge success of Japanese games in the US, the foreign relations picture isn't all import: There is export as well. Still, the diversity between Japanese and American tastes has meant that many US-designed games that have done well in their home country have had only modest success in Japan.

The importance of the US and Japan to each other is perhaps best symbolized in the very name of the company that is the biggest producer of American-designed games and that was founded by the man who invented video games in the first place. Nolan Bushnell got the name for his company from his favorite board game, the Japanese game *Go*. In *Go*, when you are about to do serious damage to your opponent, you utter what Bushnell calls "a polite warning." You say, "Atari."

• **DISTRIBUTORS, OPERATORS, AND OTHERS**

Distributors are the glue that holds the video game industry together. They buy from manufacturers and sell—with about a 25-percent markup—to operators. They also arrange financing on many of the machines they sell and provide parts and service for their customers.

Operators buy machines and place them in locations—arcades, restaurants, stores—where players finally get their hands on them. Some operators are also distributors or location owners. When the games are in a location not owned by the operator, the operator typically splits the machines' earnings fifty-fifty with the location owner and takes care of placement and removal of machines, service, and collection of quarters.

Operators of video and other games have a national trade as-

sociation called the Amusement and Music Operators Association. The key function of the AMOA is to put on an annual show, usually in Chicago, at the end of October. Every major video and pinball manufacturer reserves one or more booths to display its brand-new and recent products. Many of the greatest video games in history have made their American debuts at the AMOA show.

In addition to the manufacturers of the video games themselves, there are many other manufacturers who contribute to the video industry. They make cabinets, electronic components, other parts, kits to make games harder, test equipment to help technicians diagnose problems, colored plastic overlays to make screens more attractive, locks, burglar alarms, cleaning solutions, tokens, change machines, and devices for moving games from one location to another.

Other companies provide services. They decorate cabinets with silkscreened designs; they provide management, promotion, and accounting assistance; and they teach technicians how to service machines.

Another group that doesn't make or sell games but has a significant impact on the industry is the trade press. Clearly dominant in the video game arena are *Play Meter*, which operates in the New Orleans suburb of Metairie, Louisiana, and *RePlay*, headquartered outside of Los Angeles in Woodland Hills, California. *Play Meter* was founded in late 1974 by Ralph Lally II, a former game distributor. In late 1975 Ed Adlum, a transplanted New Yorker who had once edited the games section of *Cashbox*, established *RePlay*.

Play Meter in 1981 began appearing twice a month. *RePlay* is published monthly. Both appeal primarily to operators. In 1981 *Play Meter* had a paid circulation of about 5,000 (with another 3,200 unpaid) and *RePlay* had about 3,200 (with 500 unpaid). Perhaps most important to players, both magazines publish earnings surveys for video games and pinball machines.

THE HOME VIDEO GAME INDUSTRY: HISTORY, STATUS, STRUCTURE

In home video games *history is now*. Because the industry came of age with the systems that dominate today's market, distant his-

tory is not of great importance. In the coin-op arena, by contrast, the first game, if introduced today, would have significant appeal, and the father of the industry, Nolan Bushnell, founded a company that has over the years been the most important coin-op (and home) video game producer on the planet.

In the home video industry, the history that is important is mostly the history since 1977, when Atari introduced the first successful "programmable" home video system, the Atari Video Computer System. (In a programmable system the consumer can select one of a variety of distinctively different games: He "programs" the system's computer by inserting a game cartridge.) Other people and other companies were involved in home video games as far back as the planning stages of 1968, but their products—while impressive when first marketed—were far inferior to today's and the people who were important in the "old" days have lost most of their significance or have dropped out of the video world entirely.

Still, there is pre-1977 history, and some of its impact can be felt today. In many respects it started with Ralph Baer. In 1968, according to an article by Ralph Blumenthal in the *New York Times Magazine*, Baer was working at Sanders Associates, a Nashua, New Hampshire electronics firm, and he had an idea:

Ralph Baer was staring at the screen of a video display terminal when, he recalls, "the thought came to me you should be able to do something else with television besides watch it. You ought to be able to play games."

Baer's company researched the idea and developed a console that could broadcast signals to a television set connected to it. The company patented the idea and sold the rights to Magnavox. Magnavox later licensed the rights to other manufacturers, including Atari and Mattel.

Magnavox produced the first home video game system that was sold in stores. It was called Odyssey, it came out in 1972, and it had each of two players controlling a paddle that could hit a ball back and forth. The system was so rudimentary that it required players to attach plastic sheets to the TV screen to establish various courts and fields for different games.

Odyssey, like all games before 1977, was "dedicated." In other words it was a unified system, like an automatic 35-millimeter camera and a "dedicated" flash attachment designed specifically

for it that allows the camera to work automatically even with a flash. Dedicated video games allowed the player to play just one game, in one or more variations. Odyssey provided a variety of Pong-style games: tennis (one paddle on each side of the screen), hockey (two paddles on each side), squash (two paddles on one side, hitting against a wall), and so on.

In 1975 Odyssey was joined in the dedicated video game market by Atari. Atari was best known for its Pong system sold in a variety of stores but particularly by Sears, which bought 100,000 Pongs from the manufacturer in the introductory year alone. Also entering the market were Fairchild Instrument, National Semiconductor, General Instrument, MOS Technology and many others. At the 1976 national Consumer Electronics Show, some 60 makers of dedicated games displayed their wares.

Then in 1977 came Fairchild's unsuccessful Channel F, the first programmable system, followed by Atari's Video Computer System. Atari's was the first successful programmable system and now offers about fifty cartridges, the most famous being Space Invaders, Asteroids, and Missile Command, all of them home versions of coin-op giants. Atari soon dominated the home video game market, and its market share in 1980 was estimated at 80 percent, with the fraction remaining about the same in 1981.

In 1979 Magnavox attempted to meet the Atari challenge with Odyssey², its own programmable system. Finally, in late 1979, Mattel introduced Intellivision. By 1980 Odyssey and Mattel about equally shared the 20 percent of the market not owned by Atari. Programmable-system entrants Fairchild, Bally, and RCA lasted only briefly after entering in 1977-78 and by the end of 1980 were gone. In 1981 Mattel moved ahead of Odyssey.

All of the big three have the financial weight to stay around awhile. Atari is a \$900-million-a-year subsidiary of the approximately \$3 billion-a-year Warner Communications. Mattel, not owned by another company, does about a billion in sales annually. Odyssey is part of the giant multinational Philips Corporation of the Netherlands, which in 1980 was the tenth largest company outside the US with yearly sales in excess of \$18 billion.

The programmable systems have found a responsive public. At the end of 1980 about 3.5 percent of American homes had home video systems. Just a year later the percentage had more than doubled to 8 percent. Atari's estimated 1981 sales were 2.8 million consoles and 18 million cartridges; Mattel's were 600,000, up from 200,000 the previous year, and 2.5 to 3 million cartridges. Odyssey was just behind Mattel. Multiplied by an

average retail price of about \$150, Atari's sales of consoles alone amounted to some \$420 million at retail; the cartridges, multiplied by an average retail of around \$25, were worth about \$450 million.

A small but growing factor in the world of home video games are the home computers sold by such companies as Radio Shack (especially the TRS-80 Color Computer), Apple, Commodore, IBM, Texas Instruments, and the omnipresent Atari. These microcomputers are much more expensive than home game systems (about \$400 and up) and are designed primarily for purposes other than entertainment. Because the number of such computers and the sales of cartridges compatible with them are tiny contrasted to the sales of consoles and cartridges that are designed wholly or mostly for games, personal computer video games are not covered in this book. Still, some of them are excellent and many are similar or almost identical to the games playable on the consoles that are designed primarily for video games. Atari, for instance, offers Space Invaders, Asteroids, and Missile Command for its Personal Computer System as well as for its Video Computer System. Because some personal computer games are similar to cartridges in the more popular game console libraries, much of this book's strategy on game console cartridges applies to personal computer games as well.

Personal computer games have the advantage of being able to operate in consoles with much more memory capacity than home video game consoles: generally sixteen or more kilobytes of information, as contrasted to the four kilobytes of most game systems. As a result, graphics are often superior. Personal computer game cartridges are also relatively costly, usually retailing for about \$40 to \$50, roughly twice the cost of home video game console cartridges.

HOW THE COIN-OP GAMES COVERED WERE SELECTED

A large variety of factors was considered in determining whether to cover a given game at all, deciding in which category (Monsters, or Other Stars) to place it, and allocating space to it.

The most important factor was sales of the game. Big sellers are generally more important to video history and of more inter-

est to readers than games that haven't sold well. A very important related factor was sales rank in the year or years the machine was sold as new: Sea Wolf, the biggest seller of 1976 with about 10,000 machines sold, in most cases would deserve more mention than a game that had sales of 12,000 in 1981 but didn't even rank in the top ten in the market that by then was vastly larger than that of five years before. Another especially important criterion was earnings per machine, especially as reflected in surveys by *Play Meter* and *RePlay* magazines.

Whether a game was innovative also figured into the selection process: Whether it was the first game to employ a certain theme (such as space battle), the first to have certain objects on the screen (such as asteroids), the first to have certain player-controlled functions (such as Hyperspace), or the first to benefit from significant technological achievements (such as Vectorbeam-type projection). Another factor was whether the machine was controversial.

Some preference was also given to recent machines (especially those that were introduced in 1981-82 or became popular during those years) because audience interest is likely to be greater in these games than in older games that were once very popular but that have since slipped from memory and from almost all locations.

Complexity of games also affected the determinations—not regarding whether to include a game, but regarding how much space to devote to it.

One criterion was rather subjective, and helps explain why this book contains some games that some readers will not believe deserve coverage and fails to include some machines that some will think should have made the cut. This criterion was whether the author and technical adviser believed a given game is a “good game.” Factors helping to make a game “good” in their view are, in order:

- (1) Being challenging but not overwhelming for a serious video player who has played the game a few times before.
- (2) Being fair (points awarded and destructions of the player's ship or base being almost totally a function of execution and strategy, not luck).
- (3) Giving the player precise control over his vehicle or base.
- (4) Being attractive in video and audio (bright, distinct pictures; color preferred over black and white; pictures and sounds that are close to what they are supposed to represent; pictures,

word, and number displays, and sounds that are funny or that contribute to the game's entertainment or strategy; speech that is easy to understand and that contributes to the game).

(5) Being funny or amusing.

(6) Not being annoying.

(7) Not being a "pattern" game. (The game should not be able to be mastered primarily by memorization of where the monsters or invaders or ships will move at various points in the game.)

(8) The last criterion—and this had much to do with whether a game was described in greater or lesser detail—was whether the coin-op game ever was followed by a similar or almost identical home video game and, if so, whether the home game was popular. Coin-op games followed by big home cartridges deserve especially detailed treatment because most of the strategies applicable to the coin-op machines can be used in the home versions as well. Therefore strategy on such a coin-op game is useful to more readers than advice on an equally popular coin game that has not been followed by a home video cartridge.

It is important to make clear that to be included in the book, and even to be included in the category of Monsters, a game need not be strong in every respect and may in fact be weak in more than one important area. In particular, sheer titanic popularity of a machine guarantees its inclusion, even if the author and technical adviser have to hold their collective nose. For example both of them would be ecstatic if all Galaxian machines (not innovative, but unfair, annoying, and to a significant extent a pattern game) were dumped into one of the deeper reaches of the Arctic Ocean, but the stupid game is in the book, and in the Monsters section too. Too many other people—some of them, surprisingly, able to function in society without guardians or drugs—liked the dopey machine.

GLOSSARY OF VIDEO SLANG

A whole new language has grown up around video games. Video slang includes not only the official names that manufacturers give to aliens, ships, weapons, and functions, but also the creative and humorous phrases that players have devised. Some video terms—especially *Hyperspace*—have seeped into the general language of the United States. Here is a variety of video slang as spoken by the video game players of America.

ASTEROID: Noun: a jagged celestial body in Asteroids, Asteroids Deluxe, and home video Asteroids. Synonyms: Boulder, Rock.

BEAVER: Noun: the smaller saucer in Asteroids, Asteroids Deluxe, and home video Asteroids. Synonyms: the Beaver, the Little Man, the Little Saucer, the Little Ship, Lord Vader, the Small Saucer, the Small Ship.

BOARD: Noun: The screen-displayed list of top players. Synonym: list, scoreboard.

DOUBLES: Noun: The two-player version of the game. Synonym: Two-man.

GAME, THE: Noun: the hottest machine or cartridge at the present time.

HYPERSPACE: Noun: an area of space other than that depicted on the screen (as in "Go into Hyperspace!") or the Hyperspace control on a machine panel or a home video controller (as in "Hit the Hyperspace!"). Verb: to go into Hyperspace (as in "You can't fight them off! You better Hyperspace!") or to cause something to go into Hyperspace (as in "Hyperspace your ship!"). Use in nonvideo world: Noun: somewhere else (as in "Why don't you go into Hyperspace?"). Verb: to go somewhere else (as in "I was due home an hour ago. Gotta hyperspace!") or to cause something or somebody to go somewhere else (as in "How about Hyperspacing the kid so we can go to a movie?").

KILL (AS IN "KILL A MACHINE" OR "KILL A GAME"): Verb: To demonstrate mastery of a game. Synonyms: beat, blow away, destroy, rack on, waste, wipe out.

LUCK: Noun: the sole factor causing poor performance in a game.

ON THE COUNT: Adjective: aware of the number of shots taken at aliens in Space Invaders or Deluxe Space Invaders and planning to shoot Mystery Ships on the twenty-third and each succeeding fifteenth shots in order to obtain the maximum 300 points per ship.

SHIP: Noun: a vehicle in space, in the Earth's atmosphere, or on the Earth's surface; that is, any vehicle; usually applied to the player's vehicle, not the enemy's. Synonym: Man (especially as

in "Your man"), Plane, Rocket, Spaceship. Use in nonvideo world: a vehicle, especially a car (as in "Time to hit the road. Are we taking your ship or mine?"). *Note:* Terms used to describe video vehicle functions are often applied to nonvideo vehicles as well (as in "That guy driving that red ship looks drunk; you better rotate into the left lane and thrust past him." "Yeah, but what I'd like to do is Smart Bomb the sucker.")

SHOT: Noun: a lethal projectile launched by friend or enemy. Synonyms: ABM, Bullet, ICBM, IPBM, Laser Shot, Missile, Rocket, Round, Torpedo (even in nonsea games).

SKILL: Noun: the sole factor causing excellent performance in a game.

SMART BOMB: Noun: a friendly or unfriendly weapon capable of seeking and destroying one or more opposing beings, vehicles, bases, or cities. Synonyms: Bomb, CM, Cruise Missile, Nuke, SB, Smart, Smart Missile. Verb: to use a Smart Bomb or to use a Smart Bomb on something or somebody. Synonyms: Bomb, Nuke, Smart.

TURN OVER (AS IN "TURN OVER A MACHINE" OR "TURN OVER A GAME"): Verb: to exceed the number of points a screen can display and therefore to go back to zero; similar to turning over a car odometer (as in "For a while I was stuck around 900,000 on Defender, but then suddenly I began to turn over the machine almost at will"). Synonym: roll over.

UP: Adjective: having the right to play the machine immediately (as in "That guy just lost his last ship; you're up.").

WALLY: Noun: the large saucer in Asteroids, Asteroids Deluxe, and home video Asteroids. Synonyms: the Big Man, the Big Saucer, the Big Ship, the Fat Boy, the Fat Man, the Large Saucer, the Large Ship, Wally.

WAVE: Noun: a complete group of aliens or other targets. Synonyms: field, level, phase, rack, round, table (only in Pac-Man), wall.

WRAPAROUND: Noun: a shot, missile, or vehicle capable of moving offscreen and then coming back immediately on the opposite side of the screen. Synonyms: Reflection, Reflection Shot, Wrap, Wraparound. Verb: to behave like a Wraparound Shot.

About the Author

Craig Kubey is a thirty-two-year-old California writer and attorney. He is a graduate of the University of California, Santa Cruz, where he majored in psychology, and of the School of Law of the University of California, Davis.

It was in law school that Kubey first became heavily involved with pinball machines, the ancestors of today's video games. His interest peaked during Christmas vacation 1973, when he and a best friend found to their joy that the Bally Fireball machine in the law school lounge was giving unlimited free games. They had no time to report the problem to the repairman, but each was able to squeeze in approximately twenty-five games a day during a four-day period.

After law school Kubey moved to Washington, DC, where he served as Legislative Assistant to Congressman Robert Drinan, the Jesuit priest recently removed from politics by the pope. Next, Kubey worked for Ralph Nader. Nader, Kubey, and others established the Equal Justice Foundation, a Washington public interest group that promotes access to justice.

In 1979 Kubey moved back to California. It was to be a fateful act: In April of that year, his brother, Ken, introduced him and their sister, Linda, to the classic Space Invaders game at Golden Gate Lanes in El Cerrito. Though the siblings planned to spend \$1.50 between them, they poured out more than \$11.00. Kubey has been hooked on video games ever since.

In 1980 Kubey returned to Davis, where he lives with his wife, KUP, his daughter, BUG, and his cat, ATC. In addition to writing, Kubey also runs, pumps iron, and plays blues guitar. His home is located an easy jog from eight Defender machines, two Asteroids games, and two Missile Command machines. He carries a Hyperspace button and a roll of quarters in his briefcase at all times.

About the Technical Adviser

KQB is the technical adviser on this book. He is perhaps the greatest video game player in history. So rabid is the desire for his awesome knowledge of video strategy and technique that KQB has had to adopt disguises, change his address and phone number countless times, and, of course, cease use of his true name to avoid being surrounded twenty-four hours a day by players begging his precious advice.

KQB was born in April 1962 in Berkeley, California, and grew up in nearby El Cerrito, where he was educated in the public schools. In 1979, however, to avoid harassment from video addicts, he moved to a University of California alumni camp in the Sierra that is abandoned nine months a year. There he lives in the camp dining hall, along with an Asteroids machine, a Defender game, a television set with a complete supply of Atari home video games, and his twin panthers, Thrust and Hyperspace. He spends seven months a year on the road in video game competitions.

It was in April 1976 that KQB's unique gifts first became evident. On a day of high humidity and record heat, in a fetid, disgusting delicatessen just north of Manhattan's Greenwich Village, KQB, then not quite fourteen, easily popped a game (got the replay) on his very first attempt on a pinball machine so powerful that it had to be unplugged between plays so as not to utterly destroy the electrical power grid of the entire northeastern United States. Popping a game on such a potent machine under such brutal conditions proved to observers worldwide that KQB was a player to be reckoned with.

Since that day KQB has mastered all known video and pinball games and has played in tournaments and exhibitions on every continent of the world, including Antarctica, where he entertained US soldiers stationed at Little America. In July 1979 he won the gold medal for his country in the individual Space Invaders competition in the Pan American Games in Puerto Rico. In October 1981 he presented a royal command performance on Asteroids for Prince Charles (himself a fine Star Castle player) and a turn-away audience at London's Royal Albert Hall. KQB's score that day was so high it cannot be recorded here due to space limitations.

KQB has published articles on video game history, theory, and pathology in such noted periodicals as *Video Annals* and *Hyperspace Magazine*. He has also testified before the US Senate Special Committee on Aging on the need for retraining in Asteroids and Defender for senior citizens who were raised on early pinball machines and darts.

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