

The Twice Monthly Publication
for the Coin Operated Entertainment Industry

PLAY METER

Volume 8, Number 3

February 1, 1982

VIDEO GAME THEFT EPIDEMIC

10+ PAGES OF TECHNICAL FEATURES

BUSINESS MYTH: 'DEBT IS BAD'

HOW AN ARCADE OPERATOR
COPES WITH PARENTS



THE COMPLETE STORY: **TOURNAMENT FIASCO**

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The Twice Monthly Publication for the Coin Operated Entertainment Industry

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PLAY METER, February 1, 1982. Volume 8, No. 3. Copyright 1981 by Skybird Publishing Company. *Play Meter* (ISSN 0162-1343) is published twice monthly on the 1st and 15th of the month. Publishing offices: 508 Live Oak St., Metairie, La. 70005; Mailing address: P.O. Box 24170, New Orleans 70184, U.S.A.; tel.: 504/838-8025. Subscription rates: U.S. and Canada—\$50; foreign: \$150, *air mail only*. Advertising rates are available on request. *No part of this magazine may be reproduced without expressed permission.* The editors are not responsible for unsolicited manuscripts. Second-class postage paid at Metairie, La. 70002 and additional mailing offices. **Postmaster:** Send Form 3579 to PLAY METER, P.O. Box 24170, New Orleans, La. 70184.

European Office: PLAY METER Promotions, "Harescombe" Watford Road, Northwood Middx. England, Northwood 29244.

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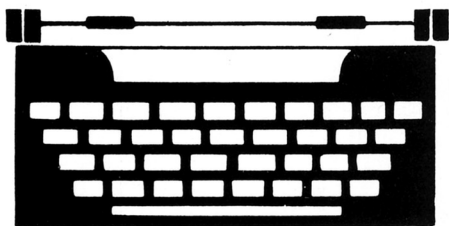
Nintendo

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Letters to the editor . . .



Lest we forget

I agree wholeheartedly with your editorial in the December 1 edition stating that the AMOA should do more to improve the image of our industry. Just this week, community members in upper Manhattan listened to arguments from a local merchant who wanted to open an amusement arcade in the area and from community leaders and local politicians who were opposed to such an establishment. The result of the meeting was that the merchant was denied the variance he sought because the community was against the drugs and prostitution the arcade would bring.

Ridiculous! Right. However, it is not what you are but what other people perceive you to be that determines your acceptance or rejection. Unfortunately, our image is not a positive one and instances like the one related above are not isolated but typical of the problem we are constantly faced with. It is in this area that the AMOA should exert their leadership capabilities and work toward improving the industry's image. Should we fail in this endeavor, then local legislators or the Supreme Court will rule us out of business.

Bob DeMartini
Friendship 1 Amusements
Brooklyn, New York

[Ed. Note: The problem of the New York City action is put in perspective in an upcoming analysis in Play Meter by correspondent Roger Sharpe.]

Politicos' danger

I have been reading your magazine for some time and thought it is time I speak out on the subject of the situation on the legality of the authorities trying to prohibit the operation of video and pinball machines in certain localities.

This is nothing new to the authorities. Since coin devices started to appear back in late 1800, they have always been the subject for politicians to try to control through licenses and taxes, either on the machines or locations. When one locality started, it spread like wildfire throughout the country until the operators and distributors, with the help of manufacturers, banded together and fought these politicians until they stopped and now the politicians are trying to do it again. No doubt they will never give up as long as politicians keep coming. As new blood and operators come into the business, they need to do the same thing as they enter the coin machine business.

I am entering my 45th year in the coin machine business, having worked as mechanic, operator, and

distributor and know of all the ups and downs the industry has to endure as long as there are politicians trying to make a name for themselves. Reading articles such as the one I am enclosing from the *Wall Street Journal*, I hope this letter will help the coin machine people to get busy and stop these politicians from doing their thing at the expense of the coin machine business.

Keep up your good editorials.

William E. Happel
Hapco Sales Company
Reno, Nevada

[The writer refers to the WSJ article of October 24, concerning small towns' banning electronic games. The governments cite the "addictive" nature of the games and the fevor of parents' opposition to arcades. (For tactics to deal with citizens' opposition, see "Why Parents Oppose Coin-ops," Play Meter, December 1.) On the industry's side, the WSJ quotes Larry Berke, Midway Manufacturing's sales director, to say that an ice-cream parlor is a "hangout; it's a healthy hangout," and he argues that video games provide "an educational hangout."]



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It didn't take the players long to find out the Tournament Spectacular was not.

Tournament Fiasco:

How it happened

By David Pierson

At the bottom of the Tournament Fiasco was the disturbing truth that it had all happened before...and it was covered up.

The blame for the failure of the \$400,000 Tournament Spectacular in Chicago can be placed squarely on the shoulders of one man, Lee Peppard, president of Tournament Games, Inc. (TGI), the company running the event. And allegations by Peppard that the blame for the failure of the Tournament Spectacular should also be shared by others associated with the event appear to be unfounded. These are the major findings of *Play Meter* magazine's investigations into the world championship coin-op games tournament held October 29-November 2 at the Expocenter in Chicago.

At that five-day event, winning players in five coin-op modes—foosball, pool, darts, table hockey, and video—received bad checks and worthless receipts for gifts and prizes.

Besides the great embarrassment the Fiasco created for those associated with coin-op amusements, there were countless questions swirling within the industry, questions that had to be answered.

How could this scheme reach such proportions? How could it even get off the ground? How could a company with Atari's reputation get drawn into the whirlpool? Why

wasn't the players' money set aside in an escrow account? Does this failure, of such high proportions, eliminate the possibility of similar promotions by the industry in the future?

But the most important question of all was one that could be asked to the industry as a whole: Did we learn anything from it all?

It is with that purpose in mind that *Play Meter* conducted an intensive investigation into everything surrounding the Fiasco. And it is with that purpose in mind that *Play Meter* now makes a complete report of those findings. For it is a well-established truth that if we do not learn from our mistakes, we will be doomed to relive them.

And, as it turns out, in this particular case, the whole Tournament Fiasco incident could have been averted if only everyone would have been aware of a certain part of industry history, dating back only as far as April, 1980.

Peppard's philosophy

To understand why the Tournament Spectacular failed so spectacularly, one has to understand Lee Peppard's philosophy concerning

(Continued on page 8)

*Tar-Baby stay still an' Brer Fox and Brer Bear dey lay low.
Brer Rabbit kep on axin' him an' de Tar-Baby kep sayin' nothin' an' finally Brer
Rabbit draw back wid his fis' an' blip, he hit de side of the Tar-Baby's head. His fis'
stuck an' he cain't pull loose. "Leggo my fis'!" he holler. "Ef you don' let me loose,
I'll hit you again," and wid dat he fotch him a swiipe wid de udder han' and' dat
stuck too. Tar-Baby, he ain't sayin' nothin', and Brer Fox and Brer Bear lay low.
Den Brer Rabbit he hit, kick, butt wif his haid till he tarred all over, only his eyes
showin'.*

*Den Brer Fox and Brer Bear, dey sauntered out, whistlin' and lookin' innocent.
Dey do a little shuffle and dance.*

—From "The Wonderful Tar-Baby"
Tales of Uncle Remus
By Joel Chandler Harris

Tournament Fiasco:

What it means

By David Pierson

A national scandal surfaces
on the day the Supreme Court
considers the fate of arcades,
and no one stands up to
represent the industry...
Where are the leaders?

Industry reaction to the \$400,000 Tournament Fiasco in Chicago underscored once again the divisiveness and lack of coordination within the industry. With three trade associations, a dozen or so major manufacturers, hundreds of distributors, and thousands of operators—we still don't have a leader. You'd think in an \$8.2 billion industry, things would be different, that there'd be someone who could step forward and speak for the industry when its reputation is called into question. But there isn't.

On the same day the U.S. Supreme Court began considering arguments in the landmark Mesquite, Texas age restriction case which will decide if local municipalities can make arcades off-limits to anyone under a certain age, reports like the following one were beginning to break concerning the Tournament Fiasco:

"Some participants said they had gone through long, often expensive qualifying tournaments that began last June in game arcades and pool halls around the country, then spent money to come to Chicago only to pay \$1 admission fees to walk into the Expocenter, and then entry fees for various games. Those playing electronic games had to drop their own quarters for each game."

It was the worst possible timing. On the same day the U.S. Supreme Court is considering the merits and demerits of amusement centers and whether local municipalities have a right to place age restrictions on those centers, a news event of national proportions surfaces which tells a scandalous story of players

(many of whom would have been under age, according to Mesquite, Texas' standards) getting ripped off by a national tournament that had its origins in arcades all over the country and which was run by someone who still owed players from similar events from more than a year ago!

It surely added fuel to the fire for those local vigilantes who, opposed to games for obscure reasons, were looking for less obscure reasons to popularize their anti-game/anti-arcade cause all over the country.

And the industry's reaction to all of this?

Like Brer Fox and Brer Bear, "Dey lay low."

The more things change, the more things stay the same. Laying low was the same response the industry did back in 1978 when the Chicago *Sun-Times* smeared the industry in a grossly unfair "Mirage" expose series.

For the one-in-three newcomers to the industry who are unfamiliar with the public relations black eye coin-ops sustained back then, here it is in a pellet. The *Sun-Times*, in a series of articles, charged that "lawlessness is the general rule" in the coin machine industry. In front page banner headline articles, which were picked up nationally (even by CBS-TV's "60 Minutes" news team), the *Sun-Times* charged: "Operators say their product is pinball and jukeboxes, but the Mirage discovered they were really trading in illegal kickbacks, etc."

And how did the industry respond to all this?

"Dey lay low."

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tournaments.

In an interview in the May 15, 1978 issue of *Play Meter* magazine, Peppard explained that a tournament was not supposed to make money, in and of itself: "Everybody who is in manufacturing or marketing has only one thing to sell, and that is quarters in the cash box. And promotions put quarters in the cash box. They create an interest, and that produces a greater income for the operator because the event is taking place. Now, we look at financing the tour like any other overhead item, and that is passed on in the cost of the product."

Peppard used that same philosophy to justify the \$400,000 Tournament Spectacular.

After the tournament had failed, Peppard explained to *Play Meter* that "the objective of the tournament was still to sell Tournament Soccer, Tournament Eight Ball, Tournament Mark Darts, and Tournament Hockey." That was the whole point of the tournament, he said, to sell product.

He even explained that it was anticipated the tournament would operate at a loss. In fact, he described a loss or shortfall of \$100,000 at the tournament as "a

manageable and acceptable marketing cost" because that loss could be recouped in TGI's margins on the sale of Tournament products—Tournament Soccer, Tournament Eight Ball, Tournament Mark Darts, and Tournament Table Hockey.

"If a tournament costs \$100,000 a year or \$8,000 a month and creates a demand for X number of pool tables or soccer tables or dart games, then it is justified," he told *Play Meter*.

There is, however, a flaw in Peppard's marketing strategy, and it was this flaw which caused the Chicago Fiasco. In his tournament promotion scheme, Peppard created a large part of the expenses up front. But, with other companies, the marketing expenses are accrued over the course of the year. This means that, unlike other companies, a very large part of Peppard's marketing expenses came due all at the same time.

It's a cash flow nightmare. By sponsoring a big money tournament which costs big money and which is then written off as a marketing expense, Peppard made a habit of digging himself into a hole and then extricating himself from that predicament afterwards by counting on the good graces of his creditors.

Creditors

It follows that, if everything comes due at once, everything cannot be paid at once. Thus, some creditors have to be paid slow, or late.

It also follows that those creditors who would be most eligible for this slow payment schedule (whether or not it's agreeable to them) are those creditors who have a vested interest in the long-term viability of Peppard's company. Companies like Sutra Corp., U.S. Billiards, and Arachnid—all of which had product that was marketed by Peppard and all of which were owed money by Peppard—fit the bill here.

It's worth nothing that, when talking about his business arrangements with these companies, Peppard rattled off a payment schedule of "30, 60, 90, 120 days," as though all these various pay schedules are one and the same thing to creditors. Obviously, they're not.

It's also worth nothing that, at the time of the collapse of the Tournament Spectacular, Peppard was heavily in debt to all three of these companies, apparently for longer than 120 days. So it was in the best interests of all three of these com-

(Continued on page 10)

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2	40,000	40,000	300	500	500	1,200	500		
3	40,000	25,000	150	300	300	750	500		
4	3,000	1,500	100	200	200	500	200		
6/4	25,000	15,000	100	150	150	400	150		
7/8	15,000	600	80	100	100	300	100		
9/12	10,000	500	60	80	80	200	80		
13/16	750	500	40	40	40	100	40		
17/24	500	300	20	20	20	70	20		
25/32	400	200	-	-	-	20	20		
33/48	300	100	-	-	-	20	20		
49/64	250	-	-	-	-	-	-		

Entry Per Player: Entry Certificate Only: \$10 Entry Certificate Only: \$5 Entry Certificate Only: \$5 Entry Certificate Only: \$25 Entry Certificate Only: \$25

ENTRY REQUIREMENTS: Open Singles: open to all players with ENTRY CERTIFICATE. Women's Singles: open to all women players with ENTRY CERTIFICATE. Specialty: open to all players. Second Chance: open to all players eliminated from other events. The dollar amounts listed in the prize money breakdown represent a combination of cash and prizes. All individuals placing will receive part of their prize package in cash.

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ATARI

Posters like this, players claim, implied Atari was a co-sponsor. Atari's reaction: The poster was not approved.

An approved Atari poster makes distinction between TGI events and the Atari event.

(continued from page 7)

The theory back then was that we should let it blow over and then "saunter out, whistlin' and lookin' innocent."

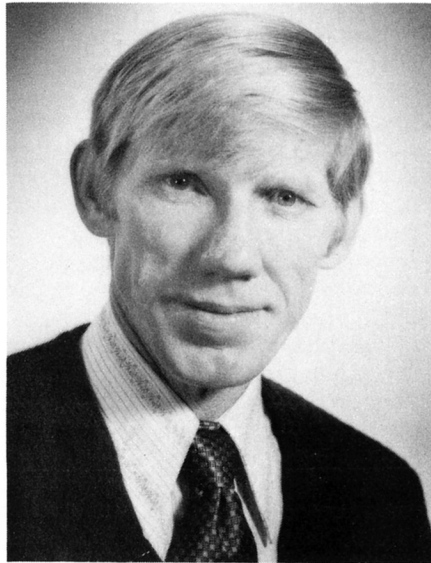
For those who think this strategy worked, they might be well advised to review the public record of the jukebox rate review hearings before the Copyright Royalty Tribunal. ASCAP, pleading against this industry, dredged up the whole sordid mess. They had one of the Sun-Times reporters on the case testify about the "general lawlessness" in the coin machine industry.

The AMOA argued that it was irrelevant, immaterial, and should be ignored.

But, in light of the CRT decision which was weighted heavily in favor of ASCAP, one wonders if the industry would have fared better if it had shown some fight back then.

Now, today, despite the industry bureaucracy of three disjointed trade associations and a general awareness that we have an image problem to overcome, a public relations nightmare such as the Tournament Fiasco surfaces at the worst possible time.

And the industry response today, with all this bureaucracy?



Charlie Cobb

The same.
"Dey lay low."

So Charlie Cobb, an arcade operator in Gary, Indiana—a newcomer to the business, by the way—took it upon himself to try and generate some sort of industry response to the problem.

First, to see if maybe the operators' national association might want to take an active hand on the matter, he

contacted the AMOA, only to learn that if there were to be an industry response, it would probably have to start somewhere else.

No doubt he must have learned that everyone's hands were tied. Before anything could be said, before it could even be considered, it had to be taken up at the next committee meeting.

There were overwhelming questions that had to be considered.

Should an association representing the industry be so bold as to contact the press (!) and say, because this reflects on the industry, it too is looking into the matter?

Yes, there were overwhelming questions that had to be considered.

What if the whole thing turns out to be "a tempest in a teapot"? Would it have been wise to have said anything at all if the whole thing turns out to be a "tempest in a teapot"?

What if we say something wrong? Would we lose our jobs?

What if they ask a question, and we don't know the answer? Would the press (!) take "I don't know" for an answer? What about "I'll try to find out"?

What if the truth is too horrible to reveal?

(Continued on page 15)

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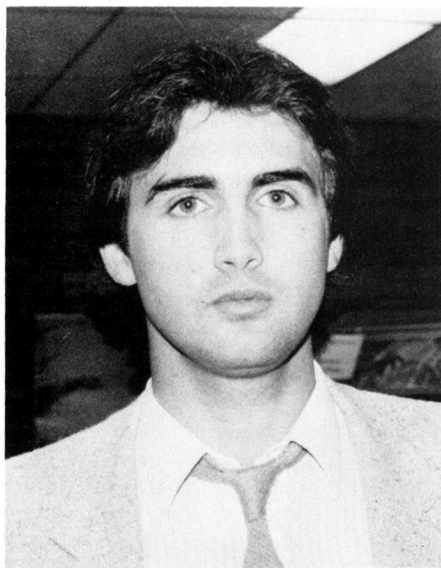
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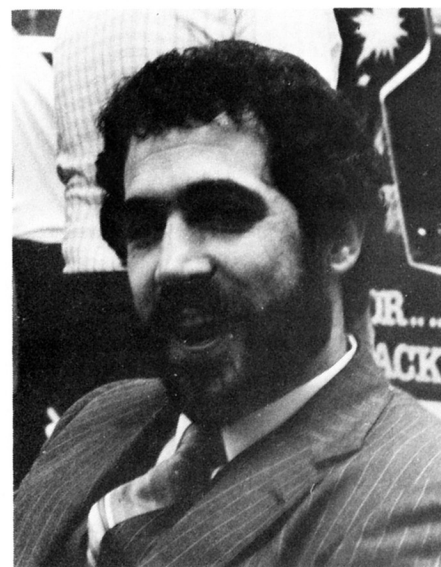
(continued from page 8)



Player Lott



TGI's Peppard



Atari's Ballouz

panies that Peppard be allowed to stay afloat. For any of them to demand timely payment would apparently only have caused Peppard's bankruptcy. And since Peppard's debt to each of these companies was already very great indeed, none of the three was in a position to do anything which would compromise Peppard's ability to pay back what he already owed.

It was a different story with some of the other creditors, however. One-time creditors, which had no vested interest in the continued viability of Peppard's TGI, had to be first on the list to be paid. Such was the case with the hotel which wanted an iron-clad guarantee that it would get paid, the decorating company which wanted its cash up front, and the retail chain which was supposed to supply some of the prizes.

The hotel ended up getting a co-signer who figures he is now stuck with about a \$20,000 hotel bill. The decorating company got its money up front from Peppard. And the retail chain, Video Concepts, which was supposed to be paid by Peppard within 30 days of delivery of the goods, did not deliver any goods because news of the tournament collapse reached them before any deliveries were made.

And then there was a third tier of creditors—the players.

Players

Over the years, Peppard cultivated a lord/serf relationship with his players. Through his pro tour of big money foosball tournaments all over the country, he had attracted a dedicated core of journeymen foosballers who would follow his tournaments from one city to the next to clean up on the prize money.

No matter where his tournaments were held, because the prize money was there, the same names would come up as big winners—Johnny Lott, Doug Furry, Dan Kaiser, Michael Bowers, Lori Schranz, Tom Spear, Faye McWilliams, Steve Simon, and Ricky Martin. There were others, of course, and they all became touring pros, supporting themselves on their tournament winnings and/or bets from challenge matches with lesser skilled players.

And those at the top of the heap were given an opportunity for something more, a job. Many of the big tournament winners ended up at one time or another during their foosball playing careers as Peppard's employees. They went on the road, staging exhibitions in hopes of

stimulating player interest in the sport and Peppard's product.

What is noteworthy here is that, unlike other promotional companies where employees of the sponsoring firm are ineligible from winning any prize money, the pros in Peppard's employ were encouraged to compete in the tournaments, to sharpen their skills and to win for themselves even more money.

And many of those who were not employed by Peppard were, nevertheless, equally dependent upon his big money tournaments to support themselves. As a result, when Peppard's cash squeeze got tighter, it was easy for the tables to turn to the point where the players felt indebted to the man and the company that had been supporting them all these years with his tournaments. The players became potential secondary creditors—like U.S. Billiards, Sutra, and Arachnid—because they too had a vested interest in the continued viability of Peppard's promotional scheme.

Rubber check

Then the video game boom hit, and one of the first casualties was foosball. The bottom dropped out of the market. Fewer and fewer players were playing the game; and, as a result, fewer and fewer operators were buying the tables, and that made it increasingly difficult for Peppard to make good on his ever-increasing debts.

Still, he forged ahead with a \$150,000 regional tournament in Portland, Oregon in April, 1980, and players were issued (apparently for the first time) rubber checks.

Then a month later, at a \$100,000 regional tournament in Chicago, Peppard again issued rubber checks to players.

And again, two months later at a \$25,000 satellite tournament in Los Angeles, more players were issued bad checks.

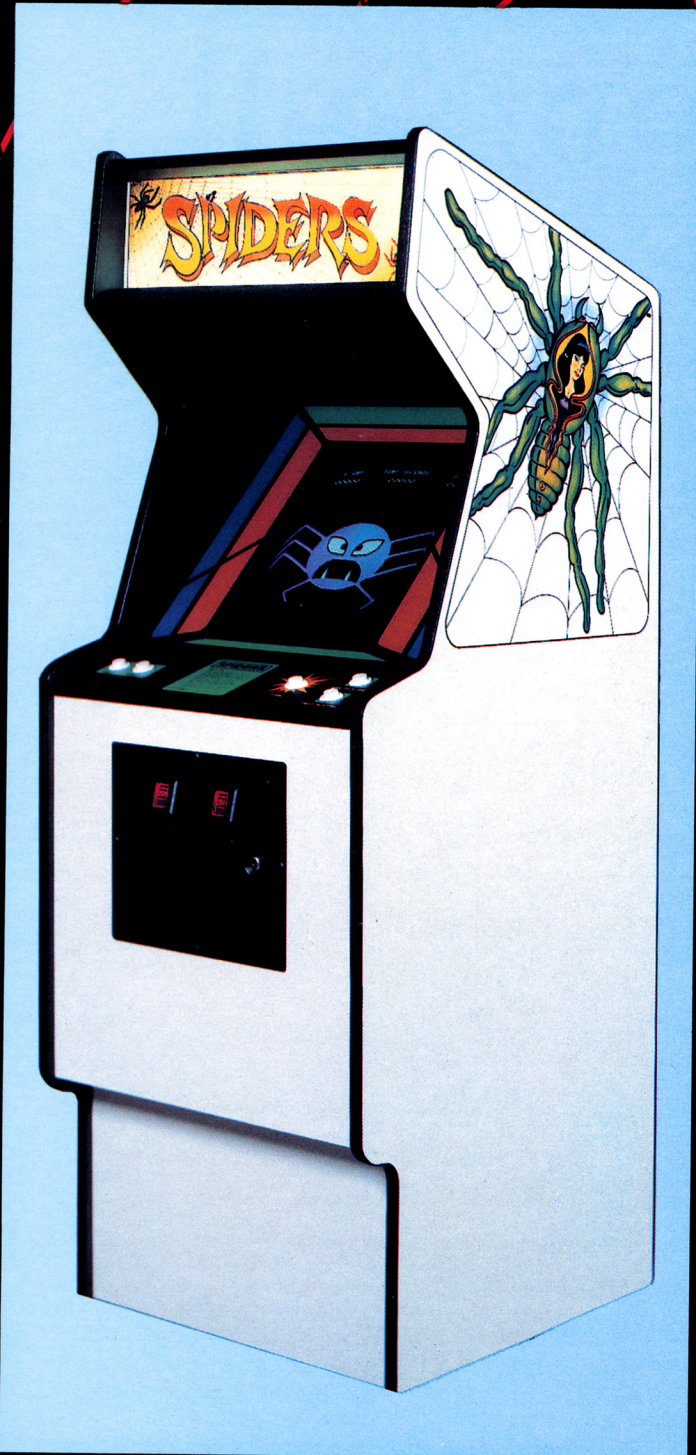
The situation was critical. Peppard explained to the players that the bad checks were a temporary condition, an unanticipated cash flow problem that would be worked out shortly. And he apparently promised to make good on the checks within 30 days.

According to Johnny Lott, one of the foosball players, Peppard "didn't pay the players in the time frame he originally told them. I don't believe it was because he was blatantly lying or misrepresenting," said Lott. "It's just that he wasn't able to."

Lott went on to say that, by the

(Continued on page 16)

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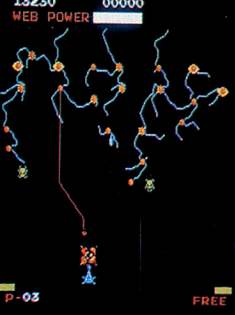
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Commencing the battle, a huge purple spider will appear challenging the player to test his skills against the attack waves of the menacing spiders.

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Spiders is also available in a 19" monitor cocktail table.

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Play Meter

Equipment Poll

The following are rankings of the top videos and top pinballs making above average weekly gross collections nationwide. The dollar amounts appearing are the average weekly grosses as reported to Play Meter magazine through its regular national operator survey. Amounts are heavily weighted by averages reported from arcade locations; street locations are generally lower. Games with less than adequate responses (less than fifty percent) but with above average collections are so noted. Games not appearing on the poll either (1) did not generate over a ten percent response rate to provide an adequate representative sampling or (2) did not register weekly gross collections above the national average.

TOP PINBALLS

Twelve of 23 pinballs (52%) with a response rate over ten percent have above average earnings.

	Feb. 1	Jan. 15	Jan. 1
National pinball average	\$104	\$ 99	\$ 99
1. <i>Black Hole</i> /Gottlieb	\$200	\$188	\$204
2. <i>Eight-Ball Deluxe</i> /Bally	\$141	\$137	\$129
★ 3. <i>Centaur</i> /Bally	\$129	\$136	\$138
★ 4. <i>Volcano</i> /Gottlieb	\$114	\$145	\$126
★ 5. <i>Fathom</i> /Bally	\$113	\$123	\$108
★ 6. <i>Embryon</i> /Bally	\$111	\$107	—
★ 7. <i>Medusa</i> /Bally	\$110	\$127	—
8. <i>Mars</i> /Gottlieb	\$107	\$106	—

TOP VIDEOS

Eighteen of 39 videos (46%) with a response rate over ten percent have above average earnings.

	Feb. 1	Jan. 15	Jan. 1
National video average	\$166	\$171	\$171
1. <i>Donkey Kong</i> /Nintendo	\$268	\$285	\$288
2. <i>Tempest</i> /Atari	\$264	\$259	\$266
★ 3. <i>Galaga</i> /Midway	\$256	\$256	\$238
★ 4. <i>Qix</i> /Taito	\$250	\$267	\$287
5. <i>Frogger</i> /Gremlin	\$241	\$243	\$264
6. <i>Centipede</i> /Atari	\$227	\$228	\$221
7. <i>Omega Race</i> /Midway	\$216	\$233	\$240
8. <i>Defender</i> /Williams	\$213	\$216	\$218
9. <i>Pac-Man</i> /Midway	\$213	\$216	\$220
★ 10. <i>Space Fury</i> /Gremlin	\$175	\$187	—
★ 11. <i>Venture</i> /Exidy	\$173	—	—
★ 12. <i>Vanguard</i> /Centuri	\$167	\$193	\$191

★ Conditionally Rated— Weekly average based on less than 50% response rate

Provisionally Rated Pinballs and Videos

(Above average earning games, with a response rate between 10—25%)

PINBALLS

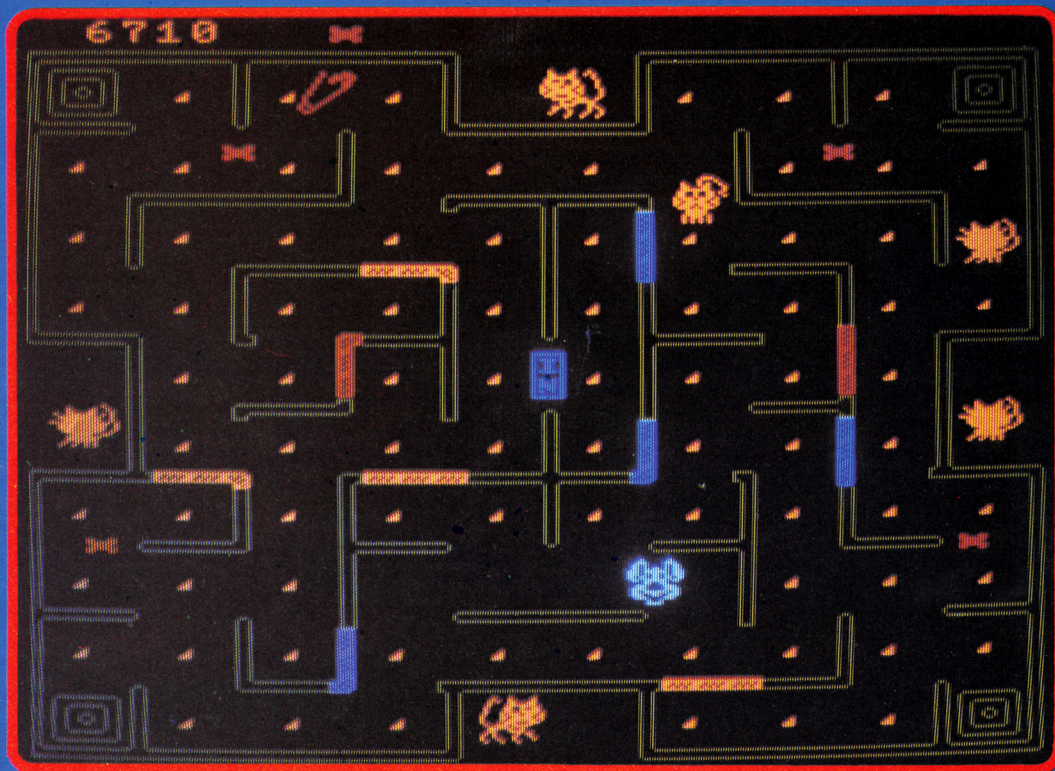
Provisional Ratings	Feb. 1	Jan. 15	Jan. 1
<i>Haunted House</i> /Gottlieb	\$225	—	—
<i>Elektra</i> /Bally	\$135	\$175	\$133
<i>Barracora</i> /Williams	\$129	—	—
<i>Solar Fire</i> /Williams	\$118	—	—

VIDEOS

Provisional Ratings	Feb. 1	Jan. 15	Jan. 1
<i>Mousetrap</i> /Exidy	\$288	—	—
<i>Stargate</i> /Williams	\$265	\$295	—
<i>Eliminator</i> /Gremlin	\$220	\$260	—
<i>Solar Quest</i> /Cinematronics	\$200	\$208	\$203
<i>Make Trax</i> /Williams	\$185	\$190	\$250
<i>Turtles</i> /Stern	\$172	—	—

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(continued from page 9)

Maybe the problem will resolve itself. Maybe Lee Peppard will find all the money and pay the players tomorrow, and that will be that.

Tomorrow, yes, tomorrow.

Anyway, there are more pressing matters to be considered at the present time, like putting together the numbers for the next board meeting on how much it would cost to hire a...public relations firm.

Tournament fund

So Charlie Cobb contacted the Chicago *Sun-Times* (!) himself, then he contacted *Play Meter* (?) too, and he suggested an industrywide tournament relief fund to pay off the players who received bad checks. No one else had come forward. No one else had an idea. No one else was saying anything—except the irate players, Lee Peppard, the U.S. Postal Service...and the Press (!).

But a tournament fund?

Why, Charlie?

"This is a black eye for the entire industry," he said. "And it's making all of us look bad." He said that he, like everyone else in the business, has too much at stake to let something like this reflect on his business. He pointed out that the players who

got burned "represent our customers" to the public. It was irrelevant that neither he nor most people in the industry had any hand whatsoever in the tournament, what mattered was that it was reflecting on the entire industry and something had to be done about it, he said.

Shouldn't industry leaders have been so bold as to contact the press themselves when the bad news broke?

He also said it was a great opportunity for the industry to show the public "exactly what we're always talking about, that we are a responsible industry."

But how, Charlie?

"*Play Meter* can collect the money and distribute it to the players. Okay? I'm a small guy and really can't afford it, but I'll kick in \$500 to get this thing started off."

But, Charlie, what about Atari? Shouldn't Atari just write a check for the entire amount?

He said Atari is doing more than its share already. When they agreed to

pay \$50,000 to pay off the Atari tournament winners, they demonstrated that they were willing to go beyond their legal responsibility on the matter. Then he pointed out that Atari has a lot of money invested in the coin-op amusement industry and said, "Do you think for a minute, if this thing were their fault, they'd try to renege on their legal responsibility?"

(It sounded unlikely. But that was an assumption that I, as a reporter, could not concede at the time. I had to work with the facts. But, after all the investigating, I think I found Charlie was right. Atari had apparently been dealing in good faith all along.)

But then what about Lee Peppard and TGI? If the industry raises the money, won't this let him and his company off the hook?

To which Charlie replied, "I'm more interested in what's good for this industry and what's good for the players than I am in what's good or bad for Lee Peppard and TGI. Personally, I think Lee Peppard and TGI should be banned from participating in any of this stuff in the future. I think they shouldn't have advertised something they didn't

(Continued on page 17)

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time of the Tournament Spectacular, "almost all the players were paid off from the May, 1980 tournament. As of this tournament, there were only two or three players who were still owed money, and they were very small amounts. All the players were paid off," Lott told *Play Meter*. "He just didn't pay them off in the time frame they would have liked, but he did pay them. And when he didn't come through in 30 days, he did come through at least with partial payments, with 25 or 50 percent payments."

Yet, despite this terribly compromised position, Peppard was somehow able to keep the company together, largely because he was able to keep a lid on exactly how dire the situation had become.

Atari enters picture

Then, in early 1981, Atari entered the picture. Joe Robbins, president of Atari, approached Peppard with the idea of having him hold an Atari world championship tournament.

To Peppard, it was a way out of a jam.

Peppard told *Play Meter*, "I very carefully did not commit this company (TGI) to another tournament until we were financially capable of dealing with it. As much as we needed a tournament to generate sale of product, I very carefully avoided it. But, when Joe Robbins came to me and said he wanted to do this, it then gave us the ability to commit on the tournament."

Peppard reportedly received \$40,000 up front; and apparently Atari, in Peppard's words, "announced the association to the trade." Still, there was no signed contract, only this apparent verbal agreement between the two parties, which Peppard claims Atari then back-pedalled on.

"Atari approached Tournament Games to organize the Atari World Championships," said Peppard, "at a time when we were rebuilding our market presence following the disastrous decline in the foosball market and prior to committing to any promotional program. A program was defined and a cost established through negotiations in the form of a written proposal.

"Based upon that proposal," Peppard maintains, "Atari sent the first payment to Tournament Games and announced the association to the trade journals. But then prior to returning a signed agreement, Atari wavered on their decision, not

because of Tournament Games' involvement but due to a last minute hesitation about the total cost associated with a program of this type. We recognized that for Atari to withdraw after having announced the association would have totally compromised us in the eyes of the industry and would have destroyed our rebuilding effort. Thus, we were forced to renegotiate the contract."

Robbins, then president of Atari and now president of ADMA (the manufacturers' association), has a slightly different story, in that he says, if there was any verbal agreement, Peppard was equally responsible for that arrangement being ended.

Robbins said, "I have to tell you I started it (discussions concerning an Atari Tournament). But, after I started it and after meeting with Peppard and examining what the situation was with him, I didn't want to go through with it. When I talked with him, I could see he was in deep trouble. I wanted to bail him out in that I wanted him to run an Atari tournament, and I thought I could make him a few bucks. But he insisted on making Atari part of his tournament, and I didn't want to do that."

Robbins told *Play Meter* he then "asked Frank (Ballouz, Atari vice president/marketing) not to go through with it. I told Frank to forget it. Even after our meeting in Pebble Beach at the end of March, when we announced we were going to do it and we had already given them \$40,000, I told Ballouz to forget the 40 grand and back out, that I didn't like it."

So the question of which party was most responsible for the cancellation of the verbal agreement is left up in the air. Was it Atari, which had announced the association to the industry and thus compromised Peppard if it were to pull out? Or was it Peppard, who began to embellish on his very favorable deal with Atari, to the point that the whole promotion became something Atari did not want to be involved in?

Actually, the whole thing becomes a moot question because, according to Peppard, the two sides then renegotiated a new agreement which required Atari to pay TGI \$100,000 instead of \$240,000 (which, Peppard claims, was the figure Atari was committed to in the first agreement).

Apparently at this point, however, serious cracks in the Atari/TGI alliance started to develop, cracks which resulted eventually in angry

denunciations by both sides after the tournament collapsed, creating wide confusion as far as who was to blame for the Fiasco.

To Peppard's mind, Atari had led him into a situation where he then committed to a big-money tournament that involved Tournament Games product lines before he was ready for it. And, because of this, Peppard claims, Atari had a "recognized and moral commitment that went beyond the contract." And when this "commitment" was pulled, then (again in Peppard's words) it "destroyed me and my company at the same time."

Peppard claims that Atari knew "we had gone through a corporate shuffle coming out of the last tournament. They knew we had basically gone belly up, that the bottom line was that we couldn't have survived that thing (the \$400,000 Tournament Spectacular)."

By contrast, Atari said it knew TGI had problems but was unaware of exactly how dire those problems were.

Arrangements

So Peppard said he had to scramble to set up a series of arrangements which would keep his company afloat through this next big tournament. According to Peppard, one of those arrangements called for Atari to help him sell tournament qualifying kits to the operators for \$25 apiece. At that price, and with a projected 5,000 kits sold, Peppard figured he could make tournament ends meet. But he sold only 600, and this low sale total, he claimed, was again Atari's fault. He maintains Atari had the responsibility of helping him market the kits.

But Ballouz of Atari argues that the tournament qualifying kits were "100 percent Tournament Soccer's.

"All advertising and marketing of the kits was to be done by Tournament Soccer. We did peripheral advertising," he said. Ballouz claims that all this is "spelled out in proposals that have been signed by Mr. Peppard any myself."

Also, Peppard claims that going into the event, he had \$20,000 guarantees from each of the three manufacturing companies whose lines he represented—U.S. Billiards, Sutra, and Arachnid.

"The guarantee of \$20,000," Peppard told *Play Meter*, "I looked at it strictly as an insurance policy from my manufacturers saying that if I had troubles with the event, that I was

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know what they were talking about." But he stressed that he didn't think such a fund would let TGI and Peppard off their legal responsibilities. "It's just that we've got to get those players paid because that reflects on the rest of us," he said.

So *Play Meter* agreed. There were a lot of holes in Charlie's idea, simply because the industry is so divided. But, as a newcomer to the business, Charlie probably wasn't aware exactly how wide that rift is.

In retrospect, a more practical idea might have been for the industry itself to announce that it would represent the players in a class action suit against Lee Peppard, TGI, and any other parties who could be shown to be legally responsible for the Fiasco.

But, at the time, Charlie's idea was the only one going. No one else was trying to elicit an industry response to what had become an industry problem.

So *Play Meter* set up the fund. It sent telegrams to leading distributors and manufacturers, asking them for donations to the fund. It contacted the various associations and any parties who might be able to help out. It even contacted Lee Peppard

to make arrangements to get a list of the names and addresses of the players who won at the Fiasco.

The industry might have represented the players in a class action suit

'A bad idea'

Then industry people started to contact *Play Meter*. And, suddenly, all the self-defeating negativity came through. Although no one could come up with a good idea, apparently everyone could see that this was a bad idea.

Some said it was Atari's problem, and Atari should write a check for the whole amount.

Some said it would let Lee Peppard and TGI off the hook.

Some said such a tournament fund drive would never get wide industry support; so they wouldn't give to the fund either.

Some said it would set a bad precedent in case something of this

magnitude happens again.

Some rationalized that since news of the event didn't reach their areas, they didn't see why they should give to a fund to create good press somewhere else.

Some said it was a good idea but the newspapers wouldn't pick up on it. "Those reporters just want to print the bad news," one industry person said. (To the contrary, the newspaper reporters this writer talked to, saw it as extremely newsworthy that an industry would make good on a debt that wasn't even its own, simply because the debtors were its own good customers. For instance, one reporter, Sharon Barrett of the *Chicago Sun-Times*, said it was "a wonderful idea" that she would like to report on favorably.)

Some said they couldn't help because they were in competition with *Play Meter*.

Some said that since *Play Meter* was a profit-making enterprise, it certainly was not the one to handle this sort of thing.

One association said that a fund like this would jeopardize its non-profit status.

Another association said most of

(Continued on page 19)

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covered.”

Why would three companies which had already loaned Peppard large amounts of money loan Peppard even more? Peppard claimed, “They had a vested interest in our running a successful event since we represented each of those people. They did not have the contractual responsibility, but they had a vested interest in not having happen what happened.”

But, in checking with factory representatives, *Play Meter* got a different view of these \$20,000 factory guarantees.

Dick Simon of U.S. Billiards told *Play Meter*, “Lee had asked me, maybe three months beforehand, if I would loan him additional monies, and I never did answer him, and there never was any conclusion that I would or wouldn’t.”

When pressed on the matter, Simon still insisted that he never committed a \$20,000 guarantee to Peppard’s tournament. “There was no guarantee,” he said. “I didn’t agree to \$20,000. He just asked me for it.”

“He asked me for it, but I said, ‘Lee, I can’t do anything. Maybe if you draw down the loans and pay the interest on a current basis and sell some of these pool tables and sell some of these *Impulses* that I have in stock, and sell a variety of other things, then we could talk about it and run a successful tournament.”

As for Arachnid, Paul Beall, the president of that company, also said he never agreed to a \$20,000 tournament guarantee for Peppard.

But Peppard claims Arachnid had paid its \$20,000 beforehand, up front. “Arachnid paid cash, \$20,000,” Peppard told *Play Meter*. “Their \$20,000 is in. He did that. But, in addition, he wired \$15,000 into the account and delivered a certified check for \$7,875 which was in the form of a loan.”

That may indeed be the case. Beall said that Peppard had asked him “to guarantee some rooms. And, of course, we advanced them large sums of money for hotel rooms for their operations help.” Beall said at the time of the TGI collapse Peppard was indebted to him for a six-figure amount. “For a small company like ourselves,” said Beall, “it’s been a real problem.”

The room guarantees, as it turns out, may possibly cost Beall another \$20,000. “Most of the tournament people didn’t have American Express or whatever,” said Beall,

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Arachnid’s area in the multi-games tournament.



Atari’s Centipede competition: a low turnout.



Air cushion table players in Chicago event.

(continued from page 17)

its members were probably dead-set against it.

Apparently, few people conceived that perhaps the industry was passing up an ideal opportunity to gain a million dollars' worth of good publicity for a whole lot less than that. Few recognized that maybe here the industry had an opportunity to generate a good news event that was even bigger than the bad news event. This was news. Man bites dog. An industry giving! Why it wasn't even muscular dystrophy or Christmas! It was November!

A third association (ADMA), through its president, Joe Robbins, said that it would try to raise all the money by getting the manufacturers to contribute. So he asked *Play Meter* to abort its collection fund drive so as not to confuse the issue.

Play Meter agreed. And its readers were left with only the small "News Brief" item in the December 15, 1981 issue. There was no follow-up to actively solicit operators' contributions to the fund.

Atari agreed to donate \$25,000 to the ADMA fund, if that's what it would take to get the thing going. And Williams Electronics quickly

matched that amount, \$25,000. But the fund never budged from that total. For one reason or another, it became apparent no more money would be forthcoming.

Wasn't it an opportunity to generate a good news event even bigger than the bad news event?

Opportunity lost

So, five weeks after the fact, when it came clear the industry was not going to raise the necessary money, when it also came clear that the players were about to file a class action suit of their own to drag the whole thing through the press again—Atari sprang for the full amount—\$105,000, plus \$50,000 for the Atari tournament winners.

Skip Paul, general counsel for Atari, gave *Play Meter* his reaction to the five-week chain of events. "I was very, very unhappy that Atari had to do it alone," he said. "Not because I work for Atari. Not because it was our obligation, because it wasn't our obligation. I just think this is some-

thing the whole industry should have supported. I think it was a cheap opportunity for the whole industry to garner a million dollars' worth of good publicity."

He said that he was trying to get a list of the players' names and addresses from Lee Peppard, as *Play Meter* had tried earlier. But, since Atari had the money at hand to pay the players and be done with it, he anticipated no problems from Lee Peppard or TGI in this regard. "If he (Peppard) does care about the players, as he says he does, you'd think he'd give us the names so we can make sure everybody gets paid," Paul said.

But then is this going to let Peppard and TGI off the hook, if it is their legal responsibility?

Apparently not. Paul said Atari is suing Peppard and TGI for probably in excess of \$600,000 for breach of contract and defamation.

Were there any bright spots in this whole sad state of affairs?

Surely. There was Charlie Cobb, for one. A good indication of what kind of people there are in the coin-op amusement industry.

Paul saw a silver lining also.

"We're grateful and appreciative

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"and the cost of the rooms were supposed to be picked up by Tournament. But Tournament had such a financial record in the past few years that the hotel would not extend them the credit. So I was asked by Lee Peppard to send them a letter telling them that if something happened, that if Tournament did not pay the bill, then I would. And they moved out without paying the bill."

Beall now figures he will have to pay the bill which he guessed could run as high as \$20,000.

As for the third company which was supposed to have promised Peppard a \$20,000 guarantee, Sutra Corp., David Forman, president of that company, could not be reached for comment.

There were three assurances which Peppard claims coaxed him into going ahead and committing to the tournament after Atari had, to his way of thinking, reneged on the original verbal agreement.

The first of those assurances was his claim that Atari would help him generate additional monies by helping him market his tournament kits. But Atari insists that it has a signed contract which spells out that everything connected with the tournament kit sales is TGI alone.

The second of those assurances was Peppard's claim that the three manufacturers whose products he represented had each guaranteed him \$20,000. But at least one of those manufacturers claims he did not make any such guarantee, and a second manufacturer is apparently unaware that he had guaranteed the tournament.

Moral commitment

And then there was Peppard's third contention—that Atari demonstrated it realized it had a "moral commitment" to go beyond the contract—when it issued a \$40,000 purchase order to Peppard for move-in and decorating costs associated with the tournament.

"How can I have in my possession a \$40,000 purchase order that Atari cut for move-in costs that I paid for cash out of that tournament, and then that Atari did not redeem? That was above and beyond the contract."

Peppard said the \$40,000 purchase order was necessitated when the decorating company, Freeman Decorating Company of Chicago, wanted more than Peppard's assurance that it would be paid. So Peppard prevailed upon

Atari to issue a purchase order (PN #37469) for \$40,000 against move-in costs.

But, according to Peppard, the decorating company wanted something even more substantial. So Peppard paid for the decorating costs out of the tournament reserves.

Ballouz of Atari has a different explanation of this purchase order. "Peppard needed money for the decorating services," he said. "They wanted either X amount of dollars in cash or a purchase order supported by Atari. I made arrangements with our people and with Mr. Peppard that we would issue the purchase order, and he would pay me the \$40,000 before I left Chicago. When I arrived in Chicago on Tuesday, the 27th of October, before the tournament started, Lee Peppard told me at that time they would not accept the purchase order, and he was going out and procuring the \$40,000 in cash.

"I said it was 'great, no problem at all because you were going to pay me Monday anyhow, now you can just rip up the purchase order.'"

Another indication that Atari realized it had to go beyond the contract, Peppard claims, is that Atari paid its last \$20,000 on the \$100,000 it had committed to pay Peppard three weeks ahead of time.

"The last \$20,000 payment that Atari was supposed to make to Tournament Games under the contract," said Peppard, "defined that they would issue Atari prize money checks for \$20,000. Three weeks before the event, Atari issued that last \$20,000 directly to Tournament Games on the basis that we were dry as far as up-front preparation going in."

But, on another occasion, Peppard appeared to explain away Atari's issuance of the money directly to him. He said that Atari was not set up "to issue 184 checks valued at \$19,800, none of them with any names on them."

Somehow Peppard conceived that this \$20,000 payment to him was \$20,000 confidence payment from Atari in addition to the \$20,000 check that it was still contracted to issue for the tournament.

Apparently, Peppard did not consider the possibility, for instance, that Atari, since it could not issue 184 blank checks, might have issued one check for the entire amount to TGI some weeks in advance in order that the money could clear both banks and TGI could write the checks for

the winners themselves.

Peppard was still expecting \$20,000, plus the \$40,000 purchase order from Atari. And he pointed to these things as examples of Atari's realizing it had to go "beyond the contract."

Low turnout

Then the turnout at the tournament was nothing short of disastrous. With the exception of the foosball competition, which brought in the usual contingent of foosball journeymen, participation in all events was sub-par. The tournament director for the eight-ball competition, in fact, told *Play Meter* that in the men's and women's "second chance" tournaments, there were even more money positions than there were people registered in the events.

But the most disastrous showing of all was in the Atari World Championships where thousands were expected to compete, and only a couple of hundred showed up.

There were widespread reports of cheating, and the tournament started to break down, and so, Peppard claims, because of this tournament breakdown, everyone had to shift gears. Instead of controlling the cash receipts, Peppard ended up trying to sort out the video game tournament. And others were removed from their appointed tasks, to plug up other holes that were created by the video game tournament falling apart, Peppard said. It was a domino effect, he explained, and the result was that the cash controls were lost. He said people who had no business handling the cash were handling the cash anyway because somebody had to do it.

After the dust had cleared, Peppard figures about \$40,000 was lost to "slippage."

This \$40,000 slippage, Peppard contends, aggravated the tight situation even more. But still, he insisted, things could be pulled together—if the three manufacturers came up with their \$20,000 guarantees, if Atari made good on its \$40,000 purchase order, and if Atari paid the additional \$20,000 Peppard figured was still owed him.

All that would get him out of his cash bind so he would have enough to pay the players, Peppard maintained.

And what about the prizes? Peppard reasoned that that would be business as usual. U.S. Billiards, Sutra, Arachnid, Video Concepts, and Atari would all deliver the goods

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for the support we got from Williams Electronics," he said. "I cannot speak more highly of a competitor. What they did showed a lot of class. When they offered \$25,000 to help finance the players, it showed that they were willing to go to the mat with us on this one."

And what about Atari?

Frank Ballouz, Atari marketing vice president, said, "Although Atari has no legal obligation to fulfill TGI's debt to the winners of the other TGI events, we are concerned about maintaining the good will and trust of all other coin-operated players. That's why Atari has set aside the money to honor the rest of the checks dispensed by TGI."

Short of an industry-sponsored lawsuit against the perpetrators of the Fiasco, should Atari itself have opted instead to represent the players in a class-action suit against TGI and Peppard? That way it would have made it clear that Atari was not responsible for the rest of the debt.

Ballouz's answer: "That translates into a twelve-month wait for these players. We believe that one year is too long to have to wait."

Paul's answer was to the same effect: "Our foremost concern was

with the players."

In the end, because Atari made good on the whole amount, it will probably appear inside and outside the industry that Atari, despite its insistence to the contrary, was responsible for the full amount. That's why the news event eventually went out like a whimper. In fact, Atari was about to be named, along with TGI, in a class-action suit by the players.

The potential for good press went out with a whimper...

But, at least according to all the evidence that was presented to this writer, Atari was not responsible. Long-time readers know also that this publication would not hesitate to place the blame at Atari's doorstep, if that's where the blame should be placed. But, in all fairness, it does not belong there. Atari paid for a service that was not rendered. And the only reason Atari has been included in all the threats and accusations since

then is simply because Atari is big and so it must be all right to exploit them.

It could be argued that, because Atari's name was associated with the \$400,000 Fiasco, then Atari should shoulder the blame. But Atari had done just that, right from the beginning by committing \$50,000 that legally it would not have been compelled to cough up.

Grievous fault?

To paraphrase Shakespeare's Marc Antony in *Julius Caesar*: If Atari's association with the whole thing "were a grievous fault, then grievously hath Atari paid for it." To the tune of \$155,000.

But it does seem a shame that in an industry as big as this one many people still have trouble seeing beyond the confines of their little rooms.

As an industry, do we really believe that, if we lay low and wait for the thing to blow over, then we'll be able to "saunter out, whistlin' an' lookin' innocent...an' do a little shuffle an' dance"?

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as promised, and he (Peppard) would honor debts, according to the "usual 30, 60, 90, 120 days."

With the credibility his foosball venture had regained through the Tournament Spectacular, Peppard figured, he could pay off his creditors through the sale of product.

But this time it didn't work out, though.

One of the foosball players, Johnny Lott, who won in the doubles event and who was still owed money from a previous event, wanted his money—now.

No further

"I couldn't let it go any further," he said later. "I knew that if I did he would put me back in the same position he had me in before, where I'm dictated to as to when I'm going to get my own money, and I just didn't want that to happen again."

So Lott went public. He contacted Atari, and he contacted the national media, and things began to unravel.

David Forman of Sutra reportedly contacted Ballouz and was told by Ballouz that the whole Tournament Spectacular had gone, in Peppard's words, "past the point of positive public relations value."

On the basis of that telephone call to Ballouz, Peppard maintains, Forman withdrew the \$20,000 guarantee he had allegedly made to TGI.

Also, Peppard said, TGI was no longer in a position to pay, in "30, 60, 90, 120 days," on the players' prizes because confidence in TGI's continued viability had been destroyed to the point that none of the companies would honor TGI's credit. And so the tournament debt ballooned to incorporate not only the bounced checks but also the "Tournament Bucks," those prize receipts which were supposed to be redeemed for Tournament Games product.

Then Atari got drawn into the middle of the whirlpool. Although the video game company did not feel it was legally responsible, Atari announced, nevertheless, that it would honor the bad checks in the Atari portion of the tournament.

Lott attacked Atari.

"The thing could not have happened without Atari," said Lott. He said that especially the foosballers were keenly aware of the shaky financial footing of TGI, and they would not have participated in the event except for the general belief that "Atari was underwriting the whole tournament."

Lott maintained, "They (Atari) knew of Tournament Games' financial situation. They allowed their name to be misrepresented by Tournament Games. They okayed all the literature. They knew what Lee was doing. If they didn't, they should have."

He said that, in his opinion, "Atari was not directly to blame." But he went on to elaborate, "Whether you're directly responsible for something or indirectly responsible for it, you're still responsible for it. And, as far as I'm concerned, Atari is responsible for it."

Responsibility

By the same standard, it could be argued that Johnny Lott is also indirectly responsible for the Tournament Fiasco.

To wit: Back in the summer of 1980, when Tournament Soccer started passing rubber checks to its players, this reporter began an investigation trying to contact players who had received the bad checks. Without any substantiation, this reporter could not report on the rumor, since it would be unsupported by factual evidence.

However, this reporter ran into a cover-up. The only two foosballers *Play Meter* was able to reach did not want to say anything that could be construed as their being disloyal to Peppard.

And there was a third foosballer, who knew of the *Play Meter* investigation—Johnny Lott. Lott, was employed by Peppard at the time. In fact, Lott told this reporter following the Fiasco that he was in Peppard's office when news first reached TGI about *Play Meter's* attempts to find sources who would talk about the rubber checks.

The news that *Play Meter* was investigating the story, Lott said, "really shook up Lee (Peppard)." Apparently because Peppard was trying to keep his creditors from finding out exactly how dire his situation was.

So, with the apparently tacit consent of Lott and a small handful of other foosballers, Peppard was able to keep a lid on the extent of his financial liabilities and thus was able to negotiate for still another tournament with a company that said it had no knowledge that TGI had done this before—bounce players' checks.

Dick Simon of U.S. Billiards, one of Peppard's creditors, when asked by *Play Meter* following the Fiasco, said he was unaware that Peppard had bounced checks off players at earlier tournaments.

To repeated questioning, Ballouz also insisted that he "was not aware totally not aware" that Tournament Soccer had failed to make good on checks from previous tournaments.

"I knew that they weren't in the best cash flow situation," said Ballouz. "My honest opinion was that Tournament Soccer had had cash flow problems, and their biggest problem was that they held off their payments as long as possible—60, 90, 120, 150 days.

"I was never aware," he continued, "of any bills that they did not live up to. I was not aware of one obligation that they did not pay prior to my entering into contract with them. If I was aware of it, I would not have gotten involved."

And now Lott, who at least tacitly participated in the cover-up of Peppard's past liabilities, was charging Atari with being indirectly responsible for the Tournament Fiasco because it should have known the extent of TGI's shaky financial situation.

Actually, Ballouz said he first learned from Lott that Peppard had bounced checks at an earlier tournament—but that was after the Fiasco.

Ballouz's reaction when Lott told him?

"Wait a minute, Johnny, you never once told me that Peppard still owes you money from prior years. And you never once asked me what you're accusing me of now, that we were a co-sponsor. You never once tried to verify that with me."

Lott acknowledged that, in fact, he never did tell Ballouz about Peppard's indebtedness to him or about his suspicion that Atari was somehow underwriting the whole tournament.

Ballouz told *Play Meter*, "I must have had twenty conversations with Johnny prior to the tournament. He had been up to my office several times, and we had a very good relationship. I don't understand why he didn't tell me that because if I would have been aware, I would have taken a different position about this whole tournament."

Literature

In support of his contention that pre-tournament promotional literature gave the impression that Atari was a co-sponsor of the whole \$400,000 world championships, Lott pointed to a poster advertising the Tournament Eight-Ball event. The poster appeared as a back page advertisement in *The National Billiard News*. The advertisement is headlined "Tournament Games



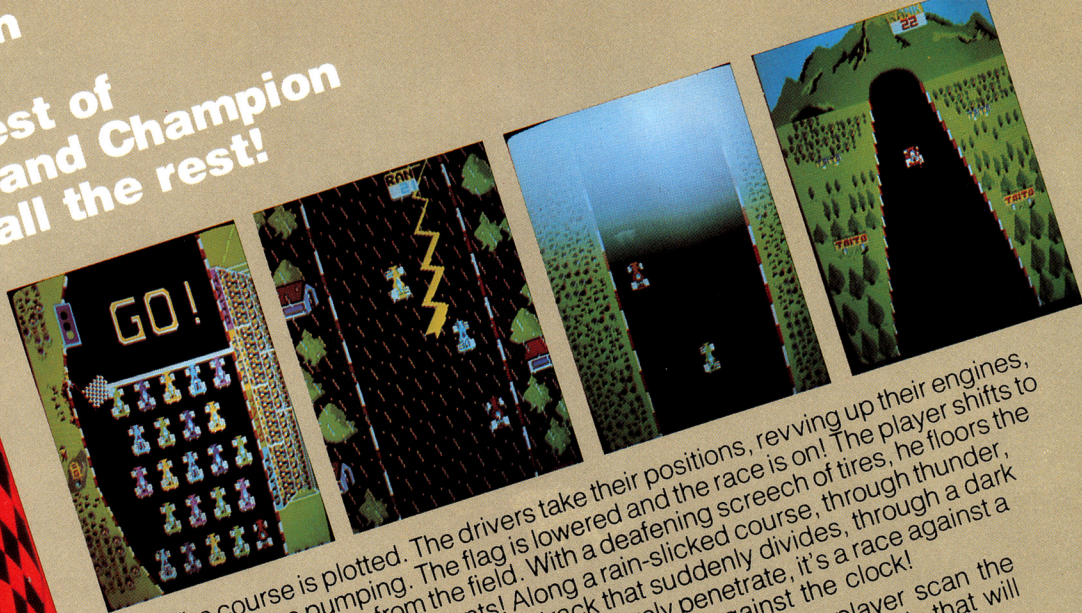
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The earmark of 'Tournament Spectacular': Sparse crowds, and dissatisfied players among them.

Spectacular: The Tournament Games & Atari \$400,000 World Championships."

When asked if Atari approved that poster, Ballouz said, "I never saw it. I never saw that ad. We were supposed to have approval of anything with our name on it, but that particular ad was never approved."

When asked if Atari had indeed approved that advertisement, Peppard claimed that they had. He said that everything that bore Atari's name had been approved by Atari. He agreed to send copies to *Play Meter* showing Atari's approval of the use of its name in this and other promotional literature. But, to date, nothing has been received at *Play Meter* to substantiate Peppard's claim that Atari approved such a poster.

Lott pointed to this poster as being "the most blatant example" which indicated that Atari was a co-sponsor of the whole event.

When asked for other material, which would indicate Atari was a co-sponsor, Lott produced news releases which refer to Atari and TGI as hosting the world championships, but in all the literature he produced, it is clearly spelled out in the body of the release that Atari's tournament is a part of the \$400,000 world championships, not one and the same thing.

One of the exhibits Lott produced was an October 5, 1981 press release from TGI which read, in part, "Among the top contenders will be current World Champion Johnny Lott, author of *The Complete Book of Foosball*. Lott will be defending his title in Open Singles against a formidable field of opponents."

When asked if he had given approval for the use of his name in this press release, he said he had not.

When asked what exactly was his relationship with Peppard concern-

ing the publication and sale of his foosball book, Lott responded, "I don't know if I really want to discuss that."

At length, he did corroborate that Peppard had agreed to buy a certain number of copies (the number appears to be 20,000 copies).

When asked if relationships such as this contributed to his not wanting to reveal the extent of Peppard's past indebtedness, Lott said, "It's not a clear cut thing. Lee's done a lot of good things for people. There's absolutely no doubt about that. The man has done a hell of a lot of things for me. But at what point do you allow the fact that he's done a lot of things for you allow him to screw you over time and time again. The man had done a lot of things for a lot of people. That cannot be ignored. I can give you time after time when the guy came to my rescue when I needed him. He did a lot of things for me. He helped me get that book published.

"Sometimes people get so caught up in what they're doing that they don't have a perspective on things. That's what I believe happened to Lee. That's why I believe he was able to do that with players, not because there was a cover-up. The man had done a lot of good for a lot of people, and a lot of people did owe him a favor, and he got that favor."

Since the foosballers would not come forward because they had a vested interest in Peppard's continued viability going into the Tournament Spectacular, and since it was Atari's contention that it might have pulled out of the tournament altogether if it had known beforehand the true extent of TGI's shaky financial situation—including Peppard's indebtedness to at least two players from a tournament held 1½ years ago—Lott was asked if it

was fair to go after Atari to get paid on the TGI events.

Lott maintained that, "Frank Ballouz definitely knew about TGI's financial problems. He knew that Tournament Games was in grave financial problems."

And he went on to say, "I know how to go about doing what I have to do. And I know what it's going to take to get my money, if that's what it takes to get my money, I do feel Atari is responsible. I don't feel they're as responsible as TGI possibly, but I do feel they are responsible."

Prior to Atari's agreement to pay off all the players in the non-Atari events, Lott had told *Play Meter* that he was ready to file a class action suit against TGI and Atari. "I have a case against Atari that is absolutely strong," he said.

Atari's general counsel, Skip Paul, on the other hand, contends that there is no case whatsoever against Atari, and that Atari is pursuing its claims against TGI in court.

Lott also told *Play Meter* that, if the threat of a lawsuit was not enough, he was also ready to dredge up the whole thing again in the press. He said that he had several reporters on hold who were eagerly awaiting news of a class action suit against Atari and TGI. "I will not allow the flame to be put out," he said. "I will absolutely not allow that to happen." He said that he would raise "the stink" again if he did not get paid.

Then, if Atari did not see that there was any case against it, did Atari pay the players because they didn't want to see this whole matter dredged up in the press again?

Skip Paul said that was not the reason Atari came up with the balance. "Our main concern," he said, "was the players. We just wanted to make sure the players would get paid to maintain their good faith."

Product and promotional developments

Game Plan has 'new outlook'

When Darrel G. McCollough assumed the presidency of Game Plan, Inc., in November 1980, his first order of business was to activate the hugh 80,000 square foot Addison, Illinois facility.

This meant initiating in-house production of video games, continuing the slot machine activity and creating innovative pinball games.

"Game Plan is now a full-line coin machine manufacturing company," McCollough said recently. "We are the only company, with the exception of Bally, that has such a wide-scope product line."

In October 1981, *Kaos*, the first completely Game Plan-designed and -produced video game rolled off one of the 30 assembly points in the Addison facility, and it was introduced at the AMOA show in Chicago.

With the production of *Kaos* and the in-house design activity on a number of other innovative games at Game Plan, the factory has taken on a new look, one of activity and sound. "We have begun an ongoing product development campaign at corporate headquarters even to the point of funding game development in Japan," McCollough said.



Darrel McCollough

"There is a new outlook in promotional activities as well," said Ken Anderson, director of marketing. "We have new sales incentive programs offering prizes for distributors and operators."

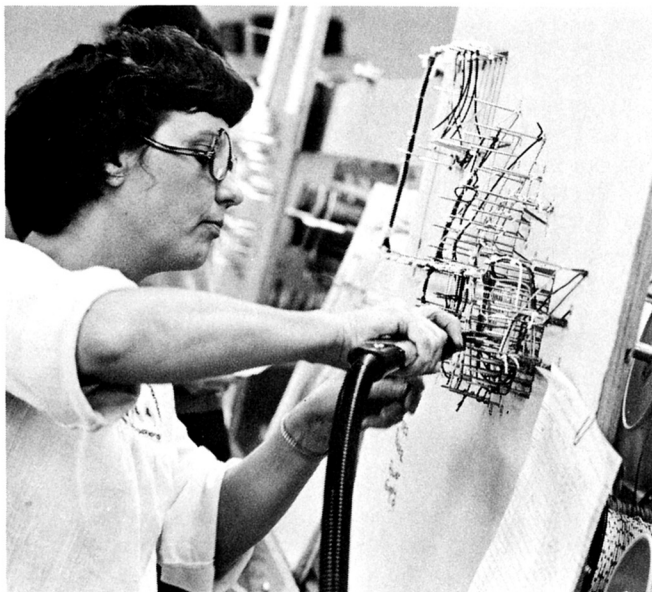
Called "Make It Happen," the incentive program offers a number of special bonuses including a trip for

two to Rome during the upcoming year. A part of the new direction was revealed at the AMOA show where Game Plan conducted a drawing for a color TV set, exhibited two new games, and introduced its new management team.

The sales and marketing functions have been strengthened with the addition of new field personnel and experienced management personnel.

The management team formed by McCollough includes: Ed Tober, vice president and chief accounting officer; Ken Anderson; Stanley Levin, director of business development; Ed Cebula, manager of engineering; Marty Rosenthal, chief engineer; Wendell McAdams, vice president of operations; Hal Anthony, Midwest factory representative; Paul R. Scribner, West Coast factory representative; and Ed Teifer, East Coast factory rep.

"With the broad experience in the industry that our management team now has, we have the opportunity, positioning, and financial backing to become a major factor in this business. We are headed into the most challenging and promising year in our company's history," Anderson said. ●



Essential wiring schematics and wire rolling are prepared for use in Game Plan's videos, pinballs, and slot machines.



GPI's Addison facility: a modern, 80,000-square-foot plant where reborn activity is evident and quality controlled, stressed.

Video producers discuss copyright problems in Tokyo conference

The Second International Conference of Video Game Manufacturers sponsored by the Japan Amusement Machinery Manufacturers Association (JAMMA) was held in Tokyo, Japan, October 5. Some 32 major companies from Europe, the United States, and Japan gathered at the Hotel Okura for this occasion.

The Conference was chaired by Masaya Nakamura of Namco Limited and co-chaired by Michael Kogen of Taito Corporation and David Rosen of Sega Enterprises, Inc. The group convened with the same goal in mind as the first Conference held in March 1981—to preserve the good reputation of the industry and uphold high ethical standards while working to produce innovative new games, and to recognize that this goal is now being violated by game copiers and plagiarists.

Three guest speakers were invited to the conference; two from the United States, Charles Paul, vice president of Atari, Inc. and A. Sidney Katz, an independent lawyer; and Professor Teruo Doi from the Law Department of Waseda University in Japan.

Paul touched up on two major issues:

(1) The fight against the copier must originate from the top management in the industry, as was the case of the movie industry a few years back. The central arena will be in the market place because as of now the market is an easy target for the

copier; 1982 will be an important year for the amusement industry's fight against the copier, he observed.

(2) Technology and demand for the product have now out-paced the legal protection available in the courts today. The judges must now cross uncharted waters and wade through technological verbiage in order to make a decision. Since the copy of a video game is more subtle than copying a record or movie (i.e., altering a character), the judges are now bombarded with technological details. When the game becomes a part of everyday life and is in the mainstream of commercial light, the courts will be able to take a firmer stand on the copyrightable property of the manufacturer, in Paul's assessment.

Katz suggested a three-prong attack against the copiers in the United States and Canada:

(1) Encouraging U.S. Customs and the U.S. Border Customs to detain and seize any copied games and circuit boards; (2) use of the exclusion order of import products dealing with the U.S. Trade Commission; and (3) filing central action in federal courts against individuals in various jurisdiction, also involving criminal action against the willful copier by the U.S. Attorney's Office.

One of the main problems mentioned by Katz is the fact that video games are probably the first audio-visual work where a human

being can participate in altering the image or sound. The question arises, "are video games fixed? Is it copyrightable?" The courts have now stated fixation is tangible; the reason is the picture is fixed into the PC Board. The final question yet to be answered is, "Can the manufacturer recover damages on copyrightable audio visual wares?"

Professor Doi stressed establishing the legal protection on: (1) copying the program itself, (2) against the counterfeit protection for such right, and (3) the legal problems of the computer.

He mentioned three main problems of the video game:

(1) The concept of "literary work" (which is copyrightable), and is the audio-visual game a "literary work"? As of now, in the United States as well as in Japan this concept has not been defined by the courts. The computer program is a copyrightable work because the courts have reasoned the final product is in the program. The hardware cannot be copyrightable but the final ROM program is, because the ROM is the means for the copier to reproduce or to alter the game.

(2) The movie works—music sound, video game, and ROM—all three should be protected under the motion picture copyrightability.

The main conclusion at the Conference was: "The idea of the game is not protectable but the expression of the game is protectable as shown on the screen and by distinct sounds."



Representatives of 32 games manufacturers from Europe, U.S., and Japan at copyright problems conference in Hotel Okura.

Elcon Industries to be acquired by operating company Micropin

Micropin Corporation has agreed to acquire Elcon Industries, an established manufacturer of video amusement games, it was announced December 8 by R. Bruce Stewart, president and chief executive officer of Micropin.

Elcon is based in the Detroit suburb of Royal Oak, Michigan and was founded by Andre R. Dubell, president and sole owner of the company.

Stewart said Elcon's sales are at the rate of \$3.5 million per year. Pre-tax earnings for the next 12 months are expected to total approximately \$600,000, Stewart added.

The Micropin president pointed out that with a tax loss carry-forward of some \$3 million, Micropin will not be required to pay any taxes on earnings in the near future.

Terms of the acquisition provide that Micropin exchange 420,000 of its common shares for all of the stock of Elcon. Micropin will issue up to an additional 420,000 of its shares to Dubell based on future earnings of Elcon.

The acquisition is subject to the approval of the boards of directors of both Micropin and Elcon. Stewart said approval of both boards is expected.

Stewart noted that the acquisition of Elcon will have a highly favorable effect on Micropin's financial results. For the fourth quarter, which ends March 31, Micropin expects to show earnings of about \$200,000, or 5¢ per share, Stewart said. This compares



Elcon's founder Andre Dubell, seen at recent Parks Show/Kansas City

to a net loss of \$146,000, or 3¢ per share in the comparable period of the prior fiscal year.

Stewart estimated the acquisition would result in gross revenues in excess of \$4 million and earnings of approximately \$800,000, or 20¢ per share based on an annualized rate.

Elcon's customers include Pizza Time Theaters, Leisuretron Corp., Showbiz Pizza Place, and other major operators and distributors of video games.

Micropin, based in Pasadena,

California claims ranking of the largest publicly owned company engaged exclusively in the operation of video games and other electronic amusement machines.

A former executive of Atari Inc. and a Los Angeles attorney have been elected to two newly-created seats on Micropin Corporation's board of directors, it was announced by R. Bruce Stewart, president and chief executive officer of Micropin.

The two new Micropin directors are F. Rigdon Currie and William F. Rinehart.

Currie is a former vice president/marketing and sales for the computer division of Atari Inc. Earlier he was vice president for marketing and planning of Diablo Systems, a subsidiary of Xerox Corporation.

Rinehart is a partner in the Los Angeles law firm of MacDonald, Halsted & Laybourne. He serves Micropin as counsel and corporate secretary.

Other members of the board are Stewart, Joel S. Heinrich, and Thomas R. Spiel.

Micropin operates all types of electronic amusement games, including video games. Micropin places its electronic games in amusement centers, liquor stores, bars and cocktail lounges, mainly in Los Angeles and Orange counties, California. The company shares the revenues from the games with the locations.

New book for players has arcade tie-in

A new book, "How to Master the Video Games" has been published in paperback by Bantam Books, released December 1 and billed as "the first complete guide to help the video addicts beat the system and themselves."

"How to Master the Video Games" is authored by Tom Hirschfield, an 18-year-old Harvard student who researched the book during a year-off from the university and became an avid electronic games fan himself. The 192-page paperback is fully illustrated and features secrets and strategies for

longer play and higher score on 30 selected top videos. Hirschfield writes, "The names vary from game to game, but one thing holds true for all games: the better you play them, the harder they get."

Toward helping the "addict," Hirschfield has strived to cut through possible confusion in learning game instructions by his means of a seven-step method for effectively learning any new video game. Provided also in the book are exercises to physically improve hand-eye coordination that is essential to winning on the videos.

Features of the new book include explanation of: game controls, scoring systems, direct dangers on the screen, and strategy based on multiple factors of the games. "How to Master the Video Games" is priced at \$2.95. For distribution information, contact: Bantam Books, 666 Fifth Avenue, New York City, NY 10103.

Bantam announced that its accelerated pre-holidays production and marketing of the video players' book provided an initial printing of 300,000 copies.

Video game theft: a new epidemic

By Mike Shaw

It's no secret now that video games have become a national, if not international, craze. Games and players are turning up where ne'er a pinball was seen. Practically all the major national media have noted the rise in the popularity of the games, but the actual success of the games can be proven by taking inventory of some of the major manufacturers. Take Bally's Midway Division, for example, which will soon roll *Pac-Man* number 100,000 off the assembly line.

Unfortunately, video madness has also opened the doors to a breed of unseemly characters seeking to make a killing by capitalizing on others' successes. Some of the most frightening people now threatening the security of video game owners are common thieves, rascals who now dramatically more than ever before are stealing games by using a variety of more or less creative approaches.

In fact, our research indicates that game theft has become a severe industry epidemic that is having national repercussions, one that deserves the immediate and serious attention of manufacturers, distributors, and operators everywhere.

Gene Beley of Android Amusement in southern California operates a modest stable of between forty and fifty games.

"I've had two games stolen in the last six months as opposed to two stolen in the previous fifteen years," says Beley.

"We've had entire truckloads stolen," C. A. Robinson distributorship's Hank Tronick told *Play Meter*. "Our drivers will stop for lunch or at

a location, and while they're away from the truck, someone will jump in and drive it away."

A Watertown, New York operator reports the first game thefts ever in his area: two *Pac-Mans* have disappeared in just the last few weeks.

Joe Gilbert at Belam in Miami, Florida told *Play Meter* of two incidents in his state where thieves drove up to distributors' warehouses and carted away machines right off the loading ramps.

In Ohio, where the Ohio Music and Amusement Association has launched a statewide campaign to halt the thievery, OMAA Secretary Judy Martin reports 150 machines stolen within the last three months. (One operator had six stolen in one day.) None of the stolen games have been recovered.

The poor recovery rate is shared nationally.

C. A. Robinson Co. has found the abandoned trucks, but not any of the games.

Gene Beley has recovered one game, but not through any successful investigative process.

"It was purely by accident," Beley reports. "The thief was in a minor traffic wreck and fled the scene. Police found my machine in his truck." Police also found the thief, an ex-con who was doing well stealing machines in southern California and unloading them in the northern part of the state.

In truth, almost none of the games stolen have been recovered, and that fact leads to some interesting questions about how easily the games can be fenced, resold, and even relocated.

But, first, let us consider how easy

it has been for thieves to make off with the games.

Most games are stolen straight out of locations.

"Locations don't give a damn," says Gilbert. "They don't own the equipment." And because location owners have no vested interest in a piece of video equipment, there is really no incentive for them to be overly concerned when two men in work clothes enter their establishment and announce they are removing the video game "for repairs."

The *Pac-Man* that was stolen from the Ramada Inn in Watertown, New York was situated in a corner near an exit and out of sight of the desk clerk. The game was easily removed and no one knew about it but the thieves.

Bold thefts

Conversely, in luxurious Marie Calendar's Restaurant in pleasant suburban Claremont, California, two men grabbed a video machine, raced through the restaurant entrance where a few stunned patrons were waiting to be seated, tossed the machine in the back of the truck, and sped away into the night.

The tremendous popularity of the games, the fact that they are considerably more compact and lighter than the old pins, and the high price tags that they carry are all easily understood reasons for the thefts. But where the games go is not so easy to surmise...

Beley believes that when truckloads of machines are stolen, there must be a ready-made fence on the other end of the ride who can quickly disperse numbers of games to

It has been easy for thieves to make off with games, straight out of locations whose managers 'don't give a damn,' said a distributor. It's the operator's property after all...

waiting buyers.

Beley also contends that, as hard as it may be to admit that there is an enemy within, "...some operators may be stealing games. The games are just too expensive for the average operator who's splitting his take 50/50 with the location to make much money," says Beley.

"The fact is," Belam's Gilbert offers, "there is more demand for good games than there are good games available. There are more locations, and we just can't get enough games from the manufacturers to supply them." That leads to a ready and eager market for stolen games. Then hang a less expensive tag on a game that is "hot" and it is easy to comprehend why some location owners and operators may be tempted to stretch their ethics in regard to these games.

Probably the most blatant reason that stolen machines are so easy to relocate is that very little is being done to prevent it. The OMAA discovered that almost all the 150 machines they reported stolen over the last three months occurred from locations near the state line. Apparently, thieves have found that getting machines out of the state is one way never to get caught.

Combative steps

Current means of keeping track of machines are simply inadequate. Some states have registration laws for games, but the laws are ordinarily an extension of rules made to govern cigarette vending pieces which are overseen, such as in Florida, by Alcohol/tobacco agents who are primarily interested in collecting tax revenues the cigarette sales generate.

The OMAA has begun an effort to

cut down the thefts. It has devised a "stolen equipment I.D. form," and asked operators throughout the state to report the names and serial numbers of any games stolen to the Association. In compiling such information, they feel they can prevent the resale of some of the games to unaware operators and aid in the recovery of other games by providing an easy access checking point when games of doubtful ownership turn up. So impressed—and perhaps desperate—is Watertown's operator Brannon with the Ohio effort that he is checking games in New York against Ohio's list.

Until a central network of game registration can be developed, there are several steps an operator can follow to at least slow the chances of theft of his equipment.

Most important, the operator should mark the machine with his personal identification. Police suggest using a driver's license number since it is an easy and sure way of tracing the equipment to its home state and owner.

Although no mark is impossible to disfigure, the identification number should be made as difficult as possible to eradicate and should be made in a spot where scratching it out, removing it, or painting over it would loom obvious.

An operator can get the location owner to participate in a check system whenever someone comes to service the machine. Repair men should have to show identification before they tend the machines and games should be signed in or out with the location owner whenever they are brought in or carried off the premises.

Some operators suggest chaining the games together or to some

immovable object in the location, but others fear this would lead to the destruction of property and they feel that thieves could simply cut the chains and make off with the equipment anyway.

Although these suggestions might deter some criminal efforts, the sad fact is there is no sure way to prevent video game theft, and very little hope that once stolen, a game will be recovered. Video game theft is an unfortunate by-product of the video market explosion and another aspect of the business that operators, and even distributors, must contend with on a daily basis. But, as always, the first step in solving a problem is a recognition that it exists. And if operators across the country will take note that their video games are easy targets for thieves, it is certain that their awareness will at least lessen the ease with which the games are currently being stolen. ●

Ed. Note: We direct the reader's attention to the accompanying article concerning illegal removal of serial numbers. The operator who finds himself a victim of physical rip-offs has several recourses. If he suspects that interstate traffic in stolen machines has been carried out, he can contact the nearest office of the FBI, as well as a state and local agencies. Readers are invited to write in with their unique solutions to combat game theft, and in the meanwhile Play Meter stands ready to publish a list of reported stolen games. Please send your name, the game and manufacturer, serial number, and location for publication, and sign the request for free publication of the stolen game description.

Removing serial numbers violates law

In this day and age, when so many video games are being stolen off of location and out of warehouses, it brings up the question of whether or not removal of serial numbers is illegal.

We asked a certain large distributor to answer this question and here are his exact words.

"Some months ago we were interested in finding out whether removal of serial numbers was illegal, inasmuch as one of our good customers lost his top location because an unscrupulous distributor

had sold the location games with serial numbers removed. Therefore, we asked our attorneys for an opinion.

"Both our attorney and his law partner, a former assistant U.S. attorney, stated that removal of serial numbers from all products, including video games, flipper games, etc. shipped in interstate commerce is a violation of federal law. This was verified a few weeks later, when two members of the F.B.I. came to see us for circulars and descriptions on games that had been stolen in a neighboring state.

Both F.B.I. agents confirmed the fact that it was not only a violation of the law to remove serial numbers from games, but whoever possessed the games at the time, be it a location owner, an operator, or distributor, could be charged for having games with serial numbers removed in his possession.

"I think that all manufacturers of games will verify the fact that they do not put serial numbers on their games necessarily to keep track of their production figures, but they put them on because it is a federal law," said the distributor.

SPEED UP COLLECTION TIME BY 40%

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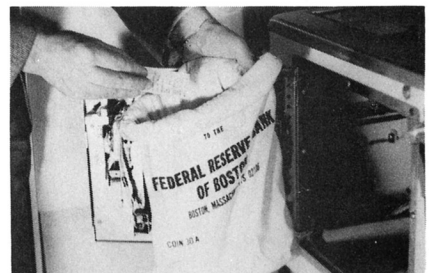
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The ITS system includes the installation of an electronic totalizer in each machine which transmits collection data through a beam of light to the ITS microprinter. With this, collections are as simple as 1, 2, 3.



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Step Two

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Step Three

Hand the second receipt to the location owner. Your collector takes all the cash.

Please send me more information on your ITS cash accountability system.

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Company _____

City _____ State _____ Zip _____

I operate under 250 machines
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 over 1,000 machines

Video Games and the Role of Electronic Entertainment in Society

By David Rosen

CHAIRMAN, SEGA ENTERPRISES, INC.

During the past year the industry has enjoyed unparalleled success—and I believe we would all agree the industry has *good reason* to look forward to continued prosperity.

During the past few weeks I have been involved in numerous interviews, and I'm sure many in this industry have also been approached by the major national news magazines and other media. The tremendously heightened media interest obviously stems from what the press calls "the phenomenon" of electronic video games. While the majority of media coverage the past year or so has been more inclined to "sensationalize" the industry—I now, however, sense a change of direction.

The media today is searching, and sometimes struggling, to understand and communicate to their readerships what it is this phenomenon is all about. There appear to be two central issues:

First, is "the video phenomenon" a hula-hoop fad, or is it truly a major new segment of the entertainment industry?

And second, from a social viewpoint, does the so-called Video Phenomenon have socially redeeming values? Is it advantageous to society or disadvantageous to society?

These are very searching questions, and I'm sure all of us have given more than passing thought to these questions.

Computer games a passing fad?

Let's for a moment examine the first major issue: are

computer video games a passing fad or is our industry, as we have said for years now, an increasingly important segment of the overall entertainment industry?

Unquestionably, the key to the industry's success has been our continued advancement of highly sophisticated technologies. The amusement games industry is in the forefront of pure and applied microprocessor technology—and I believe it is fair to say that our industry has made a significant contribution in exposing the long-awaited "computer age" to people everywhere.

It is eminently clear that computer video games are a sign of the times—and by that I mean the games are truly one of the early manifestations of an electronic revolution whose technology will personally touch, on an increasing basis, all of our lives. Therefore, what the media refers to as "the video phenomenon" is in reality an evidence of the phenomenal acceptance of electronic entertainment in today's computer-orientated society.

As the "age of technology" unfolds before us, making deeper and deeper inroads into the ways we conduct our daily lives—I can not envision, nor is there any reason to believe, that computer video games would be a passing fad. Quite the contrary, the signposts suggest a trend towards greater acceptance of present and future models of computer video games as "space age" forms of electronic entertainment.

But in order for the industry itself to continue to prosper, we must never lose sight of the objective of introducing new technology to the player-customer. As an industry, we have been enormously successful having



Rosen pictured at Sega's exhibition area at the JAMMA show in Tokyo.



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Stargate will transport you to a whole new dimension in video games! Not only will the skills you learned with Defender be challenged and refined, but new strategies must come into play if you are to be victorious in rescuing the humanoids from the clutches of the aliens and in entering the Stargate! Your ability to react quickly and with on-target precision will be tested against the evil Yllabian Space Guppies, Dynamos, Space Hums, Firebombers and their Fireballs, Phreds, Big Reds and Munchies! If you succeed in maneuvering your ship into the Stargate, you'll be instantly translocated to that part of the planet where the humanoids are being abducted! To open up spectacular scoring possibilities, rescue 4 humanoids, re-enter Stargate and you'll Warp 3 Waves ahead in space and time, setting off dazzling special effects and racking up high points!

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If all 10 humanoids in a Wave are abducted, the universe will explode into smithereens, leaving deadly mutants on the attack! Survive till Wave 5 and the universe will be restored, the humanoids safe . . . but *you'll* be the target of an Yllabian Dog Fight! There'll be no landers to abduct the humanoids, but all the other aliens will have stronger and larger forces concentrated against you! It will be an outer space battle reaching the outer limits of aggression and will call up your last ounce of determination and courage!

Technically, Stargate establishes a new, higher plane of sophistication. Diagnostic testing not only includes Defender's comprehensive systems of ROM, RAM, CMOS RAM, sound, switch, color RAM and test patterns, but is enhanced even further to give you more detailed bookkeeping totals and complete game adjustment capabilities including the awarding of ships, pricing selection and personalized attract mode messages. The potential for higher earnings is built-in with the option of 1 coin play with 3 ships or 2 coin play with 7 ships. Now, too, 40 all-time high scorers and 6 daily high scorers can be registered as an extra play incentive.

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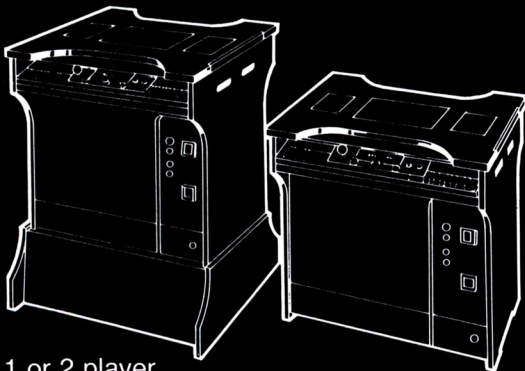
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as we do our roots in high technology. Creativity in the technical areas goes hand-in-hand with creativity in the design and development of totally new game concepts and features—and new technology, in turn, is the prime reason the industry is able to maintain a high level of sustained interest on the part of a rapidly growing customer player-base.

• • •

In terms of the marketplace there appear to be three types of players, and probably more:

First, the *macho player* who gravitates towards action-packed futuristic space-theme games;

Second, we have the *high skill player* who is attracted to new game features which require the transference of

There is an expanding customer base of adults in higher age brackets—and it becomes clear that a variety of games are needed to satisfy the various groups of player-customers.

previously developed game-play skills;

And third, we have the *cartoon game-player* who may or may not be a skilled player, but in either case is attracted to a cartoon game as light entertainment somewhat analogous to a slap-stick comedy movie.

Expanding market

Add to these player-types an expanding customer base of women and male adults in higher age brackets—and it becomes obvious that a variety of games are needed to satisfy the various groups of player-customers. Make no mistake, this is a very healthy trend for the industry because it moves us away from the instability and “boom and bust” of one-game fads, and towards a stable, broad-based entertainment industry which currently enjoys increasing consumer acceptance as an integral part of today’s cultural life-style.

As much as new technology is the “life-blood” of the industry—it is important for us to recognize that new technologies alone are not the key to further market development. A second, equally important factor, is that we will need to satisfy the player-customer with more new games more often in order for the operator to continue to enjoy the level of earnings for new “hot” games he has quickly grown accustomed to.

• • •

I think it is extremely important that all of us measure the social issue carefully, and be able to speak fluently on the subject. What the industry has before it is an educational process which must not be underestimated in terms of its magnitude, and obviously, in terms of its importance to the future well-being of the industry overall.

The detractors vs. our pride

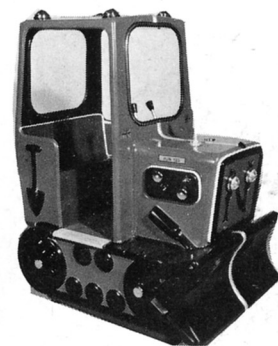
Looking at the industry from one perspective, the past few years of prosperity have given rise to instances of abuse which at times has placed the industry in a negative light.

I was driving home recently and saw two video games back-to-back on a sidewalk, fenced in, out in front of a fast-food establishment. As hard as we all work to upgrade the industry’s image, this kind of “street location” is extremely negative, and is exactly the kind of thing our detractors have every right to point to. I can

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hear it now at a city council meeting anywhere in the country: "Video games in our community? No way! The games will wind up on every street corner! I saw it happen in Yourtown, U.S.A.," etc. etc.

Manufacturers, distributors and operators *must* do a better job policing the industry—or we risk the possibility the self-policing privilege will be replaced by new regulations and ordinances. We must never forget the ultimate customer is the player—and that we are in the business of offering wholesome entertainment, in a wholesome environment.

However, not making light of occasional industry abuses, let us point with pride to the numerous social benefits and accomplishments of our industry.

Firstly, computer video games are an *active rather than a passive form of entertainment*. Activities such as television, movies, sporting events, and records or the radio all have a valid place in our society, yet all these forms of entertainment lack an important factor in satisfying a fundamental need. That need is active participation which is of course what computer video games are all about.

Second, as an entertainment medium, few if any other forms of entertainment afford the *mental stimulation* of computer video games. By their very nature, most forms of passive entertainment merely require that one absorb information. On the other hand, computer video games require the player to think and physically react in order to participate in the entertainment experience.

A third social benefit of computer video games are their value as an *emotional release* and means of expression—and perhaps they stimulate the mind to fantasize. Because the new technologies allow the design of sophisticated, complex game play, the games have an attraction to people of all ages. A visitor to most any game center during the lunch hour of a business work-day is likely to find more player-customers in three-piece suits than not!

Fourth on the list of benefits: all educators agree the *lack of discipline to concentrate* is a major problem in the schooling of our youngsters. However, by their very nature, computer video games are teaching machines. They teach eye-hand coordination, and more important, they teach the much needed discipline of concentration.

Lastly, computer video games are an excellent *entertainment value*. Personally, I believe this to be one

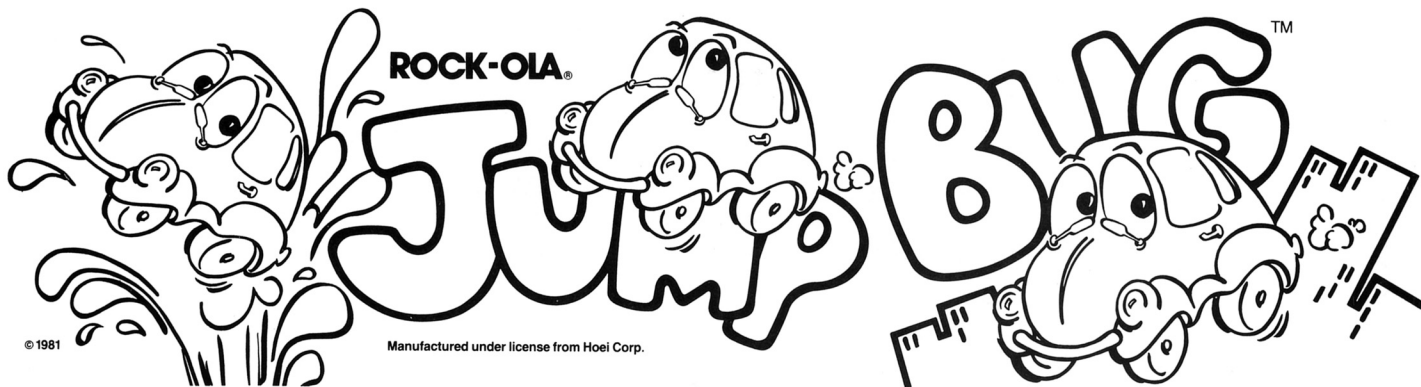
The entertainment value of electronic video games is one of the paramount reasons for the industry's continued success: 25¢ play on a greatly improved product.

of the paramount reasons for the industry's continued success. For the most part, amusement games in the U.S. have been at 25 cent play since 1966 at the time of the introduction of Sega's *Periscope*—that's 16 years of greatly improved product without a price increase.

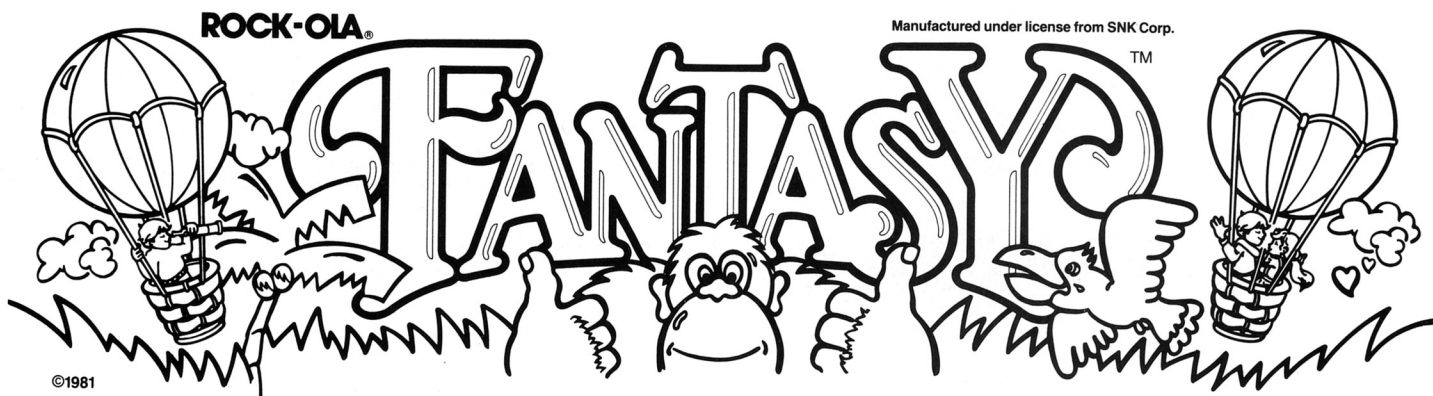
It is important that each and every one of us recognize that we are the industry's ambassadors, and it is therefore of utmost importance that we communicate the positives of our industry, not only to the media, but to all our customers whose operations, and actions, are viewed and judged by the public at large. ●

Presented at Sega/Gremlin's distributor meeting, Marriott Hotel, Chicago, October 28, 1981.

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Gottlieb picks new prexy from home game industry

Boyd W. Browne has come on board D. Gottlieb & Co. as the newly appointed president and chief executive officer of the Northlake, Illinois firm.

Browne, whose career experience includes a term in the consumer electronics and toy business, replaces Robert W. Bloom, who announced his resignation in order to pursue other long-term interests. Bloom will also continue to serve Gottlieb as a consultant.

Browne, in a conversation with *Play Meter*, noted that between the consumer electronics and coin-op amusement trades, "the dynamics are similar," both in the requirements of manufacturing and in the need for "good game play and appeal."

Asked if the coin-op manufacturing firm plans a move into the home entertainment market, Browne responded by saying: "We want to do what we do best, better. But in the long run, I wouldn't preclude anything; we want to be where the business is."

He emphasized that "continuing to do what we do best" means that D. Gottlieb & Co. will continue to be active in both the pinball and coin-op



Boyd Browne

video markets. "We are committed to the amusement game industry and to maximizing our position in it," he added.

The next video game or number of TV-type coin-ops from Northlake he said, "will be product that will certainly be unusual. We want to be different," and he indicated that a studied effort will be made to insure Gottlieb's producing videos that are

not "me-too" varieties.

Gottlieb, which presently has the first pinball-video combination game on the market, last year entered the video game market with licensed games, *No Man's Land* and then *New York! New York!* and achieved more limited market penetration with videos than its U.S. competitors.

Browne has served in chief executive positions with major divisions of General Mills, Nabisco, and Mattel, and he was president of his own consulting firm, Management Associates in Toronto, Canada, immediately prior to joining Gottlieb. He is a graduate of the University of California at Los Angeles, and he and his wife Donna have three grown children.

Robert L. Stone, executive vice president of D. Gottlieb's parent company, Columbia Pictures Industries, Inc. said: "Boyd Browne is a seasoned general manager who has a strong marketing background and has accomplished results in significant, sizeable, multi-unit manufacturing businesses. He is very sensitive to the marketplace and relates well to finance, operations, engineering, and all of the marketing functions."

Atari loses *Meteors* copyright case

A federal court has ruled out copyright protection claims of Atari, Inc. in a suit brought by that manufacturer regarding the *Asteroids* video game and naming a Maryland coin-op producer as defendant.

Atari charged that *Meteors*, a video introduced by its producer Amusement World of Eldersburg, Maryland, at the 1981 Amusement Operators Expo in New Orleans, has violated Atari's copyright protection in that it "bears remarkable similarities" to *Asteroids*' play action.

U.S. District Judge Joseph H. Young said in ruling against Atari that "copyright protection is available only for expression of ideas, not for ideas themselves.

Charles Paul, Atari corporate counsel, told *Play Meter* that his firm "definitely will appeal" the district court ruling and that the judge's

decision was "extremely narrow." Every adverse decision in games copyright matters must be appealed, Paul also indicated, adding that Atari currently has 16 copyright infringement cases pending.

In the case charging Amusement World and its president, Stephen D. Holniker, Judge Young noted "a number of similarities in the design features of the two games." But he ruled that most of the similarities were inevitable, given the requirements of a game involving a spaceship combatting space rocks and given the technical demands of the video game medium, the *Baltimore Sun* reported on December 2.

Noting the similarities and how the two games are played, the federal judge wrote the opinion that "there are certain forms of expression that one must necessarily use in design-

ing a video game in which a player fights his way through space rocks and enemy spaceships."

Judge Young concluded: "It seems clear that [Amusement World] based their game on Atari's copyrighted game, but copyright laws do not prohibit this." He said that Amusement World expressed the copyrighted idea differently than Atari.

Atari's counsel had submitted that the firm originated the audio-visual materials for *Asteroids*, obtaining a copyright for the material in June 1980.

Speaking for Atari, Paul told *Play Meter*, "Copyright is essential to the long-term interest of the industry." Beyond the copyright battles over coin-op games, Atari is also pursuing home video games copyright infringement cases, he said.

Arcade School moves to meet tech students

Arcade School president, Randy Fromm recently announced a 1982 class schedule that takes the Arcade School away from the home base in San Diego, California. Arcade Schools are scheduled for Atlanta, Baltimore, Dallas, New Orleans, Phoenix, Salt Lake City, San Diego, Wichita, Chicago, and Toronto.

"It didn't make sense to ask everyone to come to the southwest corner of the country in order to attend the Arcade School," said Fromm. "By holding the Arcade School in different cities, the students can save the cost of airfare and lodgings. This can easily amount to considerably more than the tuition to the school itself."

All of Randy Fromm's arcade schools offer the same comprehensive six day course that has allowed hundreds of Arcade School graduates to learn the easiest and fastest ways to repair games, without having to purchase expensive test equipment. The course stresses the use of a digital multimeter for troubleshooting. The meter is a relatively inexpensive piece of test equipment that most operators and mechanics can easily afford.

For further information and a class schedule, contact: Randy Fromm's Arcade School, 6123 El Cajon Bl., San Diego, California 92115, 714/286-0172.

Willis appears in Who's Who/1982

Robert J. Willis, II, chairman and president of Willis Industries, has been selected to appear in the 13th Edition of Who's Who In California.

Willis is among approximately 5,000 Californians of achievement listed in the 1981-1982 volume.

First published in 1928, Who's Who In California is published every two years by the Who's Who Historical Society, San Clemente. The current 600-page reference volume contains biographical sketches of eminent Californians from the arts, science, business, education, law, and government.

Willis received a scroll from the Society "in recognition of exceptional achievement, leadership and service."

PLAY METER CALENDAR

January 21-24

IMA, MesseGelande, Frankfurt, Germany

February 16-18

Northern Show, Blackpool, England

March 3-5

Australia's AMOA Convention, Hilton Hotel, Melbourne

March 26-28

Amusement Operators Expo '82, Hyatt Regency, Chicago

March 31-April 2

Coin-Op '82, Irish Amusement Trades exhibition, Racecourse Centre, Leopardstown

April 2-4

NAMA Western Convention-Exhibit of Vending and Food-service Management, Brooks Hall, San Francisco

April 2, 3

AMOA/Notre Dame Seminar, Center for Continuing Education, Notre Dame, Indiana

April 14-23

Milan Fair, Internat'l Business and Meeting Center, Milan, Italy

April 16-18

FAVA/music, games, and vending show, Curtis Hixon Convention Center, Tampa, Florida

April 30, May 1

Wisconsin Music Merchants Association exposition and annual membership meeting, Milwaukee

May 7-8

Ohio Music & Amusement Operators, annual convention and show, Columbus

June 3-5

Amusement and Music Operators of Texas, Americana Hotel, Ft. Worth

June 20-25

Bowling Proprietors Association of America, 50th annual convention and trade show, Town and Country Hotel, San Diego, California

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Birmingham celebrates happy 50th

Birmingham Vending, Birmingham, Alabama, threw a gala product showing December 9 to celebrate its 50 years in the coin machine business.

Al Toranto of Birmingham Vending entertained his guests among the new machines with a buffet and prize drawings. The distributorship's new facilities for sale and service located at 540 Second Avenue North, Birmingham, also hosted visiting distributor executives Joe Flynn (J&J Distributors/Indianapolis) and Steve Shaffer (Shaffer Distributing/Columbus, Ohio) among the crowd.

The stars of the show for the 50th anniversary fest were the 1982 product line. On show were: Centuri's *Round-Up* cocktail and upright models and *Vanguard* upright; Midway's *Omega Race* (sit-down, mini, and upright models) and *Galaga*, standing and sitting versions; Cinematronics' *Vanguard* console and new *Solar Quest*; Bally's pin line *Embryon*, *Elektra*, *Fathom*, and *Medusa*; Gremlin videos *Frogger* and *Eliminator*; Gottlieb pins *Black Hole* and *Volcano*; Stern pingames *Viper*, *Split Second*, and *Catacomb* and videos *Turtles* (upright and cocktail) and *Strategy X*; Exidy's new *Mousetrap* and *Venture* videos; *Kaos* from Game Plan; Universal USA's *Snap Jack*, *Lady Bug*, and *Cosmic Avenger*; and Rowe jukeboxes in 200- and 160-selection models of *Kentwood*.

When the entertainment, festivity and test playing of games was done, the assemblage seemed agreed that Birmingham Vending was well on its way to another 50 years or more, of coin machine handling.

An advertisement appearing in the January 1, 1982 issue of *Play Meter*, page 56, for Game World's Scoopy "baker" vending machine, listed a telephone number that was partially incorrect for U.S. Game World rep Phil Goodman in Las Vegas, Nevada.

The correct phone number for Goodman is: 702-735-5039.



Visiting distribs celebrate with Birmingham: Joe Flynn, left, Steve Shaffer, center, and Al Toranto.



Pinball showed lively interest at the anniversary festivity.



Area operators had a wide range of new videos to view.

Phonecall survey not Play Meter's

Play Meter has received reports of a telephone survey being made, with the caller identifying himself as working for *Play Meter Magazine*. The caller asks equipment earnings per week.

Such telephone surveys are not authorized by *Play Meter*, nor does this magazine conduct industry surveys by phone. *Play Meter's* twice-monthly Equipment Poll and numerous surveys conducted on an annual basis are carried out by the use of forms which the operator fills in and returns via pre-paid envelope.

Respondents to *Play Meter's* surveys are not asked to identify themselves on the survey form. No record is kept of earning levels or other information supplied by respondents that is identifiable by their names or locations.

Readers are advised that callers asking for equipment earnings are not connected with *Play Meter* magazine, and we at *Play Meter* recommend that you not respond to these callers.

Vending growth rapid in Britain

Vending machines are one of the fastest growing sectors of Great Britain's economy, according to a business report released this fall in London. Vending machines' present 500 million annual turnover was expected to show continued significant increases, said a special report on the industry prepared by ICC Business Ratios and published in the trade press.

A mini sales boom experienced in 1979-80, according to ICC, was only the start of vending's growth. ICC based predictions on a study of the financial performances of 60 leading machine companies over three years.

Export sales was one area of automatic vending in the U.K., however, which had not fared as well, with only about one percent of the total machine sales.

The ICC report said: "In one respect this is not surprising since the relatively small number of companies which are active in this field have very mixed results in terms of their overall returns on capital...varying from losses to returns markedly better than the (vending) sector averages."

Sega spurs production, markets cocktail *Frogger*

Sega/Gremlin has begun marketing in the U.S. a cocktail table version of its video game *Frogger*, which is manufactured by Sega Enterprises/Tokyo.

Sega/Gremlin reported it has accelerated production of *Frogger* units, in response to "strong demand from distributors worldwide" during the AMOA Expo in Chicago.

Sega Chairman David Rosen stated that distributors report *Frogger* attracts a "broad base of players and is appealing to people of all ages. Women in particular enjoy

the game. They feel comfortable with it because *Frogger* is non-aggressive yet challenging. The enthusiastic acceptance among adult players makes the game especially well-suited for locations where cocktail table games are appropriate, such as lounges and restaurants," he added.

Frogger is a one- or two-player, multi-phase video game in which players race against time to guide several daring frogs safely home across a busy highway and a perilous river. Lively music, whimsical frog sounds, and vivid color imagery call attention to the game. •

'Captain Video' arcade aids kids' learning problems

Programs for kids with learning problems were "rescued by Captain Video," Los Angeles superhero, when Captain Video's Games in Westwood saluted National Learning Disabilities Month with a fundraiser on October 25 benefitting four Westside nonprofit agencies which serve the learning disabled.

Three agencies and Poseidon School joined together with Mike McClelland and Gary Gullette, co-owners of Captain Video's Games to rally support for this community activity. Participants including parents, adolescents, and learning disability professionals were enthusiastic about the day-long event which featured free play on Captain Video's computer games, as well as entertainment and refreshments. Paul Tracy, entertainer with

the combined talents of composer, instrumentalist, and storyteller, gave an afternoon performance for kids of all ages. Hanko, "king of the clowns" and Clown of the Year in 1978, performed stunts on a mini-bike and made up one child as a clown. And superhero Captain Video was on hand to add excitement to the fundraiser.

Sue Welsh, chairing the special event, said: "We are delighted by the generous offer of Captain Video's owners to help us raise money for our various programs. Their interest and support are excellent examples of local business rallying to the needs of children in trouble."

A ticket to the children's cause gave unlimited free play at the game room at 10860 West Pico Blvd. •



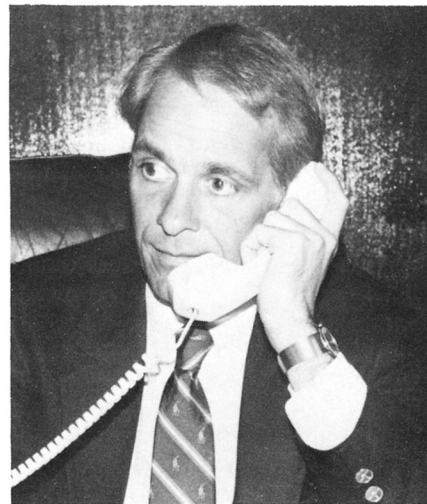
Dynamo Announces

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Coin business is brisk at AVA in St. Louis



AVA's President Entringer



TV-set giveaways stirred excitement with the new Solar Quest through tie-in for "brisk sales," said Entringer.



Lady Bug, by Universal, among the new videos creating interest at AVA's show.

Audio Visual Amusements/St. Louis termed the turnout "fantastic" for its product showing and service seminars at the distributorship on December 9.

Pete Entringer, president of AVA, reports that business at the distributorship has tripled during the past year due to "hit video games" that have come on the market and which have captivated players.

As an additional enticer for year's-end sale, AVA was giving away a portable color television set with the sale of every two *Solar Quest* video games sold. Sales of the Cinematronics game were "very, very brisk," said Entringer.

"We had twice as many operators attending as last year, and it was a great opening," he added.

For the service seminar, 13 operating companies sent personnel to audit the session given by Gordon Cook, Cinematronics technical engineer.

For the product floor show, 44 different operating companies' people came from the Missouri and Illinois area. Factories represented were Dynamo, Nintendo, Pacific Novelty, Electro-Sport, Universal USA, Cinematronics, U.S. Billiards, Nichibutsu, and Wurlitzer.

On hand were Entringer's AVA team: Vice President/Marketing Brian Nelson, Comptroller Norman Marsh, Doug Allebach for customer service, and "Andy" Devine, service manager. AVA has a total of 11 employees.

The AVA base of operations is at 1809 Olive Street, St. Louis; phone 314/421-5100.

Amusement Operators Expo 1982

**PLAN NOW TO ATTEND
THE INDUSTRY EVENT OF THE YEAR!**

March 26, 27, and 28
Hyatt Regency Hotel
Chicago, Illinois

Sponsored by
PLAY METER MAGAZINE

PLAN NOW TO ATTEND THE NEWEST, FASTEST GROWING SHOW IN TOWN-EXPO '82!

We are extremely pleased with the nation-wide response to our third annual AMUSEMENT OPERATORS EXPO to be held this year in Chicago on March 26-28. We've chosen Chicago for EXPO '82 because it offers a more concentrated marketplace of manufacturers, suppliers, and distributors.

AMUSEMENT OPERATORS EXPO has, in only its third year, become *THE* place to go for the latest in equipment and practical, hard-hitting educational sessions. Phenomenal interest has already been shown by both the exhibitors and the seminar registrants, indicating that this show will be the biggest and best in its three-year history.

The Exhibit Hall is a sell-out...it's two and one half times as large as last year's.

We're again offering a free early-bird General Session, "The Manufacturers Face the Firing Line," this time in open forum design. A panel of top manufacturers will answer difficult questions of industry-wide importance. We're also expanding the number and scope of seminar/workshops to keep pace with our fast-moving industry.

With more exhibitors and attendees than ever before, AMUSEMENT OPERATORS EXPO has become a permanent and important industry conference and exposition.

We welcome you to it and hope you enjoy three full, satisfying and rewarding days.

Cordially,



Ralph C. Lally
Editor/Publisher
Play Meter Magazine

Amusement Operators Expo 1982

The Third Annual AMUSEMENT OPERATORS EXPO is even bigger and better than last year's. We've grown from 70 to 235 booths with virtually every manufacturer represented. These companies are aware of the evolution of AOE '82 into a viable marketplace for their products, their services, and their equipment. The spectacular Exhibit Hall at the Hyatt Regency Hotel in Chicago was designed and built specifically for trade exhibitions and will provide a dramatic showplace for the 235 exhibits.

Exciting new topics have been added to the Seminar/Workshop Program. There's something for everyone — from "New Equipment Purchasing for the 1980's" to "The Profitable Distributorship."

Faculty members include many of our Industry's leaders — pros whose experience is practical, not theoretical, and who will be imparting information not available anywhere else. Part of the Expo '82 team are: Allen Bruck of Banner Specialty Company, Marshall Caras of D. Gottlieb and Company, Stan Jarocki of Midway Manufacturing, Jerry Marcus of Empire Distributing Company, Charles Ross of Southwest Texas State University, and Virgil Vance of Van Brook of Lexington.

While the Seminar/Workshops form the main structure of your participation, you'll find that the conference and exposition will be a place where you can exchange new ideas with your colleagues, sharpen your professional skills, and come away with new perspectives, new directions, and new prospects.

It's all happening in Chicago on March 26, 27, and 28. So, come join us for the greatest AMUSEMENT OPERATORS EXPO ever.

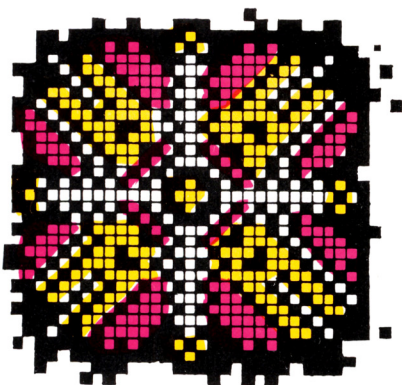


EXHIBIT HALL

250% larger than 1981! Key suppliers will demonstrate the latest equipment, services, and products available. Hours for all three days: 10:30 a.m. to 4:00 p.m. Yes, it's true — our Expo family will have virtually every manufacturer represented.

SEMINAR/WORKSHOPS

You can attend as many as six seminar/workshops during EXPO's three days. Special attention has been given to securing the best courses, and selecting the most articulate and knowledgeable seminar faculty members, including nationally recognized leaders in the amusement industry as well as experts on finances, taxes and marketing.

SEMINAR/WORKSHOP DISTRIBUTORS ONLY

Special Distributor's only three-hour seminar will be offered on Saturday, March 27. See session 408 for details.

SEMINAR TIMES

Morning sessions will be from 9:00 to 11:00.
Afternoon sessions will be from 3:30 to 5:30.
Non-smoking areas in the meeting rooms will be set aside.

HOTEL ACCOMMODATIONS

The Hyatt Regency Hotel is located at 151 East Wacker Drive in downtown Chicago. A block of sleeping rooms at preferred rates has been set aside for registrants. Make reservations directly with the Hotel by using the form on page A9.

DISTRIBUTORS PREVIEW

AMUSEMENT OPERATORS EXPO will feature a special distributors only exhibit preview from 9:00 - 10:30 a.m. on March 27 and 28. Join us for Bloody Marys and big opportunities.

REGISTRATION FEES

For advanced registrations (postmarked by March 5 with payment in full), the cost is \$20 per session. This includes seminar registration and admission to the Exhibit Hall.

Registrations postmarked after March 5, or made at the door, cost \$30 per session. These will be accepted on a space available basis for both seminar registration and Exhibit Hall admission.



CALENDAR OF EVENTS

EARLY BIRD GENERAL SESSION

Thursday, March 25
Cocktails 5:00 — 6:00 p.m.
Meeting at 6:00 p.m.

SEMINAR/WORKSHOPS

Friday, Saturday, and Sunday
March 26, 27, and 28
Morning sessions: 9:00 — 11:00 a.m.
Afternoon sessions: 3:30 — 5:30 p.m.

EXHIBIT HALL

Friday, Saturday, and Sunday
March 26, 27, and 28
Hours: 10:30 a.m. to 4:00 p.m.
Special Distributors-only hours:
Saturday, March 27 and Sunday, March 28,
9:00 — 10:30 a.m.

**EXHIBIT HALL ADMISSION IS
OPEN TO ALL EXPO REGISTRANTS
AT NO ADDITIONAL CHARGE**

CONFERENCE & EXPOSITION SPONSORS

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CHICAGO- YOUR KIND OF TOWN!

Chicago has something for everyone in entertainment, from the Chicago Symphony to the nightclubs of Rush Street. Besides more than 42,000 first-class hotel rooms, Chicago has 6,000 restaurants of every size, taste and description. The newly-constructed State Street Transit Mall includes many world-famous department stores, and don't forget the "Magnificent Mile," along North Michigan Avenue. You can stroll through the galleries in the Art Institute or through the outdoor sculpture plazas in the Loop.

If you're looking for fun, Chicago is ... your kind of town.

EARLY BIRD GENERAL SESSION

THE MANUFACTURERS FACE THE FIRING LINE: WHAT'S ON YOUR MIND? ... HERE'S YOUR CHANCE TO QUESTION OUR INDUSTRY'S LEADING MANUFACTURERS

6:00 p.m., Thursday, March 25

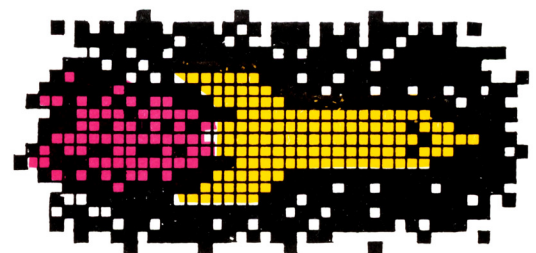
A FREE early-bird General Session has been arranged to kick off AMUSEMENT OPERATORS EXPO. Now's your chance to ask your hard-hitting questions and get some answers in this important open forum available to all AOE attendees. Take a trip into the future with these five leading manufacturing representatives and find out where tomorrow's action is.

Moderator: Joseph Dillon, Director of Sales, Williams Electronics, Inc.

Panelists: Larry Berke, Director of Sales, Midway Manufacturing Corp.; Jack Gordon, Director of Sales, Gremlin Industries, Inc.; Ben Rochetti, Director of Sales, Stern/Seeburg Electronics, Inc.; David Stroud, V.P., Marketing, Cinematronics Corp.

Preceding this session, cocktails will be available starting at 5 p.m.

Please note that the seminar is FREE to all registrants. Also, it is important that you make note on the Registration Form (page A13) if you plan to attend.



SEMINARS/WORKSHOPS

FRIDAY, MARCH 26

9:00 — 11:00 a.m.

Session 101

LOCATION COST ANALYSIS

Faculty: Charles C. Ross, Partner, Innovative Management Consultants, and Owner, Family Amusement Center

In the face of soaring costs extreme care should be taken in evaluating present and future locations. Learn how to make certain every location pulls its own weight, what income is necessary to warrant a new machine and how to detect and eliminate locations that are not profitable. A proven formula that enables you to effectively evaluate each location in terms of its profits will be included in the discussion.

(This session will be repeated as session 206.)

Session 102 **T**

HOW TO READ SCHEMATICS

Faculty: Bruce Minus, Director of Technical Marketing Services for Gottlieb Amusement Games

Mr. Minus will instruct on how to read and interpret electronic schematics for any manufacturers pinball or video game. He will stress the basic component symbols used for analog and digital circuitry. Functional block diagrams and system flowcharts will also be covered. The seminar is geared for operators and technicians who want to isolate and trouble-shoot their game faster and more accurately. Also, how to correctly substitute components. Workbook will be provided.

Session 103

PARTS: HOW TO EFFECTIVELY PURCHASE, STOCK, AND MAINTAIN A GOOD PARTS INVENTORY

Faculty: Bill Ray, Jr., Vice President, Penn-Ray International

Can the correct use of parts purchasing become a profit center? According to this seminar's speaker, it can be. Mr. Ray will discuss the whole area of parts purchasing and stocking. He will explain how costs can be cut by wise purchasing, how to insure delivery when it is most needed, and how to avoid late deliveries. He will also offer advice on how to interchange parts, which parts are universal game parts, and how to interchange parts between machines from different manufacturers.

T Technical session

**AFTER READING
THE SEMINAR DESCRIPTIONS
CAREFULLY, TURN TO
PAGE A13 TO REGISTER.**

Session 104 **T**

SIGNATURE ANALYSIS ... AN ERROR DETECTION TEST SYSTEM, PART 1

Faculty: Jim Sneed, Director of R&D, Kurz-Kasch, Inc.

Microprocessor systems must have streams of data which are 100% accurate in both time and bit polarity. Signature analysis, when used with microprocessor stimulation, can detect with uncanny accuracy any bit of data which is displaced in time or is of the wrong polarity. Theory, hardware and test methods will be included in the four-part seminar. An effort to attend all four sessions should be made as each one progresses to the next. (NOTE: This is the first of a four-part series designated for the technician. An individual must register for all four parts of this program and a separate registration fee is required for each part. See Sessions 204, 304 and 404.)

Session 105

ARCADE DESIGN AND CONSTRUCTION: A PRACTICAL APPROACH, PART 1

Faculty: Steven J. Bodenstein, Vice President Development, Six Flags Amusement Centers, Inc.

It is extremely important that the owner/operator become well acquainted with all of the various details that go into the effective design and construction of an arcade. Bodenstein will discuss basic ordinances, location features, store layout for maximum utility and marketability, construction techniques and materials for maximum longevity, floor coverings, insulation and maintenance. Selection of contractors and architects, along with building permits, plans and inspections will also be discussed. (NOTE: This is the first of a two-part session. An individual must register for both parts of this program, and a separate registration fee is required for each part. See session 205.)

Session 106 **T**

ELECTRONICS: HOW TIMES HAVE CHANGED

Faculty: James R. Hanna, Service Manager, Automated Amusements

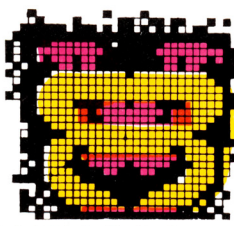
Do you find yourself not understanding the whats and whys of our new solid-state world? This seminar/workshop will include discussions on component identification, component usage and failures as applied to the coin industry. An overview of the vocabulary and uses of electronics will also be presented. The attendees will come away with an understanding of exactly what the technician is talking about when explaining a problem.

Session 107

WHEN YOU WANT TO BUY A COMPUTER — WHAT DO YOU DO NEXT?

Faculty: Donald Glendening, Coordinator of Systems and Programming, Administrative Computing Services, University of Florida

Mr. Glendening will discuss the appropriate time to implement the use of a computer. Who should and who should not be considering a computer, and after that decision is made, how to select the appropriate computer system. Mr. Glendening will be addressing this seminar to the small to medium sized operator.



SEMINARS/WORKSHOPS

FRIDAY, MARCH 26

3:30 — 5:30 p.m.

Session 201 **T** **THE DIGITAL MULTIMETER: UNIQUE METHODS FOR USING THIS METER IN TROUBLESHOOTING**

Faculty: Randy Fromm, Randy Fromm's Arcade Schools

The digital multimeter is a relatively inexpensive piece of test equipment that can be used to troubleshoot the majority of failures in electronic games. Subjects will include: Testing diodes, transistors, and other semiconductors — testing power supplies and filter capacitors. Finding short circuits in seconds instead of hours — finding bad integrated circuits — and more! (It is recommended for the novice that this course be preceded by session 102, How to Read Schematics, however it is not a pre-requisite.)

Session 202 **BUSINESS FORMS AND RECORD KEEPING FOR THE ARCADE AND THE OPERATOR**

Faculty: Stephen B. Goot, President, Total Vending Services, Inc.

In any organization internal work flow is the key to success. Accurate record keeping of all the important documents and actions is of absolute necessity. Mr. Goot will explain how to organize routes to enhance record-keeping abilities. Learn what information you need and what you don't need. Efficient use of forms and records will be demonstrated along with tips on using and evaluating the process of information gathering. Proper record keeping for a token oriented arcade will also be discussed.

(This session will be repeated as session 501.)

Session 203 **TOKENS: CHANGING THE WAY AMERICA PLAYS**

Faculty: Virgil Vance, President, Van Brook of Lexington, Inc.

Will tokens play a more and more important role in the coin-operated amusement industry? Will you be ready to move to tokens if your competitors introduce them first? This seminar will help you make the first jump . . . show you how to convert your operation into a token system. The speaker will discuss the ways in which both street location and arcade operators can increase their profits on amusement games by moving into the use of tokens. Mr. Vance has a wide knowledge of successful operations that have utilized tokens, and he will cover the entire area of token operations, including the proper use of record keeping.

T Technical session

Session 204 **T** **SIGNATURE ANALYSIS . . . AN ERROR DETECTION TEST SYSTEM, PART 2**

Faculty: Jim Sneed, Director of R&D, Kurz-Kasch, Inc.

Microprocessor systems must have streams of data which are 100% accurate in time and bit polarity. Signature analysis, when used with microprocessor stimulation, can detect with uncanny accuracy any bit of data which is displaced in time or is of the wrong polarity. Theory, hardware and test methods will be included in the four-part seminar. An effort to attend all four sessions should be made as each one progresses to the next. (NOTE: This is the second of a four-part series designated for the technician. An individual must register for all four parts of this program and a separate registration fee is required for each part. See sessions 104, 304, and 404.)

Session 205 **ARCADE DESIGN AND CONSTRUCTION: A PRACTICAL APPROACH, PART 2**

Faculty: Steven J. Bodenstein, Vice President, Development, Six Flags Amusement Centers, Inc.

It is extremely important that the owner/operator become well acquainted with all of the various details that go into the effective design and construction of an arcade. Bodenstein will discuss basic ordinances, location features, store layout for maximum utility and marketability, construction techniques and materials for a maximum longevity, floor coverings, insulation and maintenance. Selection of contractors and architects, along with building permits, plans and inspections will also be discussed. (NOTE: This is the second of a two-part session. An individual must register for both parts of this program and a separate registration fee is required for each part. See session 105.)

Session 206 **LOCATION COST ANALYSIS**

Faculty: Charles C. Ross, Partner, Innovative Management Consultants, and Owner, Family Amusement Center

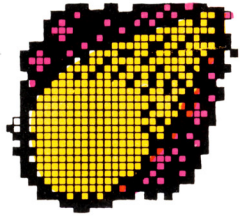
In the face of soaring costs extreme care should be taken in evaluating present and future locations. Learn how to make certain every location pulls its own weight, what income is necessary to warrant a new machine and how to detect and eliminate locations that are not profitable. A proven formula that enables you to effectively evaluate each location in terms of its profits will be included in the discussion.

(This session is a repeat of session 101.)

Session 207 **LIVING WITH LEGISLATION: HOW IT AFFECTS THE OPERATOR**

Faculty: Frank Fogelman, Vice Chairman, Sega/Gremlin

This seminar covers local ordinances and taxes and how they have come to the forefront around the nation. Mr. Fogelman will go into detail about the restrictions being imposed on the number of games in a location, the hours a location may operate and limiting ordinances that tend to ban the amusement game machine. Some guidelines and model ordinances will be discussed.



SEMINARS/WORKSHOPS

SATURDAY, MARCH 27

9:00 — 11:00 a.m.

Session 301

THE FUTURE OF THE PINBALL MACHINE: A VIABLE AND PROFITABLE PART OF YOUR BUSINESS

Faculty: Marshall Caras, Vice President of Marketing, Gottlieb Amusement Games, D. Gottlieb & Co.

This seminar will cover the role pinball games will play in the future of the coin-operated amusement industry. Specific topics will include new game configurations and formats manufacturers will be exploring, expected technical developments, ROI, and promotions. Discussion will focus on opportunities that will be emerging in pinball and how operators can best capitalize on them.

Session 302 **T**

TROUBLESHOOTING FOR THE CONVENTIONAL VIDEO GAME SYSTEM

Faculty: Randy Fromm, Randy Fromm's Arcade Schools

Most video game problems are easy to diagnose and repair once you know what to look for! Typical problems such as loss of picture or sound, or a screen full of "garbage", can often be isolated and repaired on location using basic troubleshooting procedures. Although this session is geared for those with little or no knowledge of electronics (we all have to start somewhere!), session 201, "Using the Digital Multimeter" is a suggested prerequisite.

(This session will be repeated as session 603.)

Session 303

NEGOTIATING COMMISSIONS WITH LOCATIONS

Faculty: Frank Seninsky, President, Alpha/Omega Amusements, Inc., and Feature Writer, Play Meter Magazine

Inflation affects amusement operators as much as it does anyone else and in a lot of cases, even more. Learn how to explain your situation to your locations in a logical and straightforward manner. Establishing weekly minimums and assessing service charges will be discussed in detail. In addition, Mr. Seninsky will get heavily involved in the use of contracts in effecting the appropriate commission structure.

Session 304 **T**

SIGNATURE ANALYSIS ... AN ERROR DETECTION TEST SYSTEM, PART 3

Faculty: Jim Sneed, Director of R&D, Kurz-Kasch, Inc.

Microprocessor systems must have streams of data which are 100% accurate in both time and bit polarity. Signature analysis, when used with microprocessor stimulation, can detect with uncanny accuracy any bit of data which is displaced in time or is of the wrong polarity. Theory, hardware and test methods will be included in the four-part seminar. An effort to attend all four sessions should be made as each one progresses to the next. (NOTE: This is the third of a four part series designated for the technician. An individual must register for all four parts of the program and a separate registration fee is required for each part. See sessions 104, 204, and 404.)

Session 305

ADVERTISING AND GENERAL PROMOTION FOR TODAY'S AMUSEMENT CENTERS

Faculty: Carol Kantor, President, Business Builders/ A Full Service Marketing Agency

Advertising is a vital element of business development. Yet many owner/operators of amusement centers fail to recognize the significance of advertising's key role. Ms. Kantor will explain effective ad campaigns, media utilization, and supportive promotions. The attendee will come away with a better understanding of advertising leading to more cost effective advertising decisions for today's amusement centers.

Session 306

RETURN ON INVESTMENT AND BUSINESS PROFITABILITY

Faculty: Charles C. Ross, Partner, Innovative Management Consultants, and Owner, Family Amusement Center

This session is designed to cover all aspects of business profitability from both a return on investment and marginal cost/marginal revenue standpoints. Ross will discuss the "how to's" of computing return on investment, determining cash flow, payback periods and net present value of a machine.

(This session will be repeated as session 405.)

Session 307 **T**

TROUBLE SHOOTING TECHNIQUES FOR THE PINBALL MACHINE

Faculty: Lou Rudolph, Director of Field Services and Technical Publications, Stern/Seeburg Electronics, Inc.

This seminar explains basic pinball troubleshooting techniques for those with little or no electronic background. Mr. Rudolph will show the serviceman how to determine the difference between play features and logic problems and if there is a logic problem, in which module. Module level repair for the street or arcade serviceman, using only a volt meter and jumper wires will also be discussed.

(This session will be repeated as session 604.)

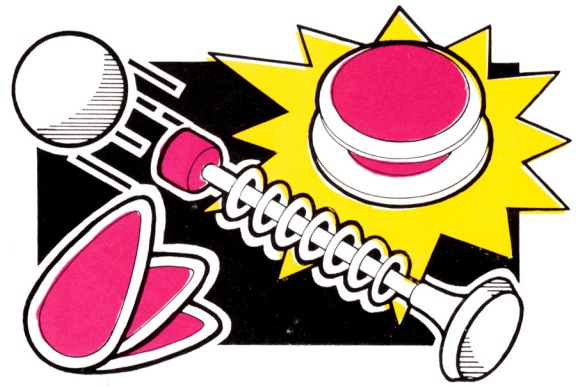
T Technical session

**VISIT THE SPECTACULAR
EXHIBIT HALL —
ALL IMPORTANT
SUPPLIERS WILL BE THERE.**

SEMINARS/WORKSHOPS

SATURDAY, MARCH 27

3:30 — 5:30 p.m.




Session 401
NEW EQUIPMENT PURCHASING FOR THE 80's
Faculty: Alan Bruck, Jr., Banner Specialty Company
Faced with the stark realities of rising costs the owner/operator must become familiar with the various factors leading to a wise purchasing decision. Mr. Bruck will examine these factors with an eye toward selectivity, reliability, and supplier analysis.

Session 402
**WHY A DISTRIBUTOR?
WHAT A DISTRIBUTOR CAN DO FOR THE OPERATOR**
Faculty: Jerry Marcus, President, Empire Distributing, Inc.

Mr. Marcus will discuss all facets of the relationship between the operator and his distributor. The topics to be covered will include: sales, warranties, repairs, parts, and supplies. He will also discuss consulting, test reports, equipment financing, used equipment, and legislative matters.

Session 403 
TROUBLESHOOTING IN THE XY VIDEO GAME SYSTEM
Faculty: Randy Fromm, Randy Fromm's Arcade Schools

The XY video game system in games such as Atari's Asteroids and Midway's Omega Race, can display images with greater resolution than conventional "raster scan" systems. Although the trouble shooting techniques differ between the two, the XY system is as easy, or easier to repair. An easy to follow, step-by-step procedure will allow you to isolate and repair many common problems. This session is geared for those with beginning to intermediate knowledge of electronics. Sessions 201 and 302 are suggested as prerequisites.

Session 404 
SIGNATURE ANALYSIS ... AN ERROR DETECTION TEST SYSTEM, PART 4
Faculty: Jim Sneed, Director of R&D, Kurz-Kasch, Inc.
Microprocessor systems must have streams of data which are 100% accurate in both time and bit polarity. Signature analysis, when used with microprocessor stimulation, can detect with uncanny accuracy any bit of data which is displaced in time or is of the wrong polarity. Theory, hardware and test methods will be included in the four-part seminar. An effort to attend all four sessions should be made as each one progresses to the next. (NOTE: this is the fourth of a four-part series designated for the technician. An individual must register for all four parts of this program and a separate registration fee is required for each part. See sessions 104, 204, and 304.)

Session 405
RETURN ON INVESTMENT AND BUSINESS PROFITABILITY
Faculty: Charles C. Ross, Partner, Innovative Management Consultants, and Owner, Family Amusement Center
This session is designed to cover all aspects of business profitability from both a return on investment and marginal cost/marginal revenue standpoints. Ross will discuss the "how to's" of computing return on investment, determining cash flow, payback periods and net present value of a machine.
(This session is a repeat of session 306.)

Session 406
SHOPPING CENTERS AND ARCADE LEASING
Faculty: Robert Stone, Attorney, Vice President, Time Out Family Amusement Centers, Inc.
The shopping center is recognized as one of the prime factors in the growth of the amusement machine industry. Mr. Stone will discuss the factors in finding and selecting locations within a shopping center, negotiating the lease and analyzing the costs involved.

Session 407
THE COMPUTER, THE PROGRAM, AND THE AMUSEMENT OPERATOR
Faculty: Richard Priesmeyer, Partner, Innovative Management Consultants
Mr. Priesmeyer will discuss how the minicomputer can have a positive effect for the operator. Discussion will be centered around basic data processing, programs of interest to the amusement operator, and the selection of the appropriate computer.

Session 408
THE PROFITABLE DISTRIBUTORSHIP
Faculty: Chuck Arnold, General Manager, Northeast Region, Rowe International Rubin Franco, President, Franco Distributing Co., Inc.
Arnold A. Kaminkow, President, Bally Northeast Distributing, Inc.

This session, for DISTRIBUTORS ONLY, will examine the financial, operational and marketing portions of the business. The attendee will come away with an enhanced awareness of the term "bottom line"; what it means, as well as how he can obtain a more favorable profit margin.
(This is a special 3-hour course.)

 Technical session

SEMINARS/WORKSHOPS
SUNDAY, MARCH 28
9:00 — 11:00 a.m.



Session 501

BUSINESS FORMS AND RECORD KEEPING FOR THE ARCADE AND THE OPERATOR

Faculty: Stephen B. Goot, President, Total Vending Services, Inc.

In any organization internal work flow is the key to success. Accurate record keeping of all the important documents and actions is of absolute necessity. Mr. Goot will explain how to organize routes to enhance record keeping abilities. Learn what information you need and what you don't need. Efficient use of forms and records will be demonstrated along with tips on using and evaluating the process of information gathering. Proper record keeping for a token oriented arcade will also be discussed.

(This session is a repeat of session 202.)

Session 502

STARTING AND MANAGING THE ARCADE, PART 1

Faculty: Steve Isaacson, General Manager, S.L. London Music Company

Starting and managing an arcade on the surface is viewed as merely a process of using sound business sense. While this is true to some extent, the arcade operation has other factors which should be examined. Mr. Isaacson will discuss topics such as determining locations, construction, licensing, purchasing, management, game mix, traffic flow, and promotion. (NOTE: This is the first of a two-part series designed for the operator. Individuals must register for both parts of this program and a separate registration fee is required for each part. See session 602.)

Session 503

DEPRECIATION FACTS AND FALLACIES

Faculty: Charles C. Ross, Partner, Innovative Management Consultants and Owner, Family Amusement Center

This seminar/workshop will examine depreciation and its impact on business profitability. Certain misconceptions regarding which depreciation methods are best for the amusement machine industry will be discussed at length. The attendee will come away with an understanding of the proper use of depreciation and how it should be looked upon from the accounting standpoint, under the new 1981 tax laws.

T Technical session

Session 504 **T**

THE TECHNICAL SIDE OF THE BUSINESS: WHERE WE'RE COMING FROM AND WHERE WE'RE HEADED IN ELECTRONICS

Faculty: Lou Rudolph, Director of Field Services and Technical Publications, Stern/Seeburg Electronics, Inc.

This seminar will cover the new types of logic systems and how these new systems could revolutionize the nature of video games. Also discussed will be new types of troubleshooting equipment available for these systems.

Session 505

EFFECTIVE MANAGEMENT: HOW TO EVALUATE YOUR CURRENT BUSINESS AND PLAN FOR FUTURE GROWTH

Faculty: Richard Priesmeyer, Partner, Innovative Management Consultants

This seminar provides a method for evaluating company strengths and weaknesses and outlines strategies for long term growth. Effective decision making is made easier through checklists that apply to both large and small operators.

Session 506

TOKENS: A COMPLETE CONCEPT

Faculty: Phyllis Bohrer, Sales Manager, Green Duck Corporation

David Appel, Operator, General Amusements

Ray Nicholson, Vice President, Coin Mechanisms, Inc.

Because of the importance of tokens to the industry this seminar will offer an in-depth analysis from the concept to the implementation of the token. Topics to be covered will include the "proper" token for you, mechanism adjustments to keep both yours in and others out, and an operator's actual observation and recommendations.



SEE REGISTRATION FORM ON PAGE A13.

SEMINARS/WORKSHOPS
SUNDAY, MARCH 28
3:30 — 5:30 p.m.



Session 601
THE "RIP-OFF": COPIED GAMES AND THEIR EFFECT ON THE INDUSTRY

Faculty: Stan Jarocki, Vice President, Midway Manufacturing Company

Mr. Jarocki will discuss copyrights and copyright protection and the effect upon the industry of copied games. You will learn some interesting facts on copyright laws and what the copied game can mean to you, the operator.

Session 602
STARTING AND MANAGING THE ARCADE, PART 2

Faculty: Steve Isaacson, General Manager, S.L. London Music Company

Starting and managing an arcade on the surface is viewed as merely a process of using sound business sense. While this is true to some extent, the arcade operation has other factors which should be examined. Mr. Isaacson will discuss topics such as determining locations, construction, licensing, purchasing, management, game mix, traffic flow, and promotion. (NOTE: This is the second of a two-part series designed for the operator. Individuals must register for both parts of this program and a separate registration fee is required for each part. See session 502.)

Session 603 **T**
TROUBLESHOOTING FOR THE CONVENTIONAL VIDEO GAME SYSTEM

Faculty: Randy Fromm, Randy Fromm's Arcade Schools

Most video game problems are easy to diagnose and repair once you know what to look for! Typical problems such as loss of picture or sound, or a screen full of "garbage", can often be isolated and repaired on location using basic trouble shooting procedures. Although this session is geared for those with little or no knowledge of electronics (we all have to start somewhere!), session 201, "Using the Digital Multimeter" is a suggested prerequisite.

(This session is a repeat of session 302.)

Session 604 **T**
TROUBLE SHOOTING TECHNIQUES FOR THE PINBALL MACHINE

Faculty: Lou Rudolph, Director of Field Services and Technical Publications, Stern/Seeburg Electronics, Inc.

This seminar explains basic pinball troubleshooting techniques for those with little or no electronic background. Mr. Rudolph will show the serviceman how to determine the difference between play features and logic problems and if there is a logic problem, in which module. Module level repair for the street or arcade serviceman, using only a volt meter and jumper wires will also be discussed.

(This session is a repeat of session 307.)

Session 605
"FRANK'S CRANKS"

Faculty: Frank Seninsky

This session will provide an overview of manufacturing capabilities. Included in the discussion will be game design, reliability, and service support. Mr. Seninsky will also touch upon the role of the operator in relation to the manufacturer: how the operator can affect change, how he can play a role in the future of our business, and how he can help guide the direction of the business to achieve needed results. Also covered will be the latest industry innovations, and what innovations still need to be made by manufacturers to improve the industry. Mr. Seninsky has a broad technical background which he will share with the audience.

T Technical session



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Room rates are subject to availability, so please make
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Mail this form directly to the Reservation Department,
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ADVANCE REGISTRATION PRIOR TO MARCH 5, 1982 \$20 for each session.

To qualify for this rate, registrations (with payment in full) must be postmarked by March 5, 1982.

REGULAR REGISTRATION AFTER MARCH 5, 1982 \$30 for each session.

CONFIRMATION

All registrations postmarked prior to March 5 will be acknowledged by mail. All tickets can be picked up at the Seminar Registration Desk located in the convention registration area of the Hyatt Regency Chicago, on Thursday, March 25, from 4 p.m. to 6 p.m., and on March 26 starting at 7:30 a.m.

ADMITTANCE TO EXHIBIT HALL IS FREE

Registrants for sessions will automatically receive Exhibit Hall admission badges with their tickets.

TIME SCHEDULE FOR SESSIONS

Sessions take place in the morning and afternoon of each day of the Conference & Exposition. Sessions last approximately 2 hours. Morning sessions start at 9:00 and end at 11:00. Afternoon sessions start at 3:30 and end at 5:30.

LOCATION OF SESSIONS

All sessions will take place at the Hyatt Regency Chicago, located at Illinois Center, 151 East Wacker Drive.

CANCELLATIONS

Cancellations with full refunds will be accepted if received in writing by March 5, 1982. After March 5, 1982, a \$5 per session service charge will be deducted from all refunds. No refunds will be given for cancellations received after 5 p.m., March 19, 1982.

HOTEL ACCOMMODATIONS

Please note page A9 for information regarding hotel room reservations.

TAX DEDUCTION OF EXPENSES

Treasury regulation 1.162-5 permits an income tax deduction for education expenses (registration fees and cost of travel, meals and lodging) undertaken to: (1) Maintain or improve skills required in one's employment, or (2) meet express requirements of an employer.

PLEASE FOLLOW THESE INSTRUCTIONS

Fill out the Registration Form on the opposite page according to the instructions given below. Please fill out a separate Registration Form for each registrant. (The form may be photocopied for additional registrants.)

1. Fill in your name, title, company, address and telephone number (including area code).
2. Please check box if you plan to attend the "Early Bird General Session."
3. Circle the sessions you wish to attend. Note: Circle all parts of multi-part sessions. Make sure you select only one session per time period. Also, check the listing of seminar titles on pages A3-A8. Make sure you have circled the correct numbers.
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5. Total up the number of seminars and multiply by \$20 for each (for advance registrations) or by \$30 (for regular registrations). Make checks payable to Conference Management Corporation and mail along with your Registration Form to: Amusement Operators Expo, c/o Conference Management Corporation, 17 Washington Street, P.O. Box 4990, Norwalk, CT 06856. Checks must be payable in U.S. dollars.
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I plan to attend the "Early-Bird General Session" on Thursday evening, March 25, at 6 p.m. Cash bar at 5 p.m.

NOTE: Select only one session per time period.

Friday, March 26 9:00-11:00 a.m.	Saturday, March 27 9:00-11:00 a.m.	Sunday, March 28 9:00-11:00 a.m.
101 103 106 102 104(part 1) 107 105(part 1)	301 303 306 302 304(part 3) 307 305	501 504 502(part 1) 505 503 506
3:30-5:30 p.m.	3:30-5:30 p.m.	3:30-5:30 p.m.
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*Amusement
Operators
Expo 1982*

March 26, 27, and 28
Hyatt Regency Hotel
Chicago, Illinois

'Gray game' makers react to policy on exhibition at AOE '82

Veiled suggestions and outright threats of legal action have come from gray area coin machine manufacturers in response to *Play Meter's* announced policy of excluding "gambling and pseudo-gambling" equipment from being permitted at the 1982 Amusement Operators Expo, sponsored by *Play Meter*.

As stated in a *Play Meter* editorial ("We Will Not Do Business with Gray Area Games," January 1 issue) by Publisher Ralph C. Lally II, the decision to exclude gray area games from the AOE Show was based on apparent confusion in the public mind between amusement games and payout gambling games.

"Gray area games are pseudo amusement devices that award the player with a high number of credits that can easily be cashed in. They are not games of skill but rather games of chance which exploit amusement machine laws and ordinances. As such they should not be operated in any state where gambling is illegal," wrote Lally in the January 1 "Up Front" column, which noted also that gray area equipment advertising will no longer be accepted for this magazine.

One gray area game manufacturer in a conversation with *Play Meter* recently criticized this anti-gaming stand, saying: "More and more states are opening up for this kind of equipment. What you're doing is opening up a door for somebody to go into it [advertising the gray games available]. If I were in the publishing field, I would go after all this business myself now. That's what I'd do," said the fringe equipment manufacturer.

From the attorney of another manufacturer, who had received written notice that gaming-type equipment would not be allowed in the AOE Show, came this response on November 12:

"Our client's product is manufactured for amusement and is no different than (sic) other games found throughout the nation. To preclude our client from exhibiting its products in a show of its peers would have the effect of restraining its ability to show its products to a large segment of its market, and to severely limit the competition it would (and does) inject into this market," the attorney wrote Publisher Lally.

Within another two weeks came a

telegram from the attorney, saying that his client had not received confirmation that it can exhibit in the March 1982 show. The telegram said that if go-ahead for exhibiting were not received, "we are authorized to institute legal proceedings to allow client into show or stop show."

As detailed in numerous news accounts and features in the magazine in recent months, public officials have confused amusement games and quasi-gambling equipment. As one illustration from Ohio (*Play Meter*, April 15, page 48 and 49), a mayor had issued an order for his city's police chief to remove *Draw Poker* machines from the town. The chief first interpreted the official order to include pinball games and began to sweep all the coin-ops out of town within the mayor's 24-hour mandated time frame.

The Lorain, Ohio mayor reportedly corrected the chief, and the pingames finally remained in town. But that was not before location owners protested that they had (1) taken out legitimate licenses for the machines and (2) had seen their eating establishments' customers dwindle after the flippers were taken out.

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Pace introduces 'rework and repair' audio-visual series for techs



Components of Pace, Inc.'s new 8-part training program in electronics

Pace, Inc., of Laurel, Maryland has announced the introduction of a complete 8-part training program in "Rework and Repair for Electronics."

According to Bill Siegel, president of Pace, Inc., this is one of the most comprehensive training programs ever undertaken and can result in saving companies hundreds of thousands of dollars in costly repair,

plus reduce critical downtime.

"We believe that everyone involved in electronics manufacture and maintenance should be trained in high reliability rework and repair," Siegel said. "Few people are trained in repair for electronics. And it's a lot more sophisticated than most people imagine. An unskilled person can cause more damage in trying to

repair a PCB than was already there.

"Moreover, the reliability of the repair work is paramount to the successful functioning of the electronic system. In field situations, for example, there are no quality assurance experts to check and double-check repair work. The burden for high reliability is strictly on the personnel who have to fix it."

Siegel says that Pace has taken a revolutionary approach in creating this eight-part training system on film. "Most people think that teaching skills or craftsmanship is an exercise in manual dexterity," Siegel added. "They're wrong. The primary teaching is on *reasoning*. That's why this training program will work in any situation regardless of the kind of equipment or tools being used."

Since it is practically impossible to see how someone repairs a PCB because of the tiny point of action, Pace has used the dynamics of motion pictures which feature animation, cut-aways, and bigger-than-life graphics to give students a "hands-on" feel for the repair process.

The eight part series is available on 16mm, Super 8, or video. The series includes: Concepts of Repair, Elements of Construction, Component Removal, Solder Extraction, Removing Conformal Coatings, Repair of Damaged PCBs, Refurbishing and Replating Edge Connectors, and Preventing Electrical Damage to Sensitive Components. It also includes student handbooks and an instructor's guide with information on how to customize the presentation if desired.

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Preview copies of *Rework and Repair for Electronics* are available to people with training responsibilities. Contact: Pace Training, 9893 Brewers Court, Laurel, Maryland 20707; 301/490-9860.

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How One Operator Gets Parents on His Side

[Ed. Note: The following article illustrates one principle set forth for operators to cope with parental objections to amusement arcades, as explored by writer Blakeman in *Play Meter*, December 1 issue.]

By Mary Claire Blakeman

Before Ian Bulloch opened his Game Town U.S.A., on College Avenue in an upper middle class area of Oakland, California, he posted signs in the window along with big pictures showing what the arcade would look like and what kinds of games it would hold. That way, he was able to talk with passers-by and parents in the area before he even opened the doors for business.

That initial contact helped him establish good relations with the community and surrounding businesses. Bulloch, who keeps his 700-square-foot arcade spotless, also posted a large sign reading "No Students During School Hours." Along with the "House Rules" (see accompanying list) printed on bright pink paper, the sign and the dependable employees supervising the arcade helped create an atmosphere that keeps problems to a minimum.

"Before I opened, the police said they thought they'd get calls all the time," Bulloch says. But since he started the business in December of 1980, "They haven't come once."

Bulloch points out that to be successful, "You have to run it strict from the start." Along with the house rules he also devised a questionnaire to gauge the impact of the arcades on young people and their parents. Players under the age of 18 who filled out the forms got a free game. While the questionnaires were not a scientific sample, they did serve to promote the business and demonstrated a level of civic responsibility on the part of the arcade.

Bulloch's approach to business is as straightforward as his house rules. When he first started in the business, he recalls visiting one location where his games were installed and noticing

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teenagers using marijuana there. "I pulled my machines out," he says.

Bulloch got into the coin-op business via his studies in television repair. "I used to have to go to San Francisco around 6:30 p.m. and would get there early to get a parking place," he recalls. "Since I had time to kill, I'd play the games in a small store near the place where I took classes. I used to think 'What if I swept the floor, painted the walls and put decent equipment in there?'"

That thought led him to acquire a couple of games with which he used to tinker in his garage. "I found them easier to fix than TV sets," Bulloch says. Eventually he put a few games in a donut shop and built up a route over three years before opening his 22-game arcade.

Perhaps his experience in repair influenced his respect for the games which he keeps in tip top condition with polishing and cleaning once a week. "The trick is to keep machines not just working, but spotless," Bulloch says. "Some people, for instance, a location down the street, put in *Skateball* at the same time I did, and theirs looks five years old already."

This attention to quality is part of Bulloch's idea to get arcades into better neighborhoods. "I'm trying to introduce something like this (arcade) to first-class neighborhoods with first-class equipment. No one else has done it as far as I know. The closest thing I've seen is in Los Angeles at a swanky shopping center."

Having an owner-operated arcade is another way Bulloch sees to head off community complaints. "Police are really against fly-by-nighters, who came in, put up a few games and leave," he says. "They don't care because they have nothing to lose."

For all his trouble, Bulloch earned the compliments of a video cable channel in San Francisco which selected his arcade from all of those in the bay area as the best site for filming game action. And, he has also earned the respect of other business people. Bulloch is now looking at expanding his arcade concept to a small store in Moraga, a town near Oakland.

"Most of the businesses (near Game Town) think it's generally good for creating traffic." He says, "And one merchant at the shopping center in Moraga where I'm thinking of opening another business said, 'When you open up, I want to be next to you.'"

INDEPENDENT TECHNICAL REVIEW:

Exidy bows new cabinet, featuring operator convenience

By Randy Fromm

Exidy has announced a new cabinet design, beginning with its recent release *Mousetrap*. Dubbed the "Operator Convenience Package," the new cabinet sports many features that make it far more than just a box to hold the guts of the game!

The electronics assembly slides out through a separate, lockable door in the front of the game. This really makes troubleshooting easy. The boards are right in front of you, for working on them without having to climb inside the game, or have the board dangle out the back. Because the electronics assembly is serviced from the front of the game, you can see the monitor as you work on the board.

Those of you that prefer to use the video probe for troubleshooting will like that especially. While the idea of having the electronics assembly slide out the front is not new (Remember Bally's *Road Runner* arcade piece?), Exidy has carried the idea a step further and made the unit removable! The entire assembly can be removed from the cabinet and taken to the shop for servicing, simply by unplugging the monitor and control harnesses and releasing a catch. The power transformer and power supplies are also located on the removable electronics assembly unit.

The monitor can also be removed from the front of the game. A separate, lockable door in the rear of the cabinet provides access to the monitor adjustments.

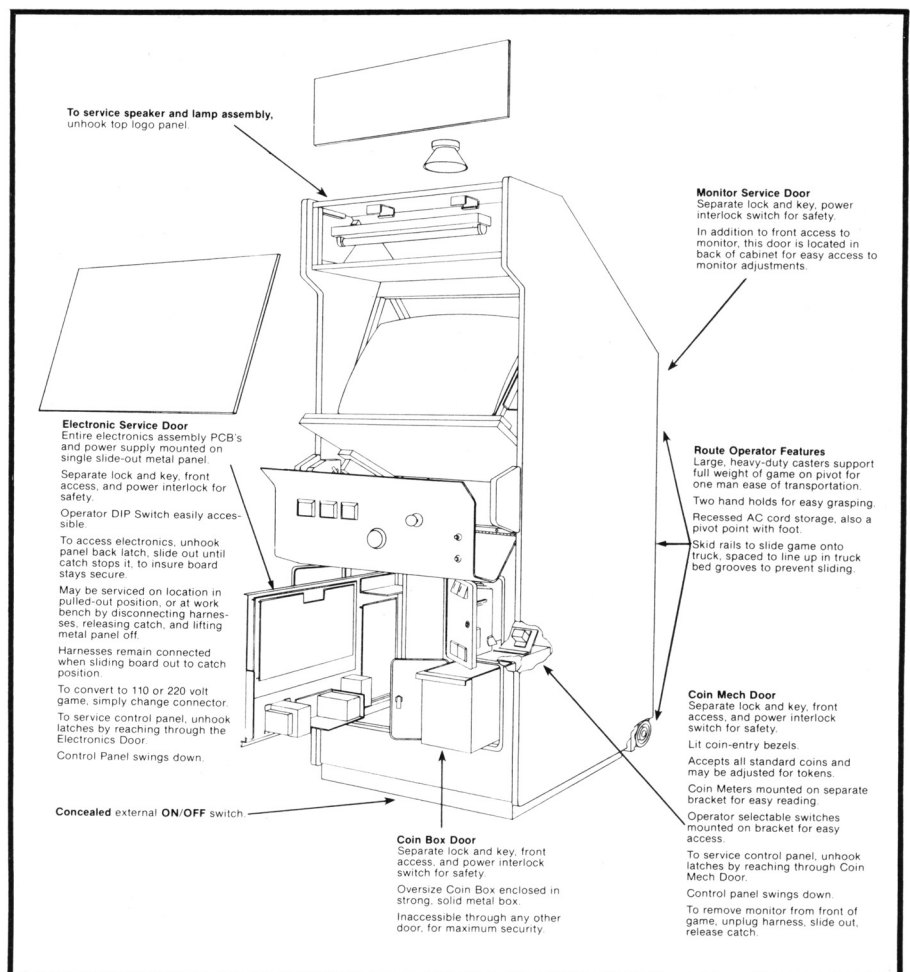
In recognition of the fact that, for any game to make money, it must first be delivered to the location, Exidy has included a number of features that will make the route operator happy. Built-in casters and handholds make it unnecessary to use a truck or dolly to move the game. Recessed AC cord storage prevents a mangled AC cord from careless moving of equipment. Skid

rails are also mounted on the cabinet, to make it easier to load the game onto a truck. The rails are spaced to line up with the grooves in a conventional pickup truck, to prevent sliding.

One of the conveniences boasted by Exidy for the new cabinet design, is that each of four doors in the game (coin mechanism, coin vault, electronics assembly, and back door) has its own separate lock and key. This feature is promoted as "Securing game service to capable hands, and profits to the right hands!" While the separate and lockable coin vault is certainly an excellent way to secure the cashbox, I am, quite frankly, insulted by

Exidy's innuendo that coin-op servicemen steal from the cashboxes of games.

All of the mechanics that I know abide by the unwritten but highly regarded law that "Anything inside the coin door is the boss." Any competent operator keeps track of meter readings, and will know if he's being cheated whether the cashbox is locked or not. I'm sure it wasn't an intentional slur against mechanics in general. I just don't want people to get the impression that they have to be paranoid about their service crew if they don't have Exidy's security system. Similar coin vaults can be found on games from Sega, Taito, and others. ●



No. 5 in the Series

Business Myth of the Month

The Myth:
“Debt is Bad”

By Charles C. Ross

The misconception about debt being bad arrives from our history and the bad experiences of many people in the Depression. Even today debt receives a bad name by people who have abused debt and overborrowed in these days of high interest rates.

Personal debt is the main cause for debt receiving a bad name. When people spend money on boats, expensive automobiles, and other luxuries they must make sure that they can earn enough money to pay for these items and the interest on the borrowed money. Many times they get in over their heads. The whole problem is that too many households are not run enough like a business and as a result the household budget gets into financial difficulty.

Debt has no need for a bad name when used in business. Without business debt most people would never have had a chance to make the company grow and prosper. Debt has been the single most important vehicle for turning people with ideas and ambition and little money into people with ideas, ambition, and large sums of money. Here is how debt can make a person wealthy in terms of net worth.

To use an extreme example, let us take a look at an ambitious person who wants to get into the amusement machine business but has only \$5,000 of his own money to invest. As we all know \$5,000 does not go far in buying new amusement machines in today's market. So if this

person were to start a company with only the \$5,000 he would have assets of \$5,000 and net worth of \$5,000. A rather small start.

Now let us assume that this ambitious entrepreneur goes to the bank and borrows \$25,000 to go with his \$5,000. His balance sheet now looks like this:

Assets	=	Liabilities	+	Net Worth
\$30,000		\$25,000		\$5,000

He is able to buy more machines that can be set on location with the additional \$25,000.

Now as time goes by the debt is paid off and the operator acquires new machines to replace the old that are wearing out. If we assume that he does no further expansion of the company and that he continues to reinvest in the company equal to his depreciation, then when the debt is paid off his balance sheet will appear as follows:

Assets	=	Liabilities	+	Net Worth
\$30,000		-0-		\$30,000

The end result is that the business owner has increased his net worth from \$5,000 to \$30,000—a sixfold increase. Now the operator could go back to the bank and borrow more money to continue the growth of the company.

He could conceivably borrow up to \$150,000 if the banker was requiring him to raise 20% of the loan. In today's tight money situation the bank may not be willing to loan quite as much money on \$30,000 of equity. But if he continues to borrow

and pay off, he can build an empire.

There is another important aspect of debt that is often overlooked, and that is the tax deductibility of interest expense. The net result of being able to deduct interest means that debt is not as expensive to use as you might believe. An easy formula to calculate the after-tax cost of interest is:

Before-tax Cost of Interest \times (1 - Tax Rate) = After-Tax Cost of Interest.

So if your company is paying 22% for money and is in the 30% tax bracket the after-tax cost of debt is only 15.4% [22% \times (1 - .30)]. It is also apparent that the higher the company's tax bracket, the less expensive is the debt that you employ in your financing.

If the firm is in the 50% tax bracket, then the after-tax cost of debt is only 11% when you pay the bank 22% for money. Not a bad deal when the inflation rate is more than 11%.

Now that we have seen the benefits of using debt and that debt is not as expensive to use as you many have thought, how and when should a company use debt?

Debt use, or as it is sometimes referred to as the use of leverage, can be used to generate cash for the firm today and commit cash flows in the future. Debt should only be used on those investments which are going to have a higher return than the cost of the debt. Now that may seem like an elementary statement, but let us analyze it.

The firm has just been offered the chance to make an investment which

‘Debt has been the single most important vehicle for turning people with ideas and ambition and little money into people with ideas, ambition, and a lot of money.’

it does not currently have the money to undertake. Should they borrow to undertake the project? The answer lies in the rate of return that the project will generate.

If the project is going to generate a 20% return after taxes and the money is going to cost 15% after taxes, then the project is acceptable. If, however, the project is only going to generate a 12% return and the money is going to cost 15%, the project is not acceptable.

Use your own money?

Then there is another question which is always asked: "Our company has the money to undertake a project but should we borrow the money or use our own money?" If we assume the firm has adequate cash for day-to-day operations and adequate cash for emergencies then we must ask, "If the firm does not use its own money for this investment opportunity, then what are they going to do with the cash they have available?"

If the answer is, "If we don't use our money in this project the owner is going to take it home," then the owner must decide whether he

would rather take the money home and pay the bank interest or use the company's money to undertake the project. The whole question is one of what the alternative use of the cash is, if it is not employed in the new proposed project.

There is another important consideration when using debt and that is the period of time the debt is going to be employed. In other words, how long should we borrow the money? Unfortunately, in some cases the bank or other lender dictates the period of time the money will be loaned—but if you have a choice, how long should it be?

Let's attack the problem from the direction of how long it should not be. You should not borrow money for a long period of time to finance amusement machines, because we all know that amusement machines do not have a long life. The machines would be gone and the debt would still be with you.

The other thing you do not want to do is get financing for such a short period of time that you cannot generate sufficient cash flows to pay off the loan. This could cause problems in making the loan payments.

Another side problem of financing for too short a period of time is that the banker may decide not to renew a loan (if you were not making monthly payments) and then the firm has a problem retiring the debt or is forced to find another lender.

So then as a rule of thumb, match the life of debt with the life of the asset you are financing. This of course makes the assumption that you have no other sources of cash flow to help retire the debt. If you did have other sources of cash, you may wish to use shorter periods for borrowing money than the life of the assets, but you must be cautious or you may find yourself in a cash flow bind.

So the bad name that debt has acquired is really as a result of personal debt and not from business use of debt. In its place debt can help the company grow and prosper and increase the wealth of the owners. Just remember, use debt wisely.

Charles C. Ross is partner in the firm Innovative Management Consultants which specializes in consulting to the amusement operating business.

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Critic says:

Kaos jumps up while Galaga falls

By Mike Bucki

Observations from the field...

At the student center on the Georgia Tech campus in Atlanta, video games compete for students' leisure time with several TV lounges, a dozen bowling alleys, numerous card tables, an ice cream stand, a cafeteria, and about 16 pool tables. Yet video does quite well in this diverse atmosphere, in fact it probably comes out on top. And I thought you'd like to know which video games attract the most attention in this particular setting.

Keep in mind the unique clientele. Most are engineering students and many are well acquainted with computers—there are more than 300 terminals on campus. The players beat the heck out of easy video games, "maxing out" weeks or even months ahead of the general population.

For example, *Pac-Man* and *Asteroids* were removed from this location at a time when they were peaking in popularity elsewhere. These students are physically tough on the games, as well—"murderous on joysticks," according to the service manager. But their collective appetite for the newest and toughest videos is insatiable. They can't seem to get enough.

Comes now, in rapid fire fashion, my observations from two recent weekday afternoons: Two copies each of *Frogger*, *Omega Race*, and *Tempest* were never idle. Quarters were stacked on the ridge above the screen, with a half dozen players watching and waiting...all the time.

Centipede attracted somewhat smaller crowds but the flow was fairly steady. *Qix* garnished a reasonable amount of attention, occasionally standing idle but not for long. *Super Cobra* had its fanatics milling about almost all of the time. One player observed was consistently plowing through at least 6,000 miles of that super tough terrain on one quarter! Once, I saw him make it to 9,000 miles, but his competitors

usually dropped out in the 3,000 to 5,000 mile range. I also noticed that most of the *Super Cobra* players did not exercise that buy back into the game option. Perhaps the ten-second display is too fast, as I've suggested (*Play Meter*, December 15) or maybe they simply prefer to see how far they can go on one credit.

Vanguard received the least attention in this setting, bolstering my ego and my November 15 review. *Donkey Kong* was also comparatively idle.

If these observations are useful to you, let me know and I'll put on a repeat performance from time to time, in this column.

Kaos by GPI and *Galaga* by Midway are two of the many games I tried to evaluate at the Chicago AMOA show. Time was short then, instinct replaced the two-to-eight hours I prefer to give each game. But now I've had more time to re-evaluate. And I've changed my mind about both games. *Kaos* is jumping up in my esteem while *Galaga* is falling.

GALAGA'S PLAYFIELD: With a two-direction, left and right joystick, the player moves a spaceship at the bottom of the screen and fires at the enemy targets at the top. The Galagas swoop across the screen in various single and double file formations and form troop lines at the top. Smaller squadrons then drop down toward the player's ship and release bombs as they dive and curl. A slight delay in the single shot fire button forces the player to dodge frequently and time his shots to achieve success.

ANALYSIS: If *Galaga* sounds a lot like *Galaxian* to you, you're right on target. There's not a heck of a lot of difference. The sounds are a little crisper, the colors seem somewhat brighter, and the tractor beam presents a slightly new challenge but it's unlikely that *Galaxian* fans who

become bored will find enough newness in *Galaga*.

The so called Challenging stage isn't. The insect-like Galagans don't fire at the player's ship, they merely swoop and curl across the screen. Players soon learn where to position the ship for maximum firing advantage and bonus points. Many will quickly master the technique of allowing the Boss Galaga to capture one ship in its tractor beam and then recovering it with a double hit on the Boss Galaga.

Two-ship, double firing power is the player's reward and as it usually happens just before the so-called Challenging stage, the game becomes too easy.

Multi-phase games should allow the player to take a breath after a few frantic stages, but *Galaga* lets him kick off his shoes and read the paper. The Challenging stage should be renamed the Bonus Stage.

Please allow me to retract my previous estimate (*Play Meter*, January 1) that *Galaga* would be number 9 among the top ten games of 1982. It's a good game but it's not that great.

Previous Ratings:

ITA -2
CB +7
MO -4

Updated Ratings:

ITA -4
CB +6
MO -6

If I were opening an arcade with 20 or more games in a new location, I would probably include *Galaga*. I'd certainly choose it over *Galaxian*. But in an established location where *Galaxian* was beginning to wane, I wouldn't replace it with *Galaga*.

I might choose something like *Kaos* by GPI, where the maze moves, the player jumps and slides, and the dragons slurp with relish.

KAOS' PLAYFIELD: Multi-

colored bars move left and right across the screen to form an ever-changing maze pattern. Occasional vertical bars fill the gap between two horizontal bars; these moving dead-ends can sweep the player's man into an often fatal chasm.

At the beginning of each round the player's man appears on a bar in the middle of the screen. Gold coins, etched with dollar signs, drop down through gaps in the bars. With a joystick the player moves his man left and right and tries to catch the coins before they hit bottom and become dragons.

If he misses a coin he can try to scoot down below it for another attempt or he can hit the jump button and try to make his way to the top of the screen. Jumps must be timed precisely. Jump too early into a gap between the bars and your man falls back to the bar where you started and you risk getting swept away by one of those moving dead-ends. Jump too late and you uselessly hit your head on the bar above.

Meanwhile, the dragons are moving up through the maze to get you. But if you make it to the top and capture an "erg" you become a king...and, as you may have guessed, kings slay dragons. Kings, however, do not live forever. They become mortal men again after a brief reign.

ANALYSIS: Considering the coins decorated with dollar signs and the "ergs" that strongly resemble the pyramid on the back of the one dollar bill, it's rather obvious that money is on GPI's mind. The question is: will *Kaos* fulfill the manufacturer's dreams?

Maybe, maybe not. *Kaos's* designers have integrated good graphics with excellent sound effects but irksome qualities are lurking in the corner. *Kaos* is growing on me but I'm still wondering how many players will stay with it for several hours when real money (instead of free credits at the distributor's showroom) is required for play.

The controls frustrated me severely during my first encounter with *Kaos*. They didn't make sense. To cross a gap in a bar where your man is standing you would think that you'd have to *jump* and *slide* to get across. That's true with the man but not with the king.

Standing on the bottom bar of the screen, a fall through a gap is fatal...for the king or the man. Try to *jump* the king across a gap and you're dead. *Slide* him quickly across the gap and discover no problem. But it takes several hours of play to discover when to do what, and that's frustrating. And I'm still left with the feeling that the joystick doesn't respond as quickly as I'd like,

as a player.

But on the other hand the sounds are delightful. Press the start button and a moog synthesizer tune invites you to adventure with a slight touch of anxiety. The man's jump is signalled with a springy beep. The dragon leaps with an ominous low chord. Crown a king and hear a royal procession of trumpets. Slay a dragon and the fireworks greet you. Get slain by a dragon and get ready to laugh. "Urp(!)" is sounded and displayed graphically as well while the dragon devours your man.

If *Kaos* is successful its sound effects will have played a major role. Attention grabbing and play-again-inviting, the sound effects of *Kaos* are its heart and soul. Don't place this game in a location where it must remain silent or nearly so.

Will *Kaos* become one of the top ten games of 1982 (now that I've dropped *Galaga* out of that exalted slot)? Well, I'm not quite ready to go that far, yet, with *Kaos* but:

ITA -3 (Immediate Turn Away)
CB +6 (Come Back)
MO -1 (Max-Out)

As "turn-about is fair play," Roger Sharpe is scheduled to lend his talents to a coming Viewpoint on Video while I'll be scooting over to the somewhat foreign field of pinball.



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Writer/operator Seninsky reports that these automaton gnomes resemble his cabinet repair shop crew...

“FRANK’S CRANKS” SPECIAL:

Warm-season arcade spawns holiday fun ‘village’

By Frank Seninsky

For some “change,” and it seems that all of us in the amusement business like “change.” I decided to write about a whole arcade instead of a single game. I chose “500 Boardwalk,” located on the boardwalk in Seaside Heights, New Jersey.

At this time of the year (now December) the temperatures in Seaside Heights hover around the 15 degree range with a wind-chill factor of -10 degrees. Most of the arcades are closed but hundreds of people are enjoying themselves at 500 Boardwalk because this is the home of “The Christmas Village.”

During the summer season there are approximately 500 amusement games and six games of chance housed in 500 Boardwalk which spans one full block. It takes 120 employees to operate this arcade in the summer, comprised mostly of college and high school students and senior citizens. There is a special room called the “New Wave Room” where the teenagers like to play. It is in this area that Christmas Village was born six years ago. 500 Boardwalk is owned and operated by Robert Bennett, Thomas Gugliotta, and Wayne Cimorelli. Wayne is also the manager and he and Stephen Carlson, technical director, are mainly responsible for creating the “village.”

Christmas Village consists of 20 three-dimensional Christmas scenes complete with a “real” Santa Claus.

The animated characters in the scenes are motorized and placed in miniature realistic settings with special attention paid to detail. Can this be the forerunner of “Pizza Time Theater?” These charming animations whimsically tell our favorite Christmas customs. They seem to come to life before your eyes. It is a winter wonderland of exceptional beauty and nostalgia,” said Cimorelli. Also included are a free kiddie movie show on a giant screen, a giant Christmas train, and a giant Christmas tree. Four free coupon advertisements are placed in each of the area newspapers every Friday and Sunday. Groups are admitted free with advance registration. The regular admission price is 50¢.

The Village is now worth \$100,000 in capital assets and costs about \$50,000 to put up, take down, and promote, explained the owners. Last year about 30,000 people saw Christmas Village and it is projected that 40,000 will visit this year. This is a great way to foster positive community interaction between the local families and the arcade. It also employs about thirty local people full time. It is obvious to me that the staff is very proud of their “Christmas Village.”

Another aspect of 500 Boardwalk that I found interesting was the four portable bathrooms that are located inside the arcade. They are made by “Mr. John” of Rahway, New Jersey

and a three month rental costs about \$1,000. The portable johns must be emptied about once per week. This service is included in the rental price.

I spent most of an afternoon going around the arcade with Stephen Carlson. He is in charge of the daily operations, servicing of equipment, and of course the service shop. Stephen’s philosophy is, “Overdue a project just enough.” He also strongly believes in preventative maintenance on all the games and displays. For example, we all (those of us who operate games near the ocean) have had and continue to have problems with pinball flipper, kicker, and pop bumper coil plungers becoming sluggish. The main reason that this happens so frequently near the ocean is because salt crystals are deposited on the metal surface of the plungers.

Stephen showed me a lubricant called LPS 1, “The Greaseless One,” which is sold by Wico Corp. Placing only one drop on a coil plunger will enable the plunger to slide smoothly with little friction through the sleeve. The lubricant will remain wet for 24 hours and will then evaporate and the salt crystals will be dissolved and forced off the plunger. One word of caution: LPS 1 is highly flammable, so keep it away from the end-of-stroke switches as a spark will cause the lubricant to ignite—only use one drop.

Last year 30,000 people saw the Seaside Heights arcade site, converted to Christmas Village for the season—fostering positive community relations.

Favorite repair tool

Inside the repair shop is a sign kit, motor repair bench, a coil winding jig with a counter (they make all of their own coils), and an oscilloscope which is hardly ever used. Stephen's favorite repair tool is a circuit probe manufactured by Production Devices, Model 105 and sold by Wico, part #27-5039. This battery operated device costs \$22.50 and is a valuable time saver.

It can be used as a simple continuity tester. Zero resistance is the reference tone. The lower the resistance, the higher pitched the tone gets; the higher the resistance, the lower pitched the tone.

Once you get used to the pitch of the tones it is very easy to check transistors and capacitors. The circuit probe will give a clicking sound if leakage is present in a transistor or capacitor. It's easy to check a whole row of suspected bad transistors on a board; the clicking sound will identify a transistor that works but is starting to break down. A normal capacitor will start out with a low tone and gradually, over a few seconds, the tone will increase in pitch as the capacitor is charged. This obviously will not work for the small ceramic disc capacitors but will work on most of the larger capacitors used on amusement games.

I was also given a lesson in soldering, which I had thought I was pretty good at until Stephen showed me a better way. After soldering a component to a board or connecting board traces with a bead of solder, a brown flux ring appears around the solder bead. I was taught that this flux ring will not conduct electricity so it was all right to just leave it. Actually the flux ring is slightly caustic and recent government studies show that the flux will conduct high speed data signals in the radio frequency range.

What this means is that under certain conditions the capacitance of the soldered area will increase, and electrical havoc will occur. It is therefore a good idea to spray a newly soldered area (within two hours of soldering) with flux remover. And you guessed it, "Flux Remover" is sold by Wico Corp. (They seem to sell everything.) A good kind is made by GC Electronics. The only drawback is that the flux remover makes the area cold, so it's best to wait an hour at room temperature before putting the circuit board back into the game.

With a little practice you can make perfect solder beads and if you



The chill factor on the Boardwalk is minus-ten, but the cheery facade above beckons a family clientele for Yule.



Free kiddie movies and lots of holiday atmosphere bring in groups from the community: A boon for the image of the arcade during its regular games season.



Twenty 3-dimensional Christmas scenes such as the above are animated, and they bring yuletide characters to life.

use flux remover the circuit board will look as if no one has ever worked on it. Now if you are good enough you can work on boards and not void the manufacturer's warranty. (I really should not have written that; I'm sure I'll hear it from some manufacturer.) Also it's a good idea to use flux remover before you attempt to "seal" a board because sealer won't stick to flux.

While we're on chemicals used in the amusement industry let's not forget "Prolong" and "Seal Out"—"Prolong" is a freon freeze spray in a can made by Drackett. One of its primary purposes is to aid in the

removal of chewing gum from plexiglass and carpeting. The gum becomes a frozen rock and can be just lifted off the carpeting or glass. "Prolong" can be sprayed directly onto a circuit board (don't spray while the game is turned on) and then the game can be turned on. Any heat sensitive chip problems will disappear and by spraying one chip at a time you can locate the faulty chip.

High voltage sealing

"Seal Out" is an insulating spray with a dielectric strength of 1523 volts/millimeter. Stephen uses it to seal circuit boards and the high

voltage wires on the backs of monitor CRTs. "Seal Out" can also be used to seal small leaks in the flyback transformers in all monitors.

Dust, as we all know, is attracted to the high voltage areas on the backs of monitor CRTs. The dust is neutral with respect to electrical charge and the high voltage areas are positively charged. As we learned in physics (or was it really third grade), dissimilar charges will attract. That's how the dust or "crud" builds up on the monitors. The dust on the seashore has a certain amount of salt in it. Salt will attract moisture and form salt water which is an excellent conductor of electricity.

If the monitors are kept on or not turned off for a period of more than 24 hours, the dust will remain dry because of the large amount of heat generated by the monitor. If the games are turned off for more than 24 hours, the high voltage will arc across and conduct through the dust which will cause an excessive load on the flyback transformer. The flyback transformer is driven by the horizontal driver transistor which is some cases will fail. This will result in loss of high voltage. This is only a theory, but by spraying "Seal Out" on the high voltage areas and keeping the CRT backs free from dust, you will have very few monitor problems.

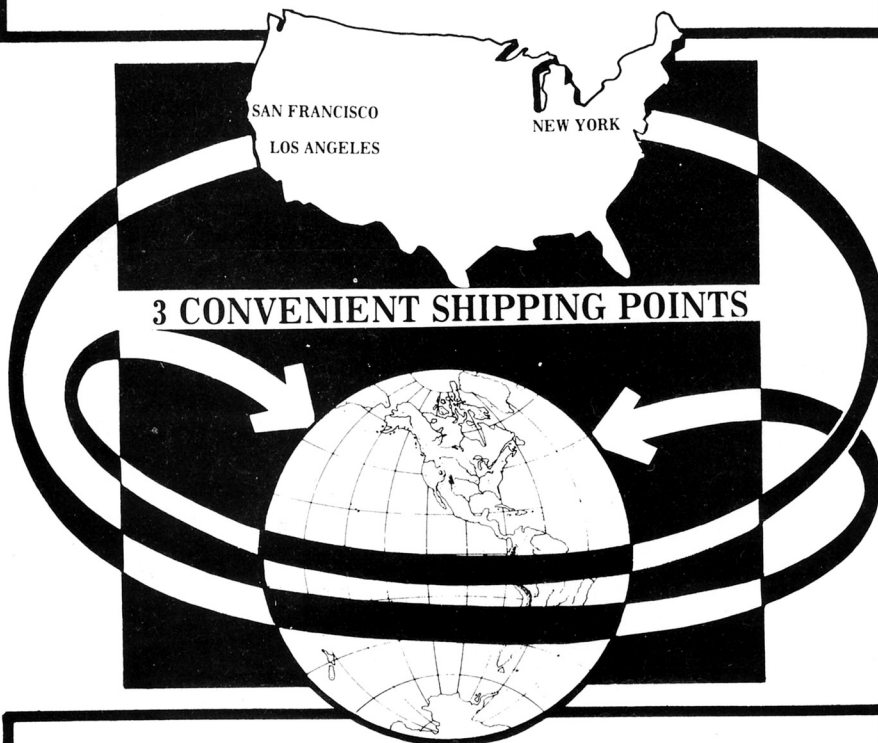
Those chemicals to stay away from are the contact cleaners that contains silicone. The silicon will combine with oxygen and form silicon dioxide ($\text{Si} + \text{O}_2$ yields SiO_2). Silicon dioxide is a primary component of glass which is a good insulator. This is how most silicon chips are made: a silicone wafer is put in an oxidizing atmosphere and a layer of silicon dioxide is formed around the wafer. These wafers are then stacked on top of one another and a complete chip is the result.

In the next issue I'll have the results on some blade switches that I have been testing for Penn-Ray International as well as some new joysticks. Games that I'll go through next are *Mouse Trap* by Exidy and *Donkey Kong* by Nintendo.

Some of the chemicals mentioned can be ordered from State Products Corp., Highlands, New Jersey.

Ed. Note: Contributor Seninsky operates Wizard's World Arcade and Alpha-Omega Amusements, Inc., game room specialist, in Edison, New Jersey.

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Have you ever experienced a day when nothing went right, or a day when everything was going your way? This is because of our biorhythm, which controls our bodies. Human beings have a favorable and an unfavorable life rhythm from the day they are born. The three rhythms; Physical "P", Sensitivity "S" and Intellectual "I" are the waves that make up the biorhythm. The biorhythm is a field pioneered by scientists, and data show that there is a 70-80% possibility of it being right. Use it for your health, safety, accident prevention, business success, happy marriage, intuition; and also to find out more about yourself and to keep your self-control.

How to use this machine:

By choosing one button, select the desired biorhythm.

START 1:

Will calculate the biorhythm for the next two weeks.

(A two week biorhythm from the day you request will be printed out with a calendar and comments.)

START 2:

Will calculate your love, driving, studying and gamble luck.

(12 items, such as love, driving, and monetary luck will be printed with an estimation graph and comments.)

START 3:

Will calculate your congeniality with that special person.

(From the birthdays of you and your special person, comments and congeniality percentages will be printed out for physical, sensitivity, intellectual and total congeniality.)

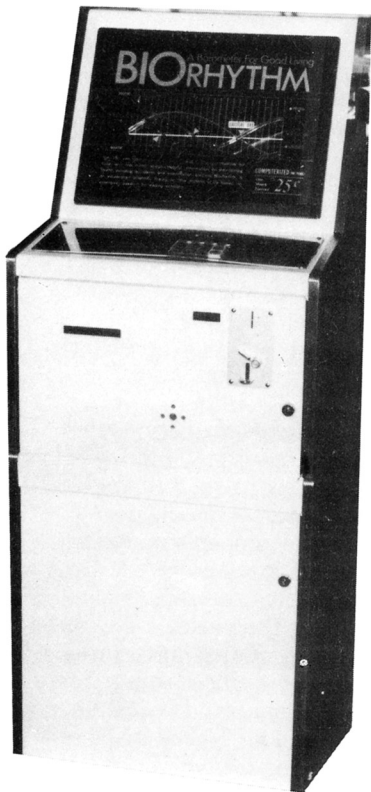
Procedures:

1. When you want your biorhythm.

- 1) Insert a coin.
- 2) Input your date of birth with the keys.
- 3) Input the day that you want to know about, using the keys.
- 4) Push the start key. (For two weeks START 1; for a day, START 2.
- 5) Cut the sheet of paper dispensed.

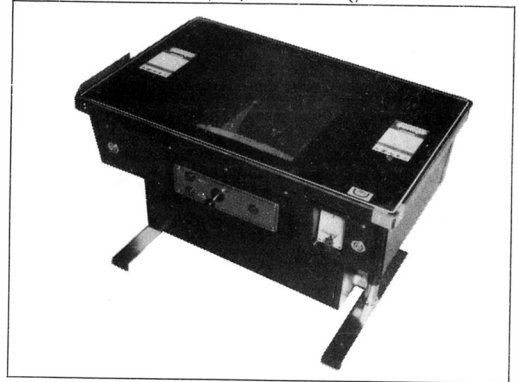
2. When you want to know your congeniality.

- 1) Insert a coin.
- 2) Input your date of birth with the keys.
- 3) Input your special person's birthday with the keys.
- 4) Push the START 3 button.



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- ★ If fail to shoot UFOs, they invade into the earth.
- ★ UFOs shoot laser beams and kidnap human, but if you shoot UFOs, bonus points bonus points be gained and rescue people.
- ★ If 3 missile guns are destroyed, game will be finished.

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<p>P-301E</p> <p>OP.DC +5V -5V +12V IN.AC 220V-240V</p>	<p>P-310</p> <p>DC6VDC12</p>
<p>P-312A B</p>	<p>P-316</p> <p>20インチモニター</p>
<p>P-307-P-308</p>	<p>P-309A B</p>
<p>P-318</p> <p>A 44P B 36P</p>	<p>PCB</p>

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MUSIC PROGRAMMING

by pat matthews

New year brings old faves

Well, the new year is certainly getting into full swing. The government went broke (if only temporarily) like a lot of your neighbors. Interest rates went up and down. Christmas was a little brighter than we may have expected it to be a couple of months before. And people keep making records.

Come Go With Me—The Beach Boys—Caribou/ZS5 02633

Now what we have here is a re-issue of some old lp filler product by the singers with sand between their toes. It is the old Del-Vikings smash from the late fifties and it's been culled from the new double-record Caribou release, *Ten Years of Harmony*, having first appeared on the Boys' *M.T.U.* album. The arrangement is an exact duplicate of the hit version and features the Beach Boys at their harmonic best. Should go Pop and MOR and will top off at 9 out of 10 on the highest chart.

Shine—Waylon—RCA/JK 12367

Yeah, that's the way it's listed on the record. I guess he's finally attained the status of being recognized by only his first name. Waylon. It has a nice "ring" to it doesn't it? And so does the song. It's your typical three-chorder in march-like rhythm. Marching up the charts we go with another musically trite effort from...Mr. Jennings, I presume. 10 out of 10 Country on his (first) name only.

You Could Have Been With Me—

Sheena Easton—EMI America/P-A-8101

This lady's turning out to be the biggest female British export since Petula Clark. And she sings just beautifully, too! The title tune from her new lp, this ballad follows the pattern established by Ms. Easton on the "For Your Eyes Only" theme winner. She looks sort of like a white Grace Jones in her recent pictures, but her music is far from avant-garde. Should be a double chart topper: Pop and MOR. That, my friends, translates to 10 out of 10 on both.

Cool Night—Paul Davis—Arista/AS 0645

Davis is back! After more than a year and his last smash hit "Do Right," it's a welcome return for these ears. Always one of my favorite songwriters, Davis doesn't disappoint with this breezy tune with a relaxing, winning melody. Sort of nostalgic, this record has every ingredient to be a hit. I hope there's more to come from this great! 10 out of 10 on the highest chart. Will crossover to MOR.

Shake It Up—The Cars—Elektra/E-47250-A

It's the title tune from the new Roy Thomas Baker produced lp. A friend of mine bought the album when it was first released and gave me a tape of it. I listened to it and commented to a few people that I think it (the lp) is great, probably their best since the debut album. I also am proud to say I picked the

single without knowing what it was going to be, and here it is, classic Cars (like a '56 Bel Air). A combination of synthesizer and guitars, this rhythm emphasize is likely to be the anthem of the New Year. A real blarer from teen age car radios, you'll be getting into its infectious sound. Plus, all you leftover New Wavers can kick the dust off your old Pogo shoes! 10 out of 10 Pop.

Love Is Alright Tonite—Rick Springfield—RCA/JH-13008

If all goes to plan, this should become the third consecutive single success for the singer/songwriter/actor. Taking a page from the Bay City Rollers songbook, Springfield has his finger on the pulse of teenage America. Particularly the girls!! Good looks and a good sound add up to good money and, hopefully, artistic gratification. 10 out of 10 on Pop easily. It's loaded with hooks, to boot.

Centerfold—The J. Geils Band—EMI America/P-A-8102

Seth Justman has gotten Magic Dick and Peter Wolf and the boys back in the studio for an overdue album. It's called *Freeze Frame* and this is the first single (natch) from it. It's probably the closest sound to Bruce Springsteen's than anything barring Bruce has ever done. Fortunately for all of us, it also has the Geils sound, including a circus sounding organ and cleverly humorous lyrics sung in classic style by Mr. Wolf. Great song to party to, as usual! 9 out of 10 or more! ●

Play Meter's List of Songs You Simply Can't Be Without

- I CAN'T GO FOR THAT (NO CAN DO)—Daryl Hall & John Oates—RCA
- THE OLD SONGS—Barry Manilow—Arista***
- SHARING THE LOVE—Rufus & Chaka Khan—MCA***
- HERE I AM (Just When I Thought I Was Over You)—Air Supply—Arista
- ALL MY ROWDY FRIENDS—Hank Williams, Jr.—Elektra/Curb
- TURN YOUR LOVE AROUND—George Benson—Warner Brothers***
- THE WOMAN IN ME—Crystal Gayle—Columbia***
- WAITING FOR A GIRL LIKE YOU—Foreigner—Atlantic
- TAKE MY HEART—Kool & The Gang—DeLite
- BLAZE OF GLORY—Kenny Rogers—EMI/Liberty***
- EVERY LITTLE THING SHE DOES IS MAGIC—The Police—A & M***
- CONTROVERSY—Prince—Warner Brothers
- TWILIGHT—ELO—Jet/CBS***
- DON'T STOP BELIEVIN'—Journey—
- LEATHER & LACE—Stevie Nicks & Don Henley—Modern/Atco***
- STILL DOIN' TIME—George Jones—Epic
- WHY DO FOOLS FALL IN LOVE?—Diana Ross—RCA
- PHYSICAL—Olivia Newton-John—MCA***
- YOUNG TURKS—Rod Stewart—Warner Brothers
- YESTERDAY'S SONGS—Neil Diamond—Columbia***
- I HEARD IT THROUGH THE GRAPEVINE—Roger—Warner Brothers
- MY GIRL (Gone, Gone, Gone)—Chilliwack—Millenium
- LOVE IN THE FIRST DEGREE—Alabama—RCA***
- ON NO—The Commodores—Motown***
- TROUBLE—Lindsey Buckingham—Asylum***
- TAKE MY LOVE—Melba Moore—EMI America
- NO REPLY AT ALL—Genesis—Atlantic***
- HARDEN MY HEART—Quarterflash—Warner Brothers
- LET'S GROOVE—Earth, Wind, & Fire—ARC/Columbia
- LET THE FEELING FLOW—Peabo Bryson—Capitol

Most popular tunes named among the over-30 set

In 1969, "Raindrops Keep Falling On My Head," written by ASCAP President Hal David and Burt Bacharach, won the motion picture industry's Academy Award. Twelve years later, "Raindrops" is still the most popular song among 35- to 45-year old males and females, according to radio station KHJ in Los Angeles. In fact, "Raindrops" comes up number one out of 999 tunes tested by KHJ in the Country and Country crossover categories of music released in the last 20 years.

Debuted as the theme to the film "Butch Cassidy and the Sundance Kid," "Raindrops" has been recorded by over 220 artists in the United States alone, and remains one of the most performed songs in the ASCAP repertory.

ASCAP-licensed songs, "You Light Up My Life" and "Lookin' For Love," ranked number two and three, respectively, in the KHJ survey that included direct response call-ins, trade charts, and playlist studies.

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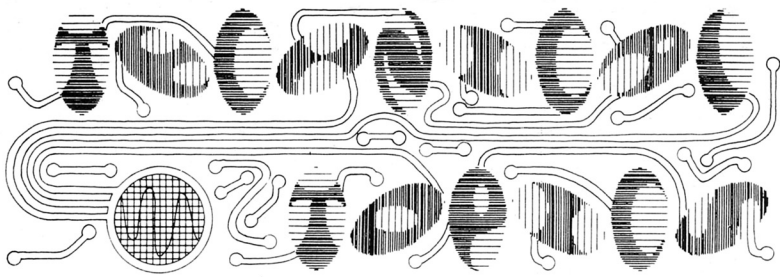
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Usage of bus analyzers to repair video games

By Joe Moran

The repair of a problem in a microprocessor board takes very little time. Finding the problem takes the time.

Experience is the best teacher but the dues are very expensive. Long hours, aggravation and problems with the boss.

When I work on the same board for a while and gain experience (I know it all) my pride sets in and continues to grow which makes it tough to live with myself.

The industry solves this problem for me when a new board arrives on the scene and the opposite of pride sets in —“HUMILITY.”

After much recycling, it comes to mind that more work can be accomplished in less time which seems to be a benefit not only to myself but the boss. Work smarter—not harder.

Everything I do or say is something that has been shared to me by those around me that care. This gift can only be repaid by trying to pass along things that have proven helpful to me and may make life easier for others.

What I would like to write an article about is not important. What YOU the reader would like is important. Therefore, your comments to the editor will be forward to me to work in that direction.

The block diagram (Figure 1) of a microprocessor based game is given with a brief explanation of it so that the use of a bus analyzer can be touched upon.

Most of the games use a microprocessor (6800, 8080, 8085, Z80) with sixteen address lines and eight data bus lines along with input and output lines. The line called READ/WRITE is one of the control

lines that is important because it tells logic on the board whether the microprocessor is looking for something to happen, like someone dropping in a coin to play a game (READ mode).

If the game is started, then the microprocessor will jump back and forth between read and write. A winning score may want to ring a bell. In that case, as the game plays, the score will have to be checked as the game proceeds by the microprocessor reading from RAM. In cases where the program stored in the PROM gets to that point, the microprocessor reads. If the score is above the point set, the microprocessor will go into the write mode and output the proper word to ring the bell. The CRT is fed data from the CRT memory (RAMS). This memory is updated after the CRT completes one frame of display and is in the process of returning the beam from the lower right hand corner to the upper left hand corner (*retrace time*).

The lower order address lines of the address bus are used to fetch a word out of the EPROM (2708, 2716, 2732) permanent stored program. The upper order address lines are used as select lines to address various areas of the board like what PROM is going to be read. The output of the PROM (data) lines will then be fed into the microprocessor for further processing.

During the game, the address and data lines will be switching. If we were to look at a data line with a scope we may see it switching, but what if inside the EPROM Data Line 4 and DL5 short together. Either line will toggle up and down on the scope

when certain conditions occur, giving us an indication the line is working.

Moving the scope probe back and forth across 24 pins on the microprocessor is a very time consuming job and not really in a positive direction. At this point we are still looking for the problem, but we can't fix the problem until we find it, so keep on with the scope probe. As stated previously, finding the problem takes the time, not the time to change a chip.

Before going on to the bus analyzer, a review of binary code will set the stage for hexadecimal display readouts used on the bus analyzer being discussed.

Counting with two flip-flops we can have four states and each state or condition can be identified by a number. The Q output of both A and B flip-flops will be used, the not-Q side will be the opposite or the complement.

The first condition will begin with the start or RESET condition. A “1” will stand for HIGH or positive voltage and a “0” will stand for LOW or ground level.

	FFB *2	FFA *1
STATE		
Reset	0	0 = count 0
1st pulse	0	1 = count 1
2nd pulse	1	0 = count 2
3rd pulse	1	1 = count 3
4th pulse	0	0 = count 0
* Weight		

If we examine the line of the third pulse, we can see how the number of the count is arrived at.

The FFA column has a “1” and so does the FFB, so we take the weight of the columns that contain a one

DONKEY KONG



Nintendo

Cabanga

CHILLS! THRILLS!
TEST YOUR SKILLS!

DONKEY KONG

from Nintendo

STARRING



SNORT!

Donkey Kong



HELP!

The Beautiful Girl



FIGHT!

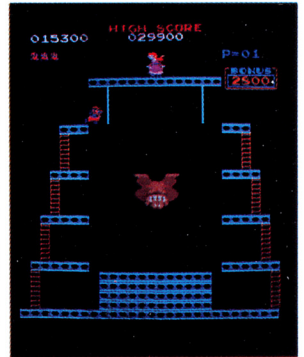
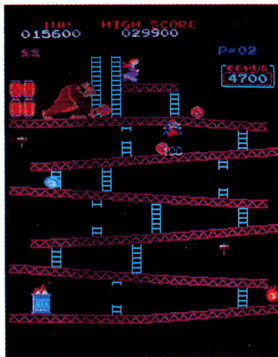
The Brave Carpenter

EVERYONE'S GOING APE OVER DONKEY KONG!

"HELP! HELP!" cries the beautiful maiden as she is dragged up a labyrinth of structural beams by the ominous Donkey Kong. "SNORT. SNORT." Foreboding music warns of the eventual doom that awaits the poor girl, lest she somehow be miraculously rescued. "But, wait! Fear not, fair maiden. Little Mario, the carpenter, is in hot pursuit of you this very moment."

Throwing fate to the wind, risking life and limb, or worse, little

Mario tries desperately to climb the mighty fortress of steel, to save the lovely lady from the evil Mr. Kong. Little Mario must dodge all manner of obstacles—fireballs, plummeting beams and a barrage of exploding barrels fired at him by Donkey Kong.



Amidst the beautiful girl's constant pleas for help, your challenge is to maneuver little Mario up the steel structure, while helping him to avoid the rapid-fire succession of hazards that come his way.

As little Mario gallantly battles his way up the barriers, he is taunted and teased by Donkey Kong, who brazenly struts back and forth, beating his chest in joyful exuberance at the prospect of having the beautiful girl all to himself. It is your job to get little Mario to the top. For it is there, and only there, that he can send the mighty Donkey Kong to his mortal doom. Leaving little Mario and the beautiful girl to live happily ever after. "SIGH. SIGH."

So, if you want the most exciting, most fun-filled, most talked about family video game on the market, don't monkey around with anything but the original Donkey Kong.

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and add them together to arrive at the number. Adding the weights of these columns together we arrive at three. This number now tells us that FFA-Q is positive and so is FFB-Q.

On the line of the first pulse FFA is a 1 while FFB is a 0. If a zero appears in the column, we don't add that column's number. The count after the first pulse is Expanding this to four flip-flops gives:

FFD	FFC	FFB	FFA	
*8	*4	*2	*1	
0	0	0	0	count = 0
0	0	0	1	count = 1
0	0	1	0	count = 2
0	0	1	1	count = 3
0	1	0	0	count = 4
0	1	0	1	count = 5
0	1	1	0	count = 6
0	1	1	1	count = 7
1	0	0	0	count = 8
1	0	0	1	count = 9
1	0	1	0	count = 10 or A
1	0	1	1	count = 11 or B
1	1	0	0	count = 12 or C
1	1	0	1	count = 13 or D
1	1	1	0	count = 14 or E
1	1	1	1	count = 15 or F

* Weight

With 4 FF's we can count to 16 which is 1+2+4+8 (the weights) and the reset state which is a count.

As the chart is examined, some may wonder what the 10 or A means. If we wanted to indicate the condition of the flip-flops with a single digit display, no problem would exist from zero to nine. Ten causes a problem, two digits are needed—or else change the world of numbers.

Let's change the world of numbers. Ten no longer exists and will be called A. Eleven will be changed to B and etc., up to F which will replace 15. This is not something new but a standard method of indicating conditions of lines called "hexadecimal." A standard single digit display exists to display 0 through F and it is used in the Bus Analyzer.

Back to the microprocessor and how we can read all 24 lines (16 address and 8 DB lines) with a 6-digit display.

A typical computer program listing will list the state of the address lines and the data bus lines and may

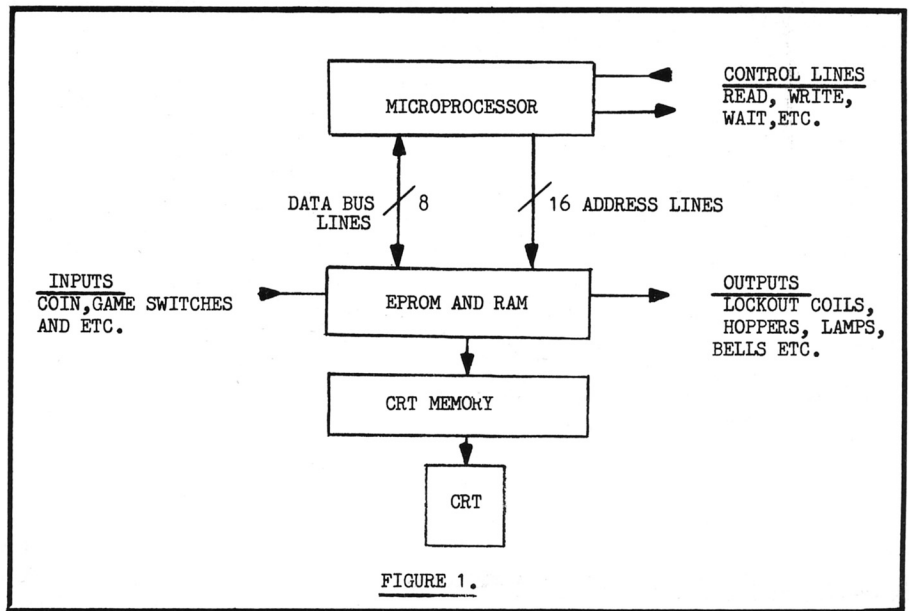


FIGURE 1.

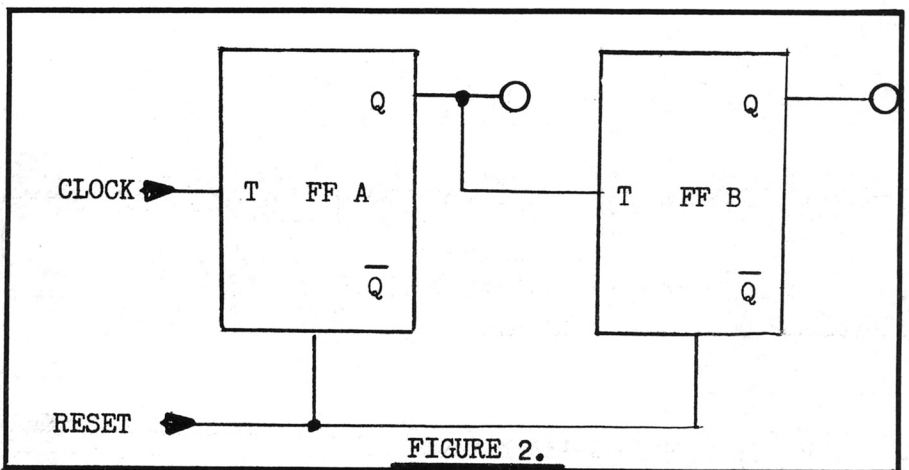


FIGURE 2.

look like this:

Address Lines	Data Bus Lines
0000	31
0001	3E
0002	D3
0003	FF

If we stopped the microprocessor on address 0000 and read the DB (data bus) we would read 31. If we had a button to stop to the next address, we would read 3E. Then stepping to the address 0002, suppose we read D2 instead of D3, which would be a wrong data bus reading—we would be able to figure out that the first data bus line called (data zero) is wrong. It is low when it should be high.

Thus, by reading the six-digit display, we can very quickly check the 24 lines and go on to the next, if it is right.

When a wrong reading is reached,

we not only know we have found a bad reading but have the machine stopped on the problem so the levels on the board can be checked in the stopped state. If you like this approach to finding a problem on a board and don't have a bus analyzer, then maybe you ought to get one because this is what a bus analyzer does. If you don't have a problem listing on the board you can see, use the analyzer to hook onto a good board to record the listing the first time.

A picture of a Z80 Bus Analyzer is shown here. A 40-pin squeeze clip is used to place over the microprocessor; you don't even have to remove the chip. The tester now has control of the board under test. With STOP-RUN switch placed in STOP, the TRAP-OFF switch in TRAP and the IC-MC (instruction cycle/

'When a wrong reading is reached, we not only know we have found a bad reading but have the machine stopped on the problem and can check the levels on the board.'



MD Bus Analyzer

memory cycle) switch in the IC position, the reset switch is pushed—at which time the bus analyzer will display 0000 on the address bus, and the data bus will read the data bus lines that appear at that time.

If this is correct, you can then depress the SS (single step) switch and go to the next address and DB reading.

After some experience with the analyzer and your program listing, you may have a board with a problem down near the middle of the listing. You don't have to step down that far, you can get down to that address in the run mode. The four-digit thumbwheel switch is set to the address desired, then throw the TRAP-OFF switch to TRAP and the STOP-RUN switch to RUN.

The board will run to that address and stop. Throwing the switches back to the original position, you can single step through that portion of the program.

The right side of the analyzer contains test jacks which can be used to display the main signals of the microprocessor: Clock, Read, Write, Memory Request, Memory Instruction Fetch, A = B (a signal switch setting) and finally, GND.

After thirty years in the field of computers and many years in the games manufacturing business, I believe this is a wonderful and inexpensive tool to use for board repair.

You may wonder why games manufacturers don't help you use bus analyzers for repairing their boards. I don't know. If you would like to know, send this article to the president of the manufacturers you are doing business with. Maybe after he gets enough letters he will reply.

I would like to thank M D Electronics, Inc. of Phoenix, Arizona for supplying the photo of their Bus Analyzer for this article.

Coin Controls licenses Coinco

During the AMOA Expo in Chicago, Claude Trieman, president of Coin Acceptors Inc., St. Louis, Missouri, signed a licensing agreement with David Bellis, managing director of Coin Controls Ltd., of England, to allow Coin Acceptors to manufacture a coin door utilizing parts which are covered by U.S. Patent #4211317. This patent is the property of Coin Controls Ltd., the manufacturers noted. The license agreement provides for retroactive royalty payments to Coin Controls Ltd.

In announcing the licensing, Bellis stated that this agreement "in no way restricts our American company, Coin Controls Inc., from selling or manufacturing the products of Coin Controls Ltd., England."

Bellis further added, "In fact, to show our commitment to serve the U.S. vending and amusement industries, we will soon begin to manufacture many of our coin

handling products at our new Elk Grove Village, Illinois factory." •

Service bulletin/ Cinematronics counters

If the coin counter on one of Cinematronics' machines becomes inoperative, check transistor Q1 (2N6292) on the logic board with an ohmmeter or transistor checker. This transistor is the coin counter driver.

Disconnect coin counter molex and measure DC voltage on red wire. Meter should read +25 volts DC.

Check molex connector J1 to logic board for +5 volts and proper ground.

Check for proper electrical connection at pin 3 of J1.

For aid with any further problems, contact Cinematronics via toll-free number 800-854-2666.

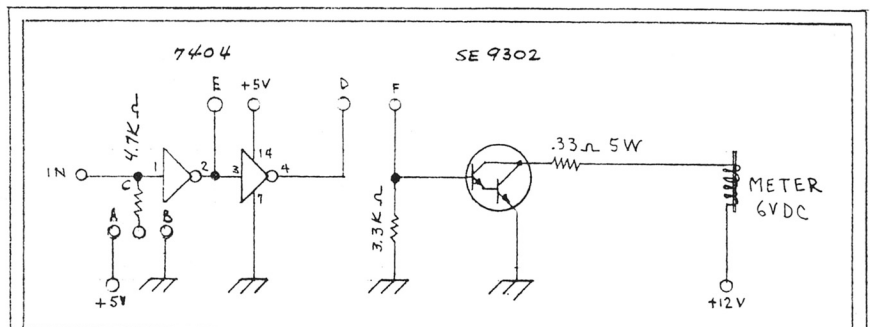
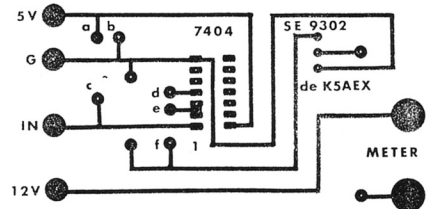
—Ron Cole, field service manager,
Cinematronics, Inc.

TECHNICAL TIP:

Coin counter

We have had several calls at our shop about how to install or make coin meters. Well, we use this one. It can be used on all video games and costs under \$15 to make.

—A tip from the Electronic Family Amusement Center, Denton, Texas



SCHEMATIC - COIN METER CIRCUIT

COIN PULSE SHOULD BE POSITIVE (REST VOLTAGE 0) AT INPUT OF SE 9302.

IF PULSE IS NEGATIVE (REST VOLTAGE +5) PUT 4.7K BETWEEN "C" AND "A" AND PUT JUMPER BETWEEN "E" AND "F."

IF PULSE IS POSITIVE (REST VOLTAGE 0) PUT 4.7K BETWEEN "C" AND "B" AND PUT JUMPER BETWEEN "D" AND "F."

IF WIRED BACKWARD, METER WILL BE ACTIVATED EXCEPT DURING COIN PULSE.

6-81 — deKSAEX.

I.C. LOGIC DESIGN COURSE

Lesson 6:

Karnaugh Maps

Editor's Note: The material below is a serialization of the Kurz Kasch correspondence course for electronics, designed specifically for the coin-operated amusement industry. This course is copyrighted and owned by Kurz Kasch of Dayton, Ohio and its reprinting is being sponsored jointly by Kurz Kasch and Play Meter magazine. This material is authorized for publication exclusively in Play Meter magazine.

Lesson Six, Karnaugh Maps. The Karnaugh map is a systematic approach to circuit reduction. Excessive elements in logic circuits can be costly and reduce reliability. By utilizing the K-map, the designer can determine the minimum number of circuit components required to perform a given logic function.

ADVANCED MINIMIZATION – KARNAUGH MAPS:

One of the first steps in designing any logic circuit is to express the desired function algebraically. This process, which we shall call **synthesis**, varies in difficulty according to the number of literals (letter variables) involved and the complexity of the necessary requirements. The truth table provides a convenient framework for synthesis.

MIN-TERM NO.	A	B	C	D	f	$f = \bar{A} \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot C \cdot \bar{D} + A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$
0	0	0	0	0	0	
1	0	0	0	1	0	
2	0	0	1	0	0	
3	0	0	1	1	1	$\bar{A} \cdot \bar{B} \cdot C \cdot D$
4	0	1	0	0	1	$\bar{A} \cdot B \cdot \bar{C} \cdot \bar{D}$
5	0	1	0	1	0	
6	0	1	1	0	1	$\bar{A} \cdot B \cdot C \cdot \bar{D}$
7	0	1	1	1	0	
8	1	0	0	0	0	
9	1	0	0	1	0	
10	1	0	1	0	0	
11	1	0	1	1	0	
12	1	1	0	0	1	$A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$
13	1	1	0	1	0	
14	1	1	1	0	0	
15	1	1	1	1	0	

Table 6-1. An example of a minterm truth table.

Suppose that a gating function involving four input variables (A, B, C and D) is required. All of the possible combinations of inputs are first listed in the truth table (see table 6-1). Each of these combinations is called a **minterm** and represented by the letter "m" with an appropriate subscript. This m_0 is $\bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$ and m_6 is $\bar{A} \cdot B \cdot C \cdot \bar{D}$, etc. The function will have an output of either 0 or 1 associated with each one of the minterms.

For example, suppose that an output of one is desired whenever m_3 , m_4 , m_6 or m_{12} is present at the inputs. In other words, $f = 1$ if the function input is $\bar{A} \cdot \bar{B} \cdot C \cdot D$ or $\bar{A} \cdot B \cdot \bar{C} \cdot \bar{D}$ or $\bar{A} \cdot B \cdot C \cdot \bar{D}$ or $A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$. Then the synthesized function is the sum of these minterms:

$$f = \bar{A} \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot C \cdot \bar{D} + A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$$

This may also be written in a shorthand form as: $f = \sum m(3, 4, 6, 12)$, which is read as the sum of minterms 3, 4, 6 and 12. The student should be very careful not to confuse this "sum" with the ordinary sum. Here we are using the "OR sum".

EXAMPLE:

Synthesize a function that has a 1 output for the minterms, 2, 4 or 5.

Solution: Let's rewrite the problem: $f = \sum m(2, 4, 5)$.

Since the fifth minterm is required in the synthesis, we must use at least a three-variable truth table (table 6-2).

NO.	A	B	C	f	$f = \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C$
0	0	0	0	0	
1	0	0	1	0	
2	0	1	0	1	$\bar{A} \cdot B \cdot \bar{C}$
3	0	1	1	0	
4	1	0	0	1	$A \cdot \bar{B} \cdot \bar{C}$
5	1	0	1	1	$A \cdot \bar{B} \cdot C$
6	1	1	0	0	
7	1	1	1	0	

Table 6-2. Truth table for $f = \sum m(2, 4, 5)$.

The required minterms are $\bar{A} \cdot B \cdot \bar{C}$, $A \cdot \bar{B} \cdot \bar{C}$ and $A \cdot \bar{B} \cdot C$. The resulting function is:

$$f = \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C$$

This method of synthesis will always result in a function that is a sum-of-products, and each product, or minterm, will contain as many literals as there are variables in the truth table. In short, the resulting function may be rather large. Furthermore, it may not be the simplest function for our needs.

An examination of the preceding example will point this out. Notice that the output, f, is 1 if the input is either $A \cdot \bar{B} \cdot \bar{C}$ or $A \cdot \bar{B} \cdot C$. These two inputs are identical except for the variable C. As long as the $A \cdot \bar{B}$ combination is present, the output will be 1 regardless of the value of C. This C is redundant and may be omitted. The algebraic minimization is as follows:

$$\begin{aligned}
 f &= \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C \\
 &= \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B} (\bar{C} + C) \\
 &= \bar{A} \cdot B \cdot \bar{C} + A \cdot \bar{B}
 \end{aligned}$$

In general, any function written as a sum of minterms may be simplified if two of the minterms differ in only one redundant variable.

EXAMPLE :

Synthesize a function that will provide a 1 output for m_2, m_3, m_4 or m_5 and simplify (table 6-3).

NO.	A	B	C	f	$f = \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C$
0	0	0	0	0	
1	0	0	1	0	
2	0	1	0	1	$\bar{A} \cdot B \cdot \bar{C}$
3	0	1	1	1	$\bar{A} \cdot B \cdot C$
4	1	0	0	1	$A \cdot \bar{B} \cdot \bar{C}$
5	1	0	1	1	$A \cdot \bar{B} \cdot C$
6	1	1	0	0	
7	1	1	1	0	

Table 6-3. Truth table for $f = \Sigma m(2, 3, 4, 5)$

The function $f = \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C$ contains a redundant C between m_2 and m_3 and another redundant C between m_4 and m_5 . Thus:

$$\begin{aligned}
 f &= \bar{A} \cdot B \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot C \\
 &= \bar{A} \cdot B (\bar{C} + C) + A \cdot \bar{B} (\bar{C} + C) \\
 &= \bar{A} \cdot B + A \cdot \bar{B}
 \end{aligned}$$

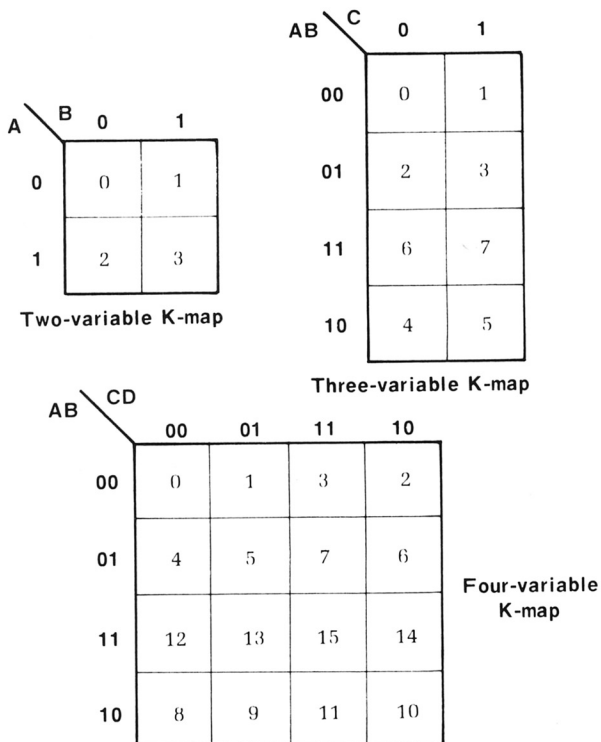


Fig. 6-1. Karnaugh maps for two-, three-, and four-variables. The minterm number is shown in its proper square.

The Karnaugh map provides a means of listing minterms so that redundancies and the resulting simplification are immediately recognizable. Karnaugh maps for two-, three-, and four-variables are shown in fig. 6-1.

Notice that, like the truth table, an n-variable Karnaugh map has 2^n squares; that is, one square for each minterm. The numbers in the squares indicate which minterm that square represents. For instance, square 5 on the three-variable K-map has the coordinates $A = 1, B = 0, C = 1$. This corresponds to the fifth minterm $A \cdot \bar{B} \cdot C$.

In order to map a function, we first determine which minterms will make the function equal one (1). Then a one is placed in the squares associated with those minterms, and the remaining squares are assigned a zero. Fig. 6-2 illustrates the map of $f = \Sigma m(2, 4, 5)$.

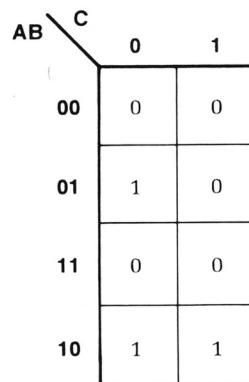


Fig. 6-2. A three-term Karnaugh map for $f = \Sigma m(2, 4, 5)$. "1" has been entered in the appropriate square.

As we move across the map from row to row or column to column, only **one** variable will change at a time. Thus, the K-map is arranged so that two minterms which differ in only one redundant variable are in adjacent squares. (Adjacency must be assumed on a side by side or above and below basis – not diagonally.)

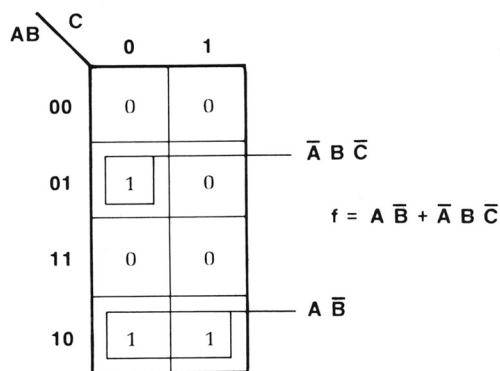


Fig. 6-3. The K-map for $f = \Sigma m(2, 4, 5)$ with adjacent squares 4 and 5 noted.

In the preceding map, two one's were adjacent in squares 4 and 5, and the one in square 2 was isolated. Therefore, minterms 4 and 5 may be simplified **while minterm 2 is taken at its ordinary value**. The map minimization and the resulting function are shown in fig. 6-3.

When using a K-map, it is extremely helpful to understand which sections of the map correspond to which variables. On a simple two-variable map, the two squares along the right side of the map correspond to B while the two squares along the bottom correspond to A. Of course, the left side must be \bar{B} and the top two are \bar{A} (see fig. 6-4). A similar arrangement is indicated for three- and four-variable K-maps.

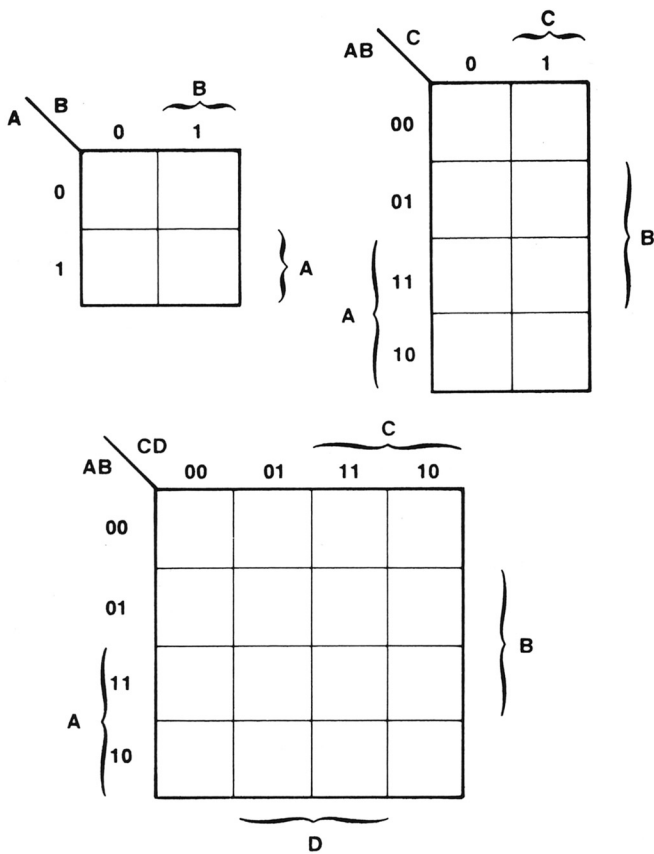


Fig. 6-4. Karnaugh maps for two-, three-, and four-variables. The student should note which sections of these maps correspond to which variables.

EXAMPLE :

Use a K-map to simplify:

$$f = \bar{A} \cdot \bar{B} \cdot \bar{C} + A \cdot \bar{B} \cdot \bar{C} + \bar{A} \cdot B \cdot C + A \cdot \bar{B} \cdot C$$

Solution: A three-variable map must be used, and a one is placed in the square corresponding to m_2 , m_3 , m_4 , and m_5 (fig. 6-5).

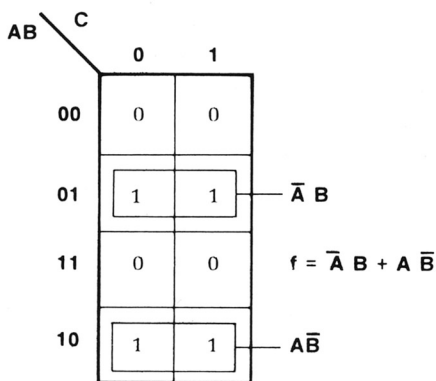


Fig. 6-5. The Karnaugh map for $f = \Sigma m(2, 3, 4, 5)$. The adjacent minterms are illustrated.

EXAMPLE :

Use a K-map to simplify:

$$f = \bar{A} \cdot \bar{B} \cdot C + \bar{A} \cdot B \cdot C + \bar{A} \cdot \bar{B} \cdot \bar{C}$$

Solution: Again we circle two sets of adjacent minterms, $m_0 - m_1$ and $m_1 - m_3$. The fact that the two circles overlap does not change the method of simplification (fig. 6-6).

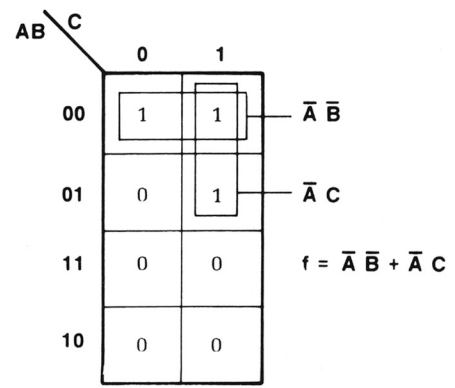


Fig. 6-6. The Karnaugh map for $f = \Sigma m(0, 1, 3)$. The circles of adjacent minterms overlap.

If we examine the minterms associated with squares 0 and 4, it is obvious that they fit the requirements for adjacency; that is, they differ by only one redundant variable, namely A. Yet, they are not adjacent but rather at opposite ends of the map. The same situation exists for squares 1 and 5. We can resolve this problem by realizing that the map is really a cylinder which has been cut open (fig. 6-7).

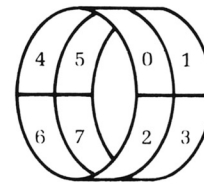


Fig. 6-7. This figure illustrates that minterms 0 and 4 and minterms 1 and 5 are adjacent.

EXAMPLE :

Use a K-map to simplify:

$$f = \bar{A} \cdot \bar{B} \cdot C + \bar{A} \cdot B \cdot \bar{C} + A \cdot B \cdot \bar{C} + A \cdot \bar{B} \cdot C$$

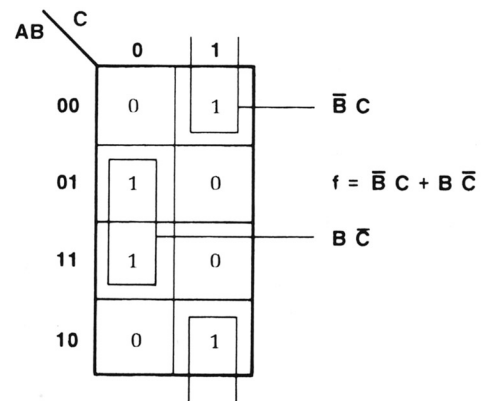


Fig. 6-8. The Karnaugh map for $f = \Sigma m(1, 2, 5, 6)$. The student should note the technique for indicating the adjacency between minterms 1 and 5.

Solution: One set of directly adjacent minterms can be circled (m_2 and m_6). Another set of "adjacent" minterms at opposite ends of the map is indicated by the use of open loops. However, the actual simplification should present no great problem (fig. 6-8).

So far our discussion has been primarily limited to the three-variable K-map. Indeed, minimization on a four-variable map is no more difficult. On the four-variable K-map, not only

are the top and bottom rows considered adjacent; but, also the right and left columns are considered adjacent. This means our map is really a cut-open torus or **doughnut**.

EXAMPLE :

Minimize :

$$f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot C \cdot \bar{D} + A \cdot B \cdot \bar{C} \cdot D + A \cdot B \cdot C \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D}$$

Solution: Using a four-variable K-map we have only two directly adjacent minterms, m_{13} and m_{15} . However, m_0 and m_8 are **adjacent** in the same respect. These last two groups overlap on m_0 (fig. 6-9).

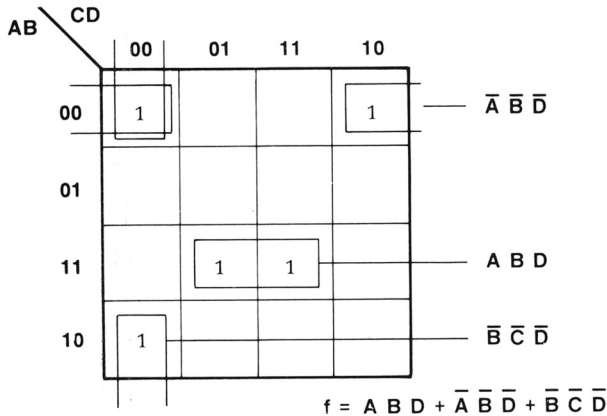


Fig. 6-9. The Karnaugh map for $f = \Sigma m(0, 2, 8, 13, 15)$. This example illustrates that left and right columns are also adjacent.

Even greater minimization may be realized where it is possible to group four one's. In this case, two redundant variables can be omitted. In the same manner, a grouping of eight one's can be used to eliminate three redundant variables. Suppose we examine several maps and the minimized functions derived from them (fig. 6-10 A through H).

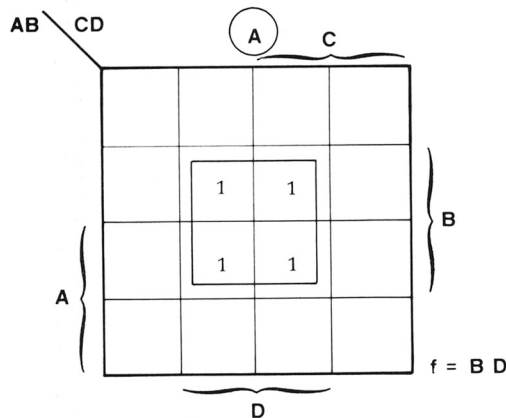


Fig. 6-10 A. A Karnaugh map for $f = \Sigma m(5, 7, 13, 15)$ or $f = \bar{A} \cdot B \cdot \bar{C} \cdot D + \bar{A} \cdot B \cdot C \cdot D + A \cdot B \cdot \bar{C} \cdot D + A \cdot B \cdot C \cdot D$. This complex function reduces to $f = B D$.

Remember, the AND statement for any loop may contain 1, 2, 4, 8... 2^n ones and is formed by ANDING together all variables inside the loop which are not split. When the loop crosses the boundary between a variable and its complement, that variable is split and therefore redundant.

Fig. 6-10 shows several ways that four squares may be grouped on a four-variable K-map. In each case, two variables

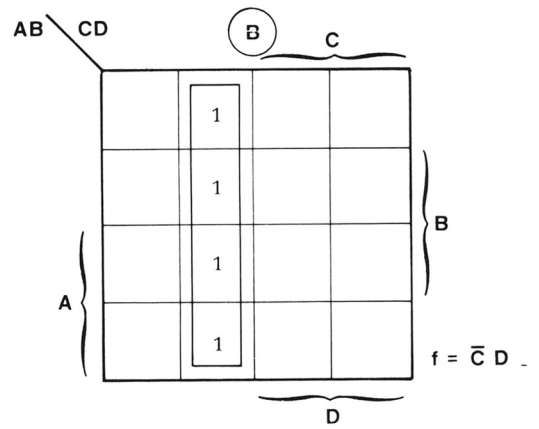


Fig. 6-10B. A Karnaugh map for $f = \Sigma m(1, 5, 9, 13)$ or $f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + \bar{A} \cdot B \cdot \bar{C} \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot B \cdot \bar{C} \cdot D$. This function reduces to $f = \bar{C} D$.

are omitted in the minimized expression for the group. Fig. 6-10F is an especially interesting result of the map's true toroidal shape. Several examples of groups of eight squares are also illustrated. Since three variables may be omitted in this case, the group may be represented by a single variable.

In the extreme event that all sixteen squares are filled with one's, we would expect a reduction of four variables. Indeed, if the function is to be one for all combinations of inputs, then we can write for all cases: $f = 1$.

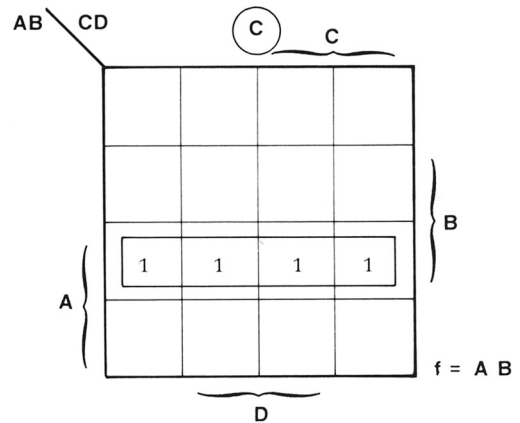


Fig. 6-10C. A Karnaugh map for $f = \Sigma m(12, 13, 14, 15)$ or $f = A \cdot B \cdot \bar{C} \cdot \bar{D} + A \cdot B \cdot \bar{C} \cdot D + A \cdot B \cdot C \cdot \bar{D} + A \cdot B \cdot C \cdot D$. This function reduces to $f = A B$.

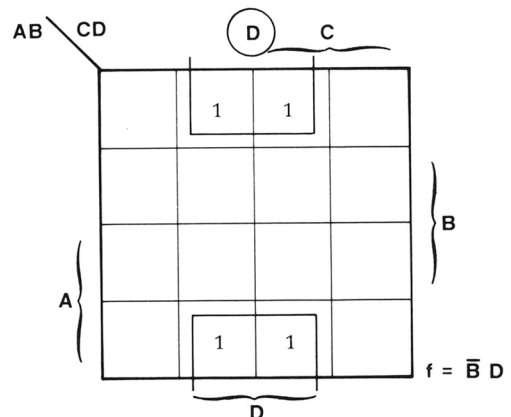


Fig. 6-10D. A Karnaugh map for $f = \Sigma m(1, 3, 9, 11)$ or $f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + \bar{A} \cdot \bar{B} \cdot C \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot \bar{B} \cdot C \cdot D$. This function reduces to $f = \bar{B} D$.

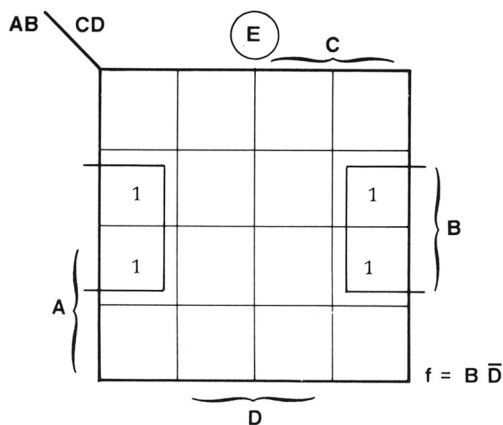


Fig. 6-10E. A Karnaugh map for $f = \sum m(4, 6, 12, 14)$ or $f = \bar{A} \cdot B \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot B \cdot C \cdot \bar{D} + A \cdot B \cdot \bar{C} \cdot \bar{D} + A \cdot B \cdot C \cdot \bar{D}$. This function reduces to $f = B \bar{D}$.

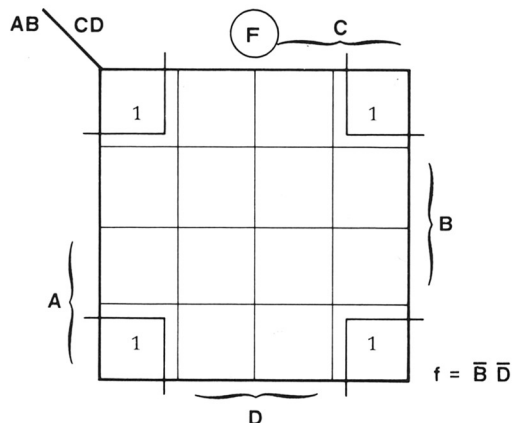


Fig. 6-10F. A Karnaugh map for $f = \sum m(0, 2, 8, 10)$ or $f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot C \cdot \bar{D} + A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + A \cdot \bar{B} \cdot C \cdot \bar{D}$. This function reduces to $f = \bar{B} D$.

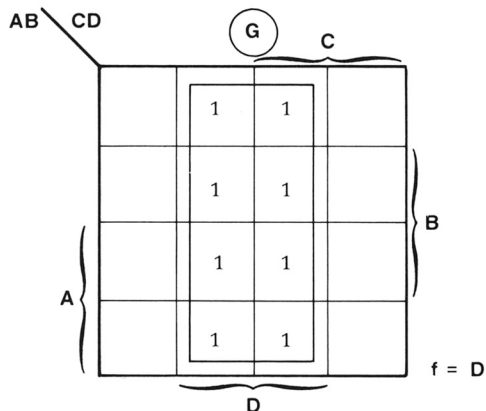


Fig. 6-10G. A Karnaugh map for $f = \sum m(1, 3, 5, 7, 9, 11, 13, 15)$ or $f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + \bar{A} \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot \bar{C} \cdot D + \bar{A} \cdot B \cdot C \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot \bar{B} \cdot C \cdot D + A \cdot B \cdot \bar{C} \cdot D + A \cdot B \cdot C \cdot D$. This function reduces to $f = D$.

EXAMPLE:

Minimize:

$$f = A \cdot \bar{B} + \bar{A} \cdot \bar{B} \cdot C + A \cdot B \cdot \bar{C} \cdot D$$

Solution:

$$f = A \cdot \bar{B} + A \cdot \bar{C} \cdot D + \bar{B} \cdot C$$

(See fig. 6-11)

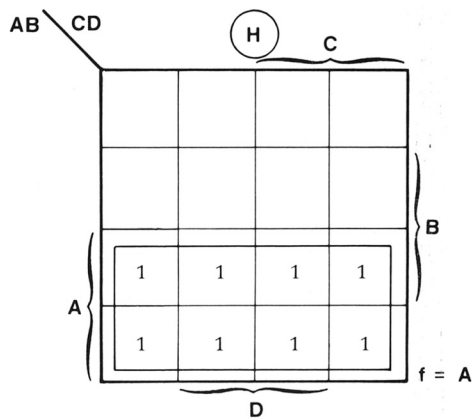


Fig. 6-10H. A Karnaugh map for $f = \sum m(8, 9, 10, 11, 12, 13, 14, 15)$ or $f = A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot \bar{B} \cdot C \cdot \bar{D} + A \cdot \bar{B} \cdot C \cdot D + A \cdot B \cdot \bar{C} \cdot \bar{D} + A \cdot B \cdot \bar{C} \cdot D + A \cdot B \cdot C \cdot \bar{D} + A \cdot B \cdot C \cdot D$. This function reduces to $f = A$.

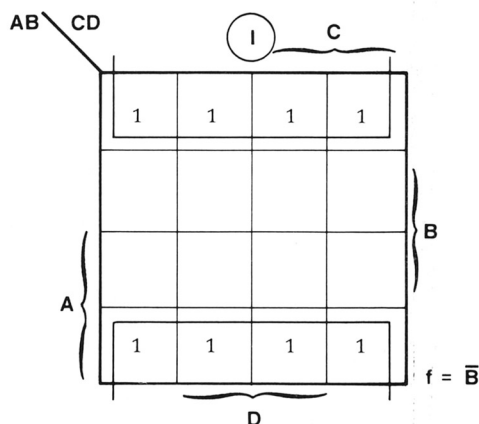


Fig. 6-10I. A Karnaugh map for $f = \sum m(0, 1, 2, 3, 8, 9, 10, 11)$ or $f = \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + \bar{A} \cdot \bar{B} \cdot C \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot C \cdot D + A \cdot \bar{B} \cdot \bar{C} \cdot \bar{D} + A \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot \bar{B} \cdot C \cdot \bar{D} + A \cdot \bar{B} \cdot C \cdot D$. This function reduces to $f = \bar{B}$.

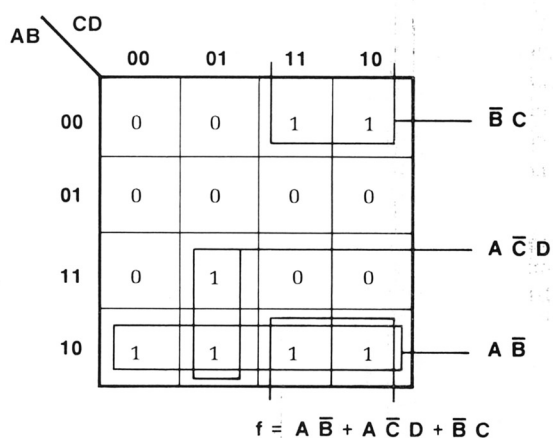


Fig. 6-11. A Karnaugh map for $f = A \cdot \bar{B} + \bar{A} \cdot \bar{B} \cdot C + A \cdot B \cdot \bar{C} \cdot D$. This is an interesting example where all of the original min-terms are not given.

It is important to use the minimum number of loops needed to circle all of the one's. In particular, it is not incorrect to circle one's that are already included in other loops; however, when you do so you will not obtain the simplest expression (see fig. 6-12).

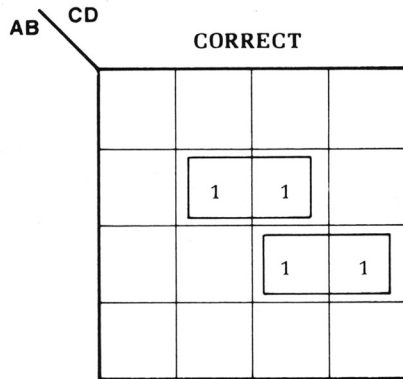
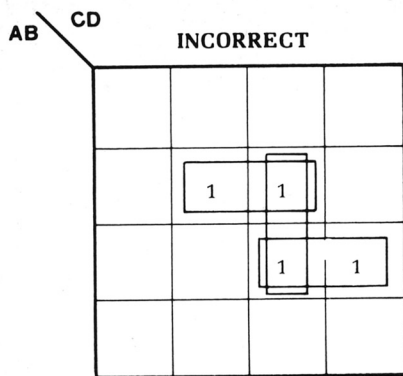


Fig. 6-12. Correct and incorrect methods of combining adjacencies for minimizing a function on a Karnaugh map. The third loop on the "incorrect" map is redundant.

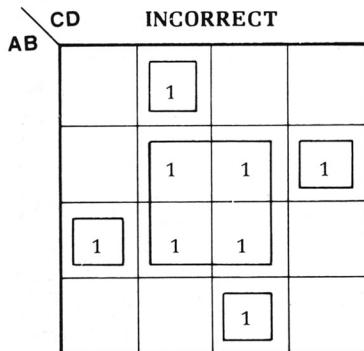


Fig. 6-13A. K-map for the function $f = B \cdot D + A \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot C \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot B \cdot \bar{C} \cdot \bar{D}$. This map contains incorrect groupings.

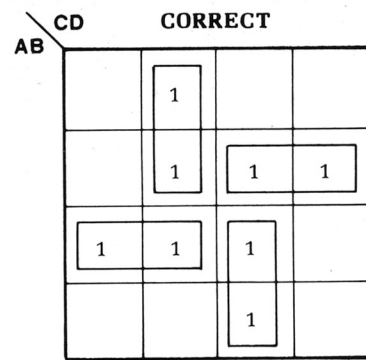


Fig. 6-13B. K-map for the same function as in fig. 6-13A but with a correct adjacency grouping. The number of terms in the function is reduced from five to four.

EXAMPLE :

Minimize:

$$f = B \cdot D + A \cdot \bar{B} \cdot C \cdot D + \bar{A} \cdot B \cdot C \cdot \bar{D} + \bar{A} \cdot \bar{B} \cdot \bar{C} \cdot D + A \cdot B \cdot \bar{C} \cdot \bar{D}$$

Solution:

Although it is very tempting to circle the large group of four one's (fig. 6-13a), this arrangement does not use the minimum number of loops. The correct solution is :

$$f = \bar{A} \cdot \bar{C} \cdot D + A \cdot B \cdot \bar{C} + A \cdot C \cdot D + \bar{A} \cdot B \cdot C$$

See fig. 6-13b.

In theory, Karnaugh maps can be used for minimizing any logic function. In practice they become very awkward when more than five variables are involved. When it is necessary to deal with many variables, the most efficient scheme employs Boolean algebra for an initial reduction of terms. After the initial reduction, mapping techniques may be of considerable value.

Test for this lesson will appear in a subsequent issue.

What's wrong with video and its players?

Video starts with V and that rhymes with T and that spells trouble—at least in Mesquite, Texas, which is now on the map as the town trying to keep kids under 17 out of video game parlors unless their parents are along.

Whether Mesquite can pass a law to that effect is now a question before the U.S. Supreme Court. The nine justices acted a little embarrassed when they listened to lawyers arguing about the constitutionality of the Mesquite ordinance. Is this issue so weighty that it demands the attention of the nation's highest court?

One would doubt it, even if the

folks in Mesquite may have overreacted when they saw youngsters flocking in great numbers to establishments where they put quarters in a slot to play electronic games. Yes, some children may be spending more money on this pastime than they should, and some mischief may be hatched in the arcades, but isn't that a problem for parents rather than the law?

In Mesquite if not elsewhere, video arcades seem to be getting the same doubtful reputation once attached to pool halls. We have yet to meet anyone who was corrupted by playing

billiards, and the worst effect we can see for kids mesmerized by video games is eyestrain and spending their allowance before the end of the week.

If the Supreme Court declares that Mesquite ordinance must go, there is an alternative for those worried parents down in Texas. They could send for some clarinets and trombones, put the kids in uniforms and start a marching band.

—Editorial from
The Star-Ledger
Newark, New Jersey
December 14, 1981

GET YOUR *

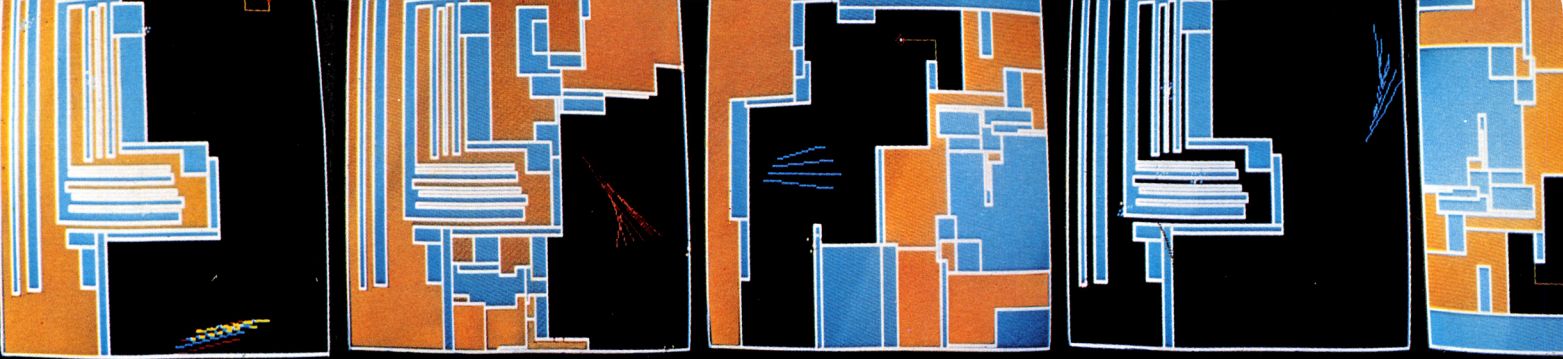
QIX

T.M.

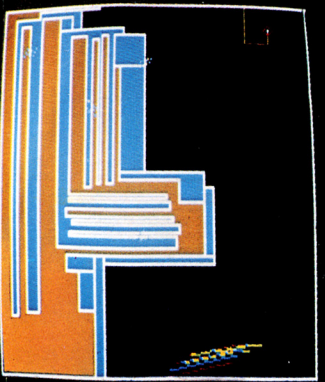
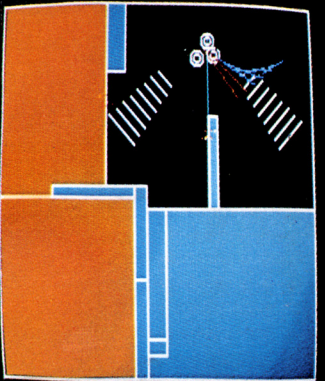
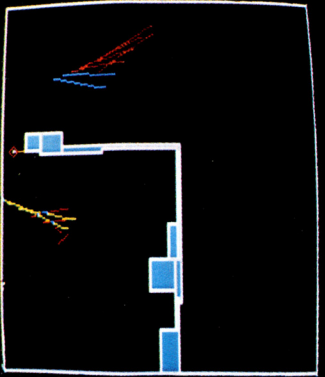
from



*pronounced "kicks"



Trillions upon trillions of configurations!



SPARK ▶

**SPIRAL
DEATH
TRAP**

▶ **MARKER**

▶ **THE FUSE**

▶ **THE QIX**

**TO DRAW STIX
PRESS
▶ FAST OR SLOW ◀**

How your players can get their Qix™ ... before Qix™ gets them!

Qix is a video game unlike any you've ever seen in design and challenge! And Qix *stays* unique play after play, player after player, because there are as many strategies as there are possible configurations . . . and there are trillions upon trillions of configurations that can be plotted on the screen! With this kind of fresh, new appeal, you'll want to make sure that your players get their Qix!

The object of the game is to box in Qix, the spinning helix, by filling in 75% of the screen with boxes of color. The percentage that's filled in over 75 is multiplied by 1000 for Bonus points. The player draws boxes with his Marker, (3-7 per game, operator adjustable), using his slow draw and fast draw on the control panel.

QIX™

The player must stay out of the destructive path of the whirling Qix so that it doesn't hit the line of a box before the box is completed! As the game progresses, the 1 Qix divides itself into 2! Separating them with lines or boxes earns

2X Bonus value! Separating them a second time scores 3X Bonus value, etc.!

SPARX™

The player must avoid the 2 Sparx that travel along the Strix or they'll destroy his Marker! The Sparx stop their mad chase only when the Marker is caught or the screen is filled by at least 75%! Just when the player feels he has them out-smarted, the Sparx begin to multiply and become even more dangerous and aggressive Super Sparx!

FUSE

If the player stops or doesn't complete a box, the Fuse will light, shoot up the Strix and destroy his Marker!

SPIRAL DEATH TRAP

The Fuse will deliver a burning fate to the player who makes a wrong turn and boxes himself into a Spiral Death Trap!

How you'll get QIX™ . . . in our brand new cabinet!

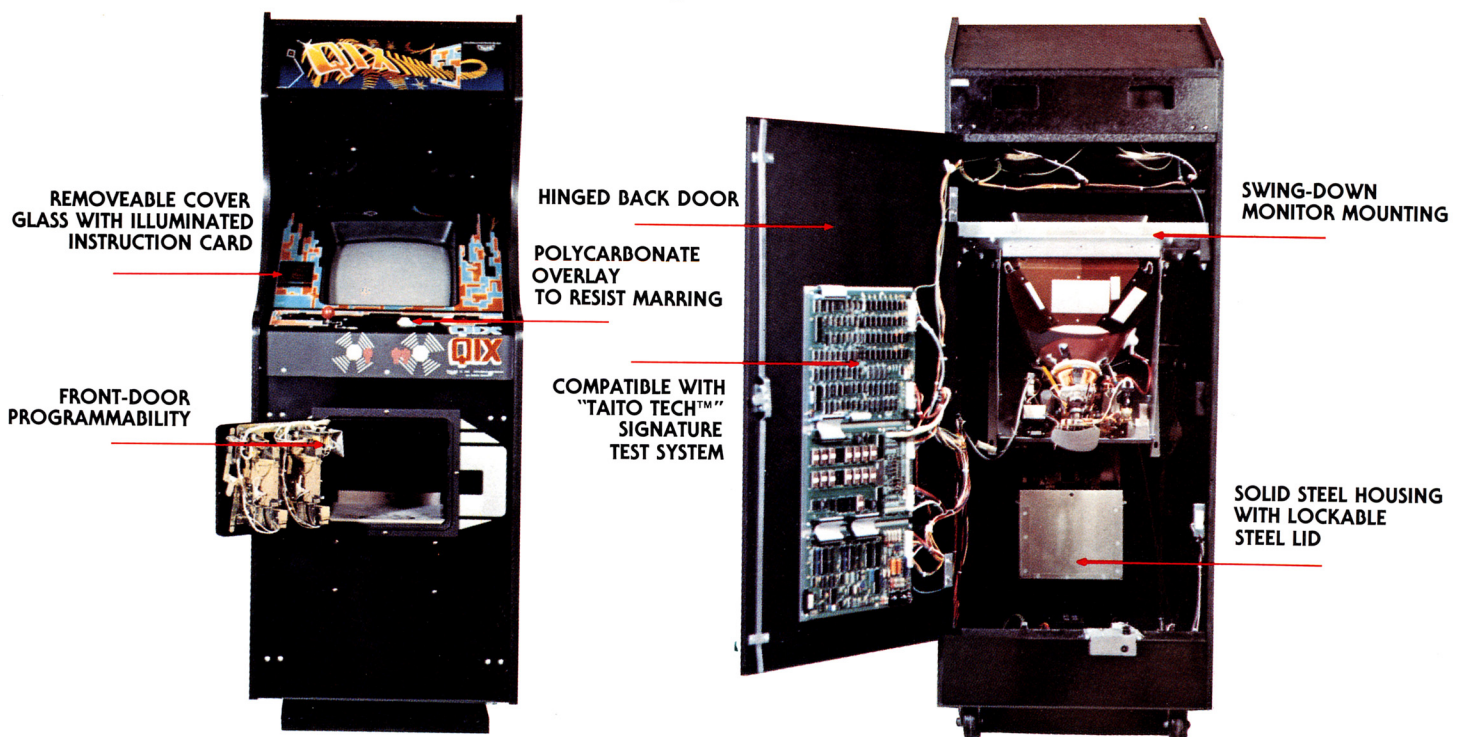
It's a special service-priority cabinet and it's just what the operator ordered!

Specifically designed for easy access and service as well as for maximum security, it houses a revolutionary new electronic system. This system allows for more on-monitor audit and test screens, flexibility and realism of configurations and innovative special effects like the ominous bellowing sounds in Qix that are twice as menacing in Taito stereo.

The cabinet has front-door programmability and audit functions with swing-down monitor mounting and logic boards on a hinged back door to simplify service. These logic

boards are fully compatible with the "Taito Tech™" Signature Test System for board troubleshooting. Removeable cover glass features an illuminated instruction card and the easily accessible control panel has a replaceable polycarbonate overlay which resists marring. The lift-out molded cash box is surrounded by solid steel housing with lockable steel lid and has the capacity for the highest earnings . . . the kind that Qix is sure to bring in!

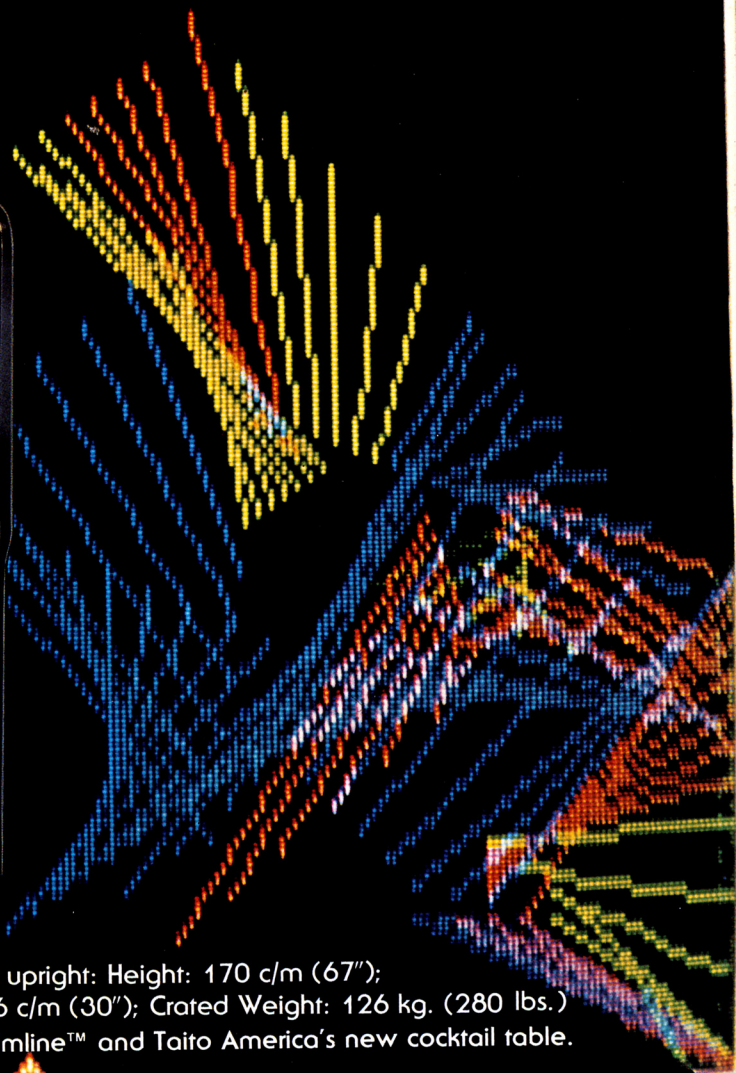
These are just a few of the new features that make the new Taito cabinet ideal for service, security and sophisticated technology. And that make it ideal for any location!



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high earnings too!



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By Roger Sharpe

SOLAR FIRE on review

A level-headed approach

It is unfortunate that pinball has been beset by almost unsurmountable problems in the last year and that none have really been directed at the quality of the games being produced, or the diversity of innovations that have been incorporated by each of the companies. The reason may be more the fact that there is a prejudgement and almost a prejudice which has been blindly enforced to counteract any of the potential gains.

Never before has the industry faced such a blatant animosity to any of its products, as is the case with what pinball has had to face. The staunch supporters of video, of which there are many, seems to also include a very militant following that would like to see the industry be basically a one-product endeavor, with an almost fanatical belief that no competition is better than to perpetuate the existing conditions. And even though pinball has in fact become less of a factor and threat, this vocal minority is still not satisfied, wanting more blood and what appears to be revenge against a cousin that was able to sustain the business for a period of over twenty years before video was even able to establish itself.

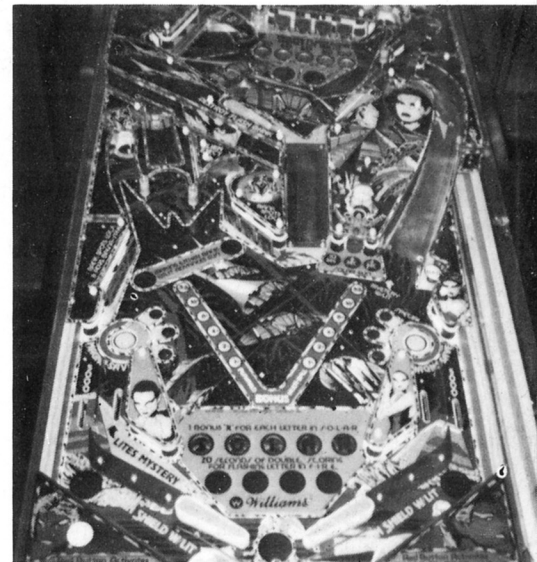
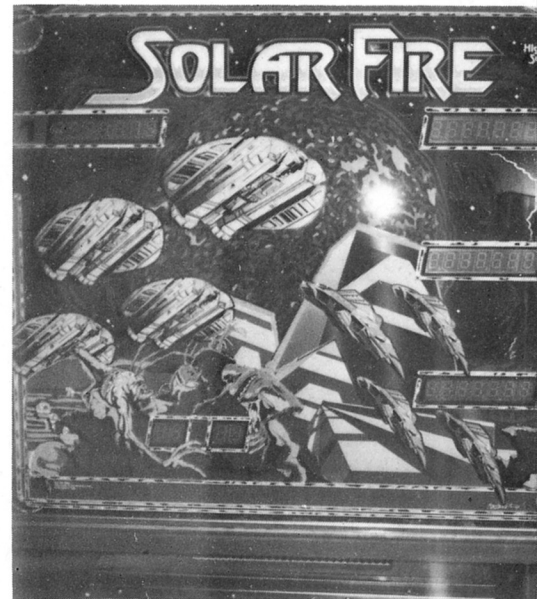
I still question the reasoning behind this, not understanding the fear and rationale behind this movement to let pinball die—only because this segment of games still has a following, admittedly small, but one that can support the efforts of the few companies still active. The hope, of course, is that some, if not all of the present companies, will continue their efforts and commitment to produce pin games, but the next six to nine months will probably decide the ultimate fate of flipper games and whether they will be

relegated to ancient history. An intuitive feeling is that they will survive in some way, shape, or form.

If the future is to be more to the direction of Gottlieb's *Caveman* or a resurrection of some past forms that at the time weren't too successful, but might be "right" for now, the decisions will be soon answered. However, no matter what happens, I find it hard to believe that they will disappear that easily or quickly.

Video, however, has its own problems to overcome, from the growing legal unrest to the public outcry, bemoaning these games' existence and the effect they are possibly having on the nation's youth. It is an age-old problem, but one that seems more profound this time around. In addition, and maybe more to the point, is the concern about the duplication, redundance, and imitative trends that video is going to have to overcome. With the initial returns coming in on the newest games, the handwriting is on the wall that the playing public may have been more than willing to accept this creative direction when it was part of pinball, but that they aren't going to put up with it when it is indicative of video.

But maybe closer to the truth, regardless of the trends, is that the coin-machine industry needs all the diverse product lines it can support and nurture if it is to continue to grow and be accepted as a major business that it has become. And we're talking about not only the existing forms of machinery now produced but also anything else that may be created in the near future. Any thriving industry has to expand and this one is no different, even if it means keeping with the staples such as pinball and the rest. Besides, the competition is healthy and the players



Williams' *SOLAR FIRE*

are the ones who will ultimately benefit and show their appreciation with increased play and more earnings.

In assessing the problem of pinball one needs only go back to the introduction of *Firepower* and its revival and update of multi-ball play, followed by the breakthrough of *Black Knight*, to realize that the pingame manufacturers and Williams in particular followed the predictable pattern that has always been a part of the industry and fell victim to its own success. The resulting product was trapped by what had come before it, so that if multi-ball play and double-level design were what proved to be temporary solutions, they were doomed as directions all would take until they were done to death and the direction was forced to change, if only to stay profitable let alone enticing and different for the player.

Eight Ball Deluxe by Bally was a noticeable break from convention and what many might have thought a daring step for the company to take, but the players showed that they did have a notion of what they might like as variations to a theme and supported this lone game that unfortunately stimulated others at too late a date.

Even Gottlieb managed to pick up the pieces with a more aggressive and innovative approach that gained them new respect and renewed support for their accomplishments, while Williams remained fixed in its commitment to fill what was perceived and truly believed to be the single direction pinball design must take to be viable.

The result was that, even though the other companies were helping to saturate the market with their own variations of double-level playfields, Williams locked itself into following *Black Knight* with *Jungle Lord*, *Pharoah*, and now, this issue's game in review, *Solar Fire*.

Williams' Solar Fire

While its predecessors innovated a number of novel features within the double-level format, this effort has tried to incorporate and maximize them all in what could be considered the best balance that is only foreshadowed by the fact that the design direction as it now stands is no longer novel.

PLAYFIELD: The action begins with entry onto the top level from the extreme right side. This portion of the playfield includes a rather complete and integrated configuration to maximize the limited space

and geometric constraints by featuring a top right kick-out hole that's fronted to the left, and at the center of the board, by a four-drop-target bank that's tied into a timer and can mean incremental values of 20,000 to 100,000 points.

Over at the left is another drop-target bank, with three targets that front a horse-shoe turnaround and works together for increased point totals, activation of lower playfield out-lane "drain shields" for possible continued play of a "lost" ball, or the spotting of letters in F-I-R-E for timed increments of double-value scoring on the entire board. The flippers are

Solar Fire is a well-executed game; it seems to have been built upon the inroads that Williams made before it.

offset in the middle, separated by a ramp, while another ramp curls around the right side.

The bottom portion of the board is weighted to the left, although the right side has a bulls-eye at the base of the ramp and over between both ramps, a "solar gun" that reclaims the old doodle bug captive ball that Bally tried to bring back to life on *Fireball II*. Here it's based on a timer feature for increased point totals that are gained by achievements elsewhere on the field.

Folowing closely on three previous double-level games, it comes off as predictable, although it has improved on many of their features.

Move over and there's an angled three-drop-target bank that fronts a little curled access to a kick-out hole, while farther over on the left is another three bank and up above this a slightly recessed kick-out hole. Meanwhile, in between all this is a deep set, slightly elevated target, reminiscent of Williams' *Phoenix*, for bonus multiplier tied into S-O-L-A-R and a maximum of 6X value.

Finishing off the conventional bottom is the side lane "magna save" tied into the drop target banks for increased amounts, and a center post between the flippers for some help off that center ramp, although

the angle, trajectory and frequency of "lost" roll-downs is far less the case than it was on, say, *Jungle Lord*. **ANALYSIS:** What can you say about *Solar Fire*, except that it's a well-executed game that seems to have been built upon the inroads made before it. The scoring features are well balanced and the action is good from top to bottom and back, as well as standing on its own. Two- or three-ball, multi-ball play has been effectively incorporated with 2X or 3X playfield values and increased multiples as incentive and reward for accomplishing the locking up of balls in the three kick-out holes by hitting down the lower playfield drop target banks.

The right side ramp also ties in with the interior lane to the left flipper for a timed mystery score of points or some other increased value, with play that is good right to left and left to right, a well as off of reverses. The top comes off fairly effectively because of the proximity of the four-drop-target bank, although the reach for that left side set-up isn't that easy from the top right flipper and is almost too steep for the left flipper on a quick reverse.

But there is a chance to develop a rhythm and play the board, while not feeling that the game is going to screw you as a player for making any particular shot. The result is that *Solar Fire* is basically a forgiving game for those willing to take the time to stick with it and its more than ample variety of shot options and play strategies.

GRAPHICS: Given the recent pronounced shift away from space-related themes on pinball, *Solar Fire* seems dated even before it begins, although the treatment is nice, with playfield art and details on the plastics melding neatly together. Add to this the tonal shades and bright colors and it's an eye-catching package, that is enhanced by the effects in multi-ball play.

PLAY: The scoring on *Solar Fire* appears more than adequate for seven-digit scoring, which it uses but doesn't abuse. The potential on the board is there, depending upon the settings and what's retained in memory, for high scores, but the allure itself seems enough without having to tap the upper reaches of the millions. For extra ball areas you may want to try a 500,000 point start and follow it with 1,000,000 points, and while on free play, try adding about 250,000 to 400,000 points to each of these levels, depending as always on your percentaging and caliber of players.

PROS & CONS: There's not a lot of fault to be found with *Solar Fire* except for the fact that it's a casualty of the times and its own upbringing. Following closely on the heels of three previous double-level games, it comes off as predictable, even though it has amplified and improved upon the usage of many of the company's unique features. Looking back at *Black Knight* and the timelessness of its design and programming characteristics, blemished only by an ill-conceived bonus multiplier shot, the legacy it left behind (besides the obvious use of two levels) was the introduction within the context of play, of, to name just a few, the use of timed drop target banks, magna-save, and a mystery score also based on time.

Jungle Lord followed and refined the magna-save by offering more player control rather than a fixed length of time and also gave us the "drain shield" feature. *Pharaoh* came next and brought in more increased values based on time within the features on the board and tried some other refinements of the art. Now, *Solar Fire* enters almost as an after-thought, taking all of the above "improvements" and utilizing them here in a design that truly uses

the space available.

The problem is that the changes seem so subtle at this stage, causing a feeling that maybe this game would have been better served had it appeared before the previous two, yet still taking advantage of those ideas found before. There's also the unavoidable thought that the pinball public, no matter how big or small, might well be double-leveled to death because it has been saturated, which might explain some of the enchantment of Gottlieb's treatment and direction with *Black Hole* which ventured *under* rather than *above* to achieve the desired result.

Whatever the reason, *Solar Fire* suffers in the final analysis only because it's so difficult to separate it from what's gone ahead, which tends to also color this player's appraisal as well as influence the reaction to the game in the field. It's too bad because the game is good, but is probably destined to a fate it doesn't deserve, given the nature of what it has to offer. In fact, those locations which didn't jump on the double-level bandwagon to the extreme, might find this a fitting finale to the end of this design era direction—which, depending upon the future of pinball, we may well see again for the next

generation of players.

For now though, in this format, it's almost a dead issue, one that lays the blame of its destiny to the nature of the industry and how it destroys the unusual in an attempt to make it the usual.

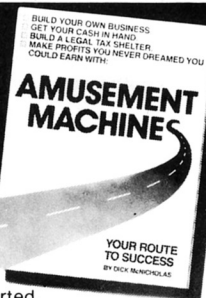
RATINGS: ##

And so the Corner has stated its case this time around, hopefully offering some food for thought and lessons to be learned, not just for pinball but for all coin-machine forms. Somehow we have all got to accept the notion that we are rapidly closing in the end of a century and the business practices that might have worked thirty years ago no longer apply—only because the technology is different, player's expectations are different, and the make-up of the public everyone is trying to appeal to is far too sophisticated to settle for less than the best efforts possible, if not each and every time, then within a cycle far shorter than the industry would like to acknowledge.

With that said, it's time to close and concentrate on the next games coming up and whether they're bridging the gap successfully. Until then, as always, be well and prosper.



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In defense of the argument, 'Pinball is dead'

By Charles C. Ross

Having just read "Is Pinball Dead, or is Video Just Afraid of the Competition?" by Roger Sharpe I feel it only appropriate that I respond to some of the comments he has made in his article and about my article "Pinball is Dead."

First, Mr. Sharpe apparently had a hard time with some of the words in my article because he points out that I said pinball has had a short life cycle. Quite the contrary! I pointed out that "simply because pinball enjoyed a long life cycle some people think it is immortal."

Mr. Sharpe goes on to point out that he has "not heard of anyone losing money on a pinball or any other game." I cannot believe that Mr. Sharpe has fallen under the "Revenues Are My Primary Consideration" syndrome. As a consultant to amusement operators all across the country, I have found many operators who are losing money on pinball machines, even new pinball machines as recent as *Volcano!* They don't appear to be losing money if you look at revenues only, but when you allocate the depreciation to the machine, the cost of running the location, and the administrative cost of running the entire company you will find that almost all pinballs lose money or have such a low return you would be better off putting the money in a money market fund and forget about it.

I also pointed out that all pinballs are dogs. As of this writing I still contend I am correct. All pinballs are dogs when compared with almost any video game. Name any pinball that has had the staying power and the profit producing power of *Asteroids*, *Space Invaders*, *Pac-*

Man, *Sprint II*, or *Monoco GP*? Also name a pinball that has been sent back into production because it was so good, like *Space Invaders*, or *Monoco GP*?

I was also amused by Mr. Sharpe's comment, "Is pinball that much of a threat?" How can anyone consider pinball a threat to video when in the October 12, 1981 issue of *Forbes* magazine the author of an article about Bally points out that video game sales have increased tenfold in the past five years while pinball sales dropped by two-thirds? Actually I think it is the other way around. Video is the threat, and has been a very deadly threat to pinball.

In his article Mr. Sharpe states: "Let's make the case that what we are really talking about is the speed of return on investment which is the real issue and the fact that most operators, rightfully so, can't wait to get their money back as soon as they can. But then this again points out the unique nature of the coin-op business, because if the rest of the world felt the same way, we wouldn't have a New York Stock Exchange where issues are bought because they pay good dividends, endure over time, and are stable institutions to put money into. . ."

Mr. Sharpe is absolutely correct about getting your money back as soon as possible. But again he has made a fundamental error. A machine has not paid for itself when it has "grossed" its cost but when it has generated cash flows equal to its cost.

Cash flow is equal to Revenues for the machine, less Operating Expenses and Administrative Expenses for the machine to get Net Income for the machine—and then

we add back Depreciation to get a true cash flow. The whole point is that most pinballs have a negative cash flow, or put another way, they will never pay for themselves.

Furthermore, about there not being a New York Exchange if everyone felt the same about investments as amusement operators, that is a false statement. Investors who buy and sell the IBMs and the AT&Ts are also concerned about return on investments and cash flows. They, however, do not face the same problems that the amusement operator faces—namely extremely rapid real depreciation. If an amusement operator does not get his money out of a machine in a short period of time he probably never will because of the nature of the business. Therefore videos are the only sensible investment.

"But in terms of pinball, the sun also rises and continues to do so as long as there are players around to support it and companies willing to have a battery of designers and engineers ready to find the next magic formula to transform a simple board of wood into the unique and special world it is."

To Mr. Sharpe I must say that the sun has set on pinball and I think in the near future you will find fewer companies making pinballs and pinball production lines converted to video production lines.

On one point Roger Sharpe and I do agree: the future will bear the burden of proof.

Ed. Note: Further dialog on the subject, from our readers and, of course, in Sharpe's "Corner," is welcomed.

More on the thesis that 'all pinballs are dogs when compared to almost any video game.' Let the reader decide...



Improved sound system

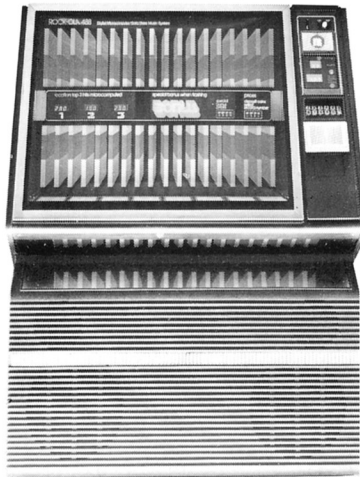
The new Rock-Ola 488 jukebox features a striking design with a recessed program holder that comes into view only as the customer approaches the phonograph. The box offers 160 selections, which Rock-Ola Manufacturing cites as "the ideal capacity for any location, recognized by popular demand."

Automatic features include: Bonus play, profit setter, random play, and top three location hits. Cabinet finish is charter oak vinyl on the upper part and simulated black Morocco, lower part.

Its improved sound system aimed to serve the needs of any size or type of location provides a solid state, 200-watt amplifier with automatic overload protection at the output stage. Tone arm is Rock-Ola's exclusive Accu-Trac with diamond stylus.

Speakers are matched and balanced to the cabinet for maximum clarity and brilliance, with two 12-inch bass and two mid-hi frequency speakers to deliver a quality stereo performance.

The back-lighted decorative area is colored electric blue and fuchsia—or in the Golden Sunset model 488-1, deep reds and gold.



In a racing tradition

Turbo, the newest and most advanced Sega/Gremlin driving game, is in production.

Turbo is a challenging and colorful MultiPhase game which carries on the grand tradition of earlier generations of Sega/Gremlin driving games. "*Turbo* is the worthy successor to *Monaco GP*, which recently was judged the most popular driving game in the U.S. in 1981, and was among the top grossing games of the year," according to Sega Enterprises.

Turbo was available in December in an upright model as well as a cockpit version.

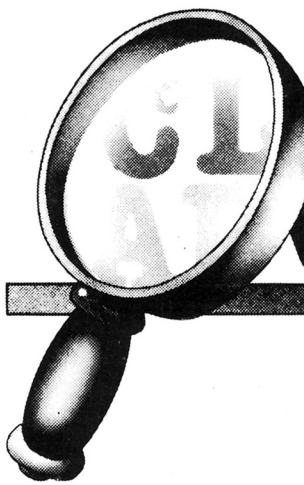
Both models feature a pro rally steering wheel, responsive two-speed stick shift, and a full-throttle accelerator pedal to allow players to physically fantasize that they are behind the wheel of a Formula 1 racing car. A fully illuminated instrument panel, complete with speedometer and tachometer, oil and temperature gauges, heightens the game's effect of realism in the cockpit version.

Turbo features realistic, three dimensional, full color imagery, through which drivers experience the sensation of being in the thick of grand prix racing action, speeding toward the horizon.

The object of the game is to pass safely as many cars as possible, as quickly as possible, without colliding with competitors or careening off the road. Drivers who successfully pass 30 or more cars within the time allotted receive extended play. (The number of cars passed during regular play is an operator adjustable option.)

The *Turbo* race begins on a city boulevard. During the race, Formula 1 cars speed between towering skyscrapers and into a rambling rural setting, through a dangerous tunnel, across a narrow suspension bridge, over a treacherous, ice-glazed stretch of road, and along a mountain road with the ocean off to one side.

Changes in road conditions, such as ice, reckless competitors, and hills which block the driver's view of slow-moving cars, challenge driving prowess. A speeding emergency Red Cross vehicle also tests the driver's reflexes.



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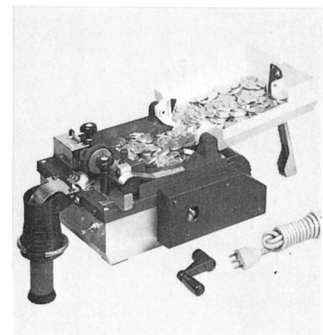
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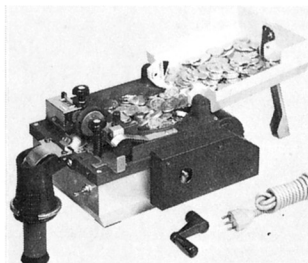
Cross reference list for Bally, Gottlieb, Stern, and Williams. Did you ever look at a game chip number and wonder what game it belongs with? You can look the chip up by the part # stamped on top. Or, if you want to find out what chip belongs in the game just look through the alphabetical listing of each game. No shop or toolbox should be without this list. Price only \$3.95. TECH SALES CENTER, 2400 Whittier St., Rahway, N.J. 07065. Phone (201) 499-0636

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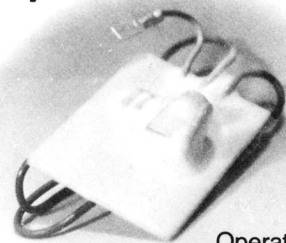
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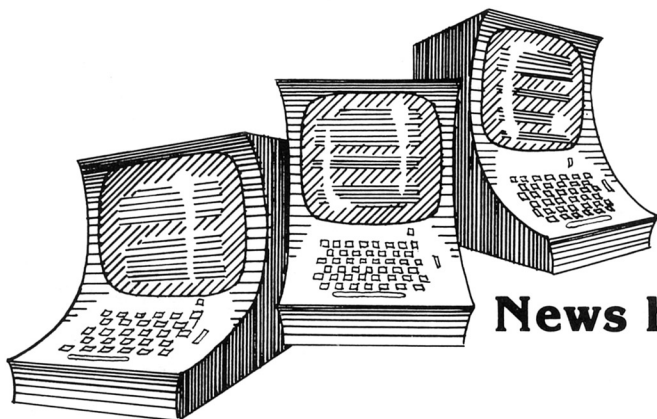
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News briefs....news briefs....news b

.....Due to legal appeal of the \$25 per-jukebox copyright fee assessments set by the Copyright Royalty Tribunal, operators are asked by that government agency to remit \$8 per box rather than the originally mandated \$25, until it can be determined what the final assessment will be.....

.....The Oregon Amusement & Music Operators Association announced its annual winter convention will be held January 15-17, 1982 at the Red Lion/Jantzen Beach, in Portland. The association plans to raffle a diamond nugget pendant with diamond for a fundraising project. The banquet on Saturday evening will include door prizes donated by area distributors and associate members.....

.....An article headlined "Pinball rage: outrageous" appeared in the New York Post on October 27 and was sent to Play Meter by a reader in The Bronx, New York. The account related that pinball "took a beating" during a city

council committee meeting October 26. It read in part: "The bell-clanging game is apparently becoming even more of a rage for school kids in the city's neighborhoods—much to the chagrin of grownups." Councilwoman June Eisland from The Bronx noted that the machines appear in pizza parlors and luncheonettes..

"Mrs. Eisland said the pinball machines—and the recent proliferation of video-electronic games is 'changing the quality of life' in the city. "The numerous game arcades springing up have made one congressional hopeful so mad that he brought a baseball bat to the hearing. 'If they don't pass (legislation) I'm going to get concerned citizens to bring bats and hockey sticks and throw a picket line in front of these places,' declared George McDonald, who next year will challenge...the Upper East Side's 18th Congressional District (seat)," reported the Post.

Last June, the city had changed the law so that any business establishment located more than 200 feet from an elementary school could operate four game machines. Previous regulations allowed only bars and amusement parlors to offer pinball, but the appearance of games "illegally" in pizza parlors and other locations led to loosening the restrictions. (For a methodology on dealing with local governing bodies, read Michael Mendelson's commentary in Play Meter, November 15, pages 24-25.).....

.....New York City operators are being hit with the same label as porno book shops. An analysis of this problem will follow in Play Meter.....

.....Hoei International of Tokyo has announced that it has granted Sega Enterprises and Rock-Ola Manufacturing the rights for its video game Jump Bug. The new game was unveiled at the Japan trade show and at the Rock-Ola booths at the AMOA show in Chicago. Sega has rights to all areas except the United States and introduced the game in Japan in December. Rock-Ola will begin manufacture of the video game in the U.S.....

.....Ross B. Scheer, president of the Special Markets and Products Division of Bally Manufacturing, has announced his resignation from that position effective February 1. He stated, "My decision to leave Bally was difficult. However, we reached a mutually agreeable understanding that would free me to pursue business opportunities in the amusement and gaming industry.".....

.....Thomas Leon of Thomas Leon's Kiddie Rides has been appointed as the exclusive import agent for Whittaker Brother Kiddie Rides of England. Whittaker Brothers is a producer of Kiddie Rides which has shipped kiddie rides for years around the world. Presently, Whittaker features 14 different rides as specially modified with U.S. 110 volt motors for the U.S. market. In signing the pact, Leon's company will stock a large inventory of equipment as well as all parts necessary to service customers after the sale. This arrangement gives Leon one of the largest assortments of different kiddie rides in the industry. Leon now represents R.J. Newborough England, Bafco-England, Continental Amusement-U.S.A., M.H.I.-U.S.A., U.B.I.-U.S.A., M.K.C. Designs Ltd.-England, and with Whittaker makes eight major factories which Leon has available.....

.....Atari announced that it has achieved a "first" in coin-op video games by obtaining Canadian Standards Association certification on its Asteroids Deluxe and Tempest games. This came on the heels of UL listing of Centipede as well as these two games for consumer safety standards.....

.....Also at Atari, Charles S. "Skip" Paul, 32, has been named senior vice president and general counsel. Paul, who joined Atari in 1979 and has served as its general counsel, has a background in corporate law and has served as law clerk to Justice John Paul Stevens of the U.S. Supreme Court.....

.....The Amusement Device Manufacturers Association announced that Amstar Electronics Corp. of Phoenix has been accepted as a member of ADMA. Hank Vandendop, Amstar president, stated that his firm will be an active and contributing member to advance the coin-op amusement industry.....

New trends on view:

A final look back at AMOA '81



A move toward getting to know the operator-customer: A manufacturer sets up a line of communication via this electronic survey-response device at AMOA.



Expanded Play Meter Award program cited Centuri, Inc. for best artwork on video game. Sharing the honors was Robert Willis (second from left) of the visual design firm, Willis Industries



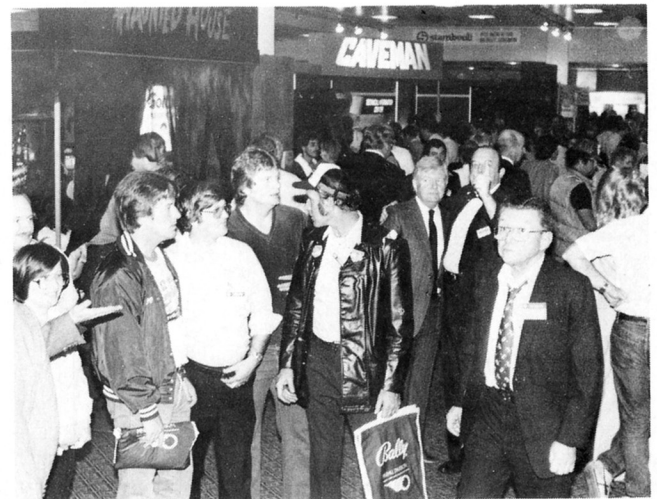
Sit down to play: Renewed interest was shown in cocktail table model videos on view at the AMOA.



'Abstract games': With possibly the spearhead of a new trend in videos, Taito introduced Qix, with its 'Etch-A-Sketch' play.



Pin or not a pin? A new game concept on the inclined board was shown by Williams in its Hyperball (center of photo).



Pinball resurgence: Veteran pinmaker D. Gottlieb & Co. enjoyed much interest in its new multi-level pin products.

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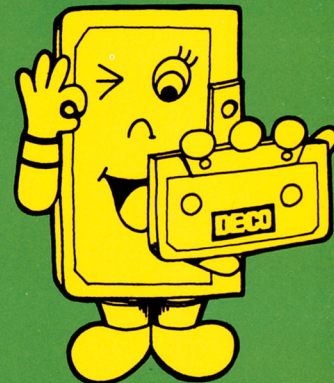
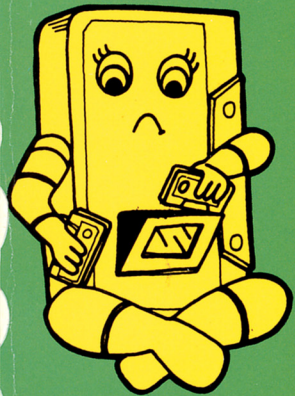
Once a game loses its popularity, there is no need to replace expensive cabinet units. DECO CASSETTE tapes will bring a new game within minutes.

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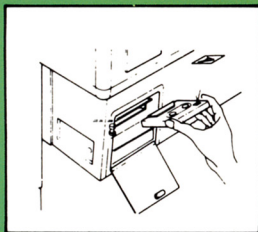
We can supply over 10 DECO original games a year and under license, supply the popular games of other major Japanese makers in tape cassettes too.

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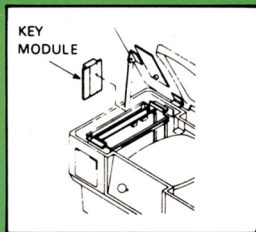
Simply change the cassettes and key modules.



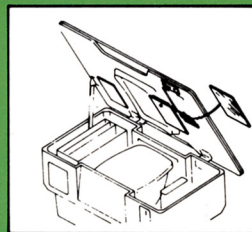
CHANGE GAME CASSETTE SIMPLY LIKE THIS



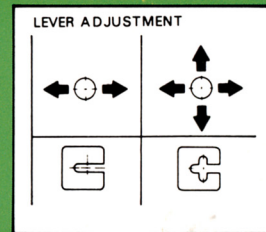
change cassettes.



set key module.



replace explanation panel.

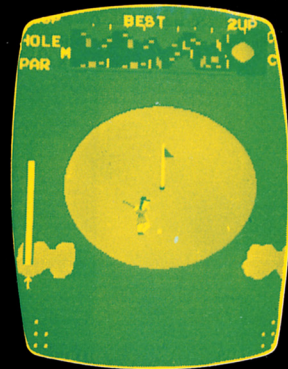


fit the joy stick movement stopper, suitable for the game.

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Turbo lapping racers at sunset.

The aerodynamic Turbo cockpit is fully equipped with an L.E.D. instrument panel that maps acceleration, indicates the top five scores to beat, shows score of the last game played, and measures record breaking speeds. Standard features include a pro rally steering wheel, responsive 2-speed gear stick shift, illuminated oil and temperature gauges and a full power accelerator, all in the realistic cockpit of a turbo charged race car.

Turbo is also available in the compact upright, with score indicator, gauges, steering wheel, stick shift and accelerator built for maximum space efficiency.

Both models offer behind-the-wheel excitement in a grueling cross country race. Road handling skills are put to the test as the Turbo course winds through busy city streets, narrow suspension bridges, blind tunnels and rambling country roads.

Sudden changes in road conditions such as snow, wreckless competitors and emergency-routed ambulances further challenge the player's driving abilities.

No pit stops are permitted in this fast-paced race to the finish. Points are accumulated as Turbo successfully routes through each phase of the course, lapping other cars. Drivers can monitor their progress at a glance with read outs for time remaining on the clock (adjustable) and number of cars passed at the top of the screen.

Collision during the first lap sends drivers back to the starting line. In succeeding laps, however, a collision explodes the Turbo car on impact.

In a rolling rural straightaway, road dips obscure cars ahead creating a hazardous sequence that taxes the driver's skill. Exercise caution and check speed while climbing steep hills.

An extended play bonus is awarded when drivers pass sufficient cars with time to spare. Lapping gear during this phase tacks on bonus points.

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