



The World Before Pong

You can't say that video games grew out of pinball, but you can assume that video games wouldn't have happened without it. It's like bicycles and automobiles. One industry leads to the other and then they exist side by side. But you had to have bicycles to one day have motor cars.

—Steven Baxter, former producer, *The CNN Computer Connection*

The Beginnings of Pinball

New technologies do not simply spring out of thin air. They need to be associated with familiar industries or ideas. People may have jokingly referred to the first automobiles as “horseless carriages,” but the name also helped define them. The name changed them from nebulous, unexplainable machines to an extension of an already accepted mode of transportation.

Although video games are a relatively new phenomena, they benefited from a close relationship with the well-established amusement industry. The amusement industry, in turn, has long suffered from a lack of legitimacy. As it turned out, however, legitimacy would never be much of an issue for video games.

The beginnings of pinball can be traced back to Bagatelle, a form of billiards in which players used a cue to shoot balls up a sloped table. The goal of the game was to get the balls into one of nine cups placed along the face of the table. Abraham Lincoln was said to have played Bagatelle.*

No surviving records explain why the cue sticks in Bagatelle were replaced with a device called a “plunger,” but for some reason the evolution took place and the game transformed into a new sport called “pinball” before the turn of the century.

If one event paved the way for today’s computer and video game industry, it was David Gottlieb’s *Baffle Ball*. The founder of D. Gottlieb and Company, David Gottlieb was a short, stocky man with a full head of brown hair and an ever-present cigar in his mouth. A showman and an inventor, he once made a living by taking carnival games to oil workers in remote Midwestern oil fields. He understood the balance of chance and skill that made games fun and had a talent for refining ideas to make them more fun. In 1931, Gottlieb created a game called *Baffle Ball*.

Baffle Ball used no electricity and bore little resemblance to modern pinball games. It was built in a countertop cabinet and had only one moving part—the plunger. Players used the plunger to launch balls onto a plane set at a 7-degree slope and studded with pins circling eight holes or “scoring pockets.” Each scoring pocket had a certain point value attached to it. For a penny, players could launch seven balls.

* Whether or not Lincoln did in fact play the game, an old political cartoon shows him playing it during his presidency.

Baffle Ball did not have flippers, bumpers, or a scoring device. Players kept track of scores in their heads. Once they launched the ball, they could control its course only by nudging the entire *Baffle Ball* cabinet, a technique later known as “tilting.” Sometimes they tilted so forcibly that the entire *Baffle Ball* cabinet could slide several inches during a single game.

At first *Baffle Ball* sales grew gradually, but within months, Gottlieb’s game became a major success. By the time the game reached peak popularity, Gottlieb shipped as many as 400 cabinets a day.

Gottlieb, the first person to successfully mass produce pinball cabinets in a factory, became the “Henry Ford of pinball.” His competitors worked out of their garages and couldn’t compete.

Imitators popped up immediately, more or less. I mean everybody got involved in the business, and, like I said, there were a lot of people building them in their garages.

Gottlieb machines were a little more expensive. I think it was \$16.50 for the machine, and that was \$1.00 or \$1.50 more than the competitors. But my grandfather used a better quality of walnut; I think the pins were a higher quality metal. He wanted it to be the Cadillac of pinball machines.

—Michael Gottlieb, grandson of David Gottlieb

Once Gottlieb proved money was to be made, imitators followed. David Rockola created several successful pin games* before establishing his company as one of the most famous names in jukeboxes. Ray Moloney’s first pinball machine, *Ballyhoo*, sold so well that he changed the name of his company from Lion Manufacturing to Bally.

Gottlieb’s chief competitor was Stanford-educated Harry Williams. Having studied engineering, Williams brought a deeper understanding of mechanical workings to the industry. He entered the business as a West Coast distributor selling other companies’ amusement machines but discovered he could purchase used pinball games and refurbish them with playfields of his own design for much less than it cost to buy new ones.

* Pin games is a slang term that members of the amusement industry often use to describe pinball machines.

In 1932, Williams decided to make pinball more challenging by limiting the amount of “body English” players could use. He designed a table with a device that contained a metal ball on a pedestal in its base. If players nudged the machine enough to knock the ball off the pedestal, the game ended. He originally called his device “Stool Pigeon,” but when a customer complained that the machine had “tilted,” Williams decided to call it a “tilt” mechanism. He tested this innovation in a game called *Advance*.

Williams later refined the “tilt” mechanism by replacing the ball and platform design with a pendulum device, which has been present in nearly every pinball game made since.

In 1933, Williams built *Contact*—the first “electric” pinball machine. The name *Contact* referred to its electrically powered scoring pockets (called “contact holes”), which knocked the ball back into the playfield to continue scoring points. Like the “tilt” mechanism, electric scoring pockets became a standard for pinball that is still used today.

Previous to *Contact*, the skill for the player was to send the ball up on the playfield, have it roll around, and hope that his aim was such that the ball would somehow magically weave its way around through the pins that were nailed into the playfield.

With the contact hole, you still needed to have some precision to get the ball into the cup, but getting the ball into the cup gave you something back. There was a sound, there was motion. Part of the fascination people have with pinball comes from those opportunities where the game takes over and does things.

—Roger C. Sharpe, author, *Pinball!**

Pay-Outs

Though he was well aware of Harry Williams’s innovations, a different development frightened David Gottlieb more. Slot-machine manufacturers

* Readers interested in learning more about the history of pinball and seeing its color and pageantry should look for *Pinball!* by Roger C. Sharpe (E. P. Dutton, 1977).

began making pinball-like machines called “pay-outs,” which combined pinball and gambling.

Gottlieb saw these machines as a threat to the entire industry. Pay-out machines first appeared in the crime-conscious 1930s, and Gottlieb suspected that politicians would outlaw the new machines and anything associated with them.

Yes, there was a certain amount of skill involved, but basically the law looked at it as a gambling device. Pay-outs started out legally in many states and eventually ended up being operated mostly illegally in places where the police would look the other way, such as New Orleans. They were nickel games, by the way. They paid off in nickels. So it was a little gamble, but nevertheless it was gambling.

—Eddie Adlum, publisher, *RePlay Magazine*

Gottlieb’s fears proved accurate. Politicians saw pinball as inextricably associated with gambling. When states passed laws prohibiting pay-out games, they usually outlawed all forms of pinball.

The most celebrated attack on pinball came from Fiorello LaGuardia, New York City’s flamboyant mayor. As part of his ongoing crusade against organized crime, LaGuardia petitioned local courts for a ban against pinball. After six years of petitioning the courts, LaGuardia’s request was granted. A Bronx court ruled pinball an extension of gambling and made it illegal.

LaGuardia celebrated by having the police confiscate pin games from around the city. He held a press conference in which he demolished several machines with a sledgehammer. The event was even shown on newsreels in theaters around the country.

There was a gaming [gambling] connotation to the coin-operated amusement business. There was a photograph I remember very clearly—Fiorello LaGuardia, the mayor of New York City, by the waterside breaking up all these “games of chance” and throwing them into the sea to dispose of them.

Today he’d have had an even greater problem with environmentalists.

—Joel Hochberg, president, *Rare and Coin It*

Within three weeks of the Bronx court's ruling, the New York Police Department confiscated and destroyed more than 3,000 pinball machines. Mayor LaGuardia donated the metal scraps to the government to support the U.S. war effort against Nazi Germany. In all, he donated more than 7,000 pounds of metal scraps, including 3,000 pounds of steel balls. New York's ban on pinball remained in place for nearly 35 years.

Once New York City banned pinball, neighboring counties followed. The trend spread quickly.

The Battle for Legitimacy

Gottlieb believed that the only way to legitimize pinball was to prove that it involved more skill than luck. Years passed before he found proof.

In 1947, one of Gottlieb's engineers, a man named Harry Mabs, added an innovation to the game—six spring-powered levers that players used to propel the ball back into the playfield before it rolled out of play.

Gottlieb called them “flipper bumpers” and said that they proved that *Humpty Dumpty*, his latest pinball cabinet, was not just a game of chance because players scored most of their points by knocking the ball back into play with flippers rather than relying on luck and gravity.

The flipper bat was quite a breakthrough because it gave the player a true means of exercising and developing skill. You could aim at targets now, rather than in the old days when you popped the ball up and just shook the shit out of the table and hoped that it went in the right hole or hit the right thing. The use of the flipper bat is probably the greatest breakthrough ever in pinball.

—Eddie Adlum

It [the introduction of the flipper] not only changed the basic landscape of the games themselves, but specific to the players, it really changed how they interacted with the games. It was a totally different entertainment form than it had been.

More important, it was a remarkable change for the game designers and developers. What had been the prescribed way of doing game development

for the previous decade had to be altered dramatically. No longer was it a situation of a person passively interacting with the game; now there was true influencing and greater control from the standpoint of the player.

—Roger C. Sharpe

Gottlieb's "flipper games" became the salvation of pinball. Pushed on by a desperate need for respectability, other pinball manufacturers and distributors imitated *Humpty Dumpty's* flipper bats and called their cabinets "flipper games." In France, where pinball has a long and popular history, pinball machines are simply referred to as "le flipper."

After years of complaining about competitors stealing his ideas, Harry Williams found himself imitating rather than innovating, as he joined the growing number of pinball manufacturers adopting the Gottlieb flipper. Williams's first flipper game was called *Sunny*. By this time, Harry Williams owned his own Chicago amusement company, Williams Manufacturing Company, which he founded in 1942.

Though Harry Mabs created the first flippers, it was Steven Kordek, an engineer from a company called Genco, who discovered the best use for them. Kordek replaced *Humpty Dumpty's* six flippers—two at the top, two in the center, and two at the bottom—with two flippers along the bottom of the playing field. Kordek's innovation was introduced in a game called *Triple Action*.*

I worked for a small company and I was always told to save money—and there was no way in the world that I was going to use six flippers.

—Steve Kordek, former pinball designer, Genco

Most pinball machines created in 1947 had six flippers. When Kordek's two-flipper design was demonstrated in a trade show in January 1948, it caused an immediate stir. The industry has followed his basic design ever since.

Even as Gottlieb sought to legitimize pinball with flippers, Bally introduced *Bingo* machines—flipperless pinball machines with rows of pockets.

* Years later, Harry Williams hired Mabs as his chief designer. Mabs later recruited Kordek to work for Williams.

Bingo re-opened some of the wounds caused by pay-out games. Though pinball remained legal, most states outlawed *Bingo* machines permanently.

People tried to operate *Bingo* machines legally and treat them as regular pinball machines, but because they were gambling devices, my grandfather didn't want to have anything to do with them.

—Michael Gottlieb

Flippers were enough proof that pinball was a game of skill for some legislators. Satisfied by flippers and free-game rewards for high scores, some states relaxed their laws governing pinball. New York continued its ban into the 1970s.

A Growing Industry

There were five game manufacturers in the beginning. It was Gottlieb making pinballs. It was Williams making pinballs and novelties. It was Bally's making pinballs, novelties, and slot machines, although the major industry didn't use those. It was Chicago Coin making pinballs and novelties. It was Midway making novelty games—target rifles and so on.

There was a sixth, United Manufacturing. But just about the time I joined the industry in 1964, United was purchased by Williams, so that put it back down to five.

—Eddie Adlum

The coin-operated amusement industry has two tiers of companies. The first tier includes companies like Gottlieb and Williams, which manufacture amusement equipment. The second is made up of local distributors and operators who place equipment in stores, bus stations, bars, restaurants, and bowling alleys and set up routes to maintain it.

Though flipper machines and other games have long represented a steady source of income, the jukebox defined the industry in the early going. During the 1940s and 1950s, jukeboxes were an integral part of the fabric of American society and the main source of income for amusement companies.

Known as music operators, these distributors placed jukeboxes and games in bus stations, restaurants, and ice cream shops. In exchange for permission to place their equipment in businesses, operators paid location owners a portion of jukebox and game receipts. They established routes and hired teams of technicians to maintain their equipment, empty the coin boxes, and place new records in jukeboxes. Keeping current with the latest music trends was essential to earning a good income and keeping location owners satisfied.

It was a competitive business. The music operator's entire livelihood depended on keeping customers happy. If a location owner thought he had received inferior equipment or old records, he could make arrangements with a new operator simply by picking up the telephone.

In the mid-1960s, Gottlieb was the recognized leader [in pinball]. Bally was the recognized loser. In fact, I knew a salesman named Irv Kempner in New York City who worked for Runyon Sales Co. They were distributors of both Rowe jukeboxes and Bally pinballs, and one of the guys said the reason "Kempy" was the best salesman was because he had the worst pinball and the worst jukebox to sell.

Today, Rowe is number one in jukeboxes, and Bally owned the pinball machine industry in the late 1970s and early 1980s.

—Eddie Adlum

Novelty Games

If you go to an old penny arcade, some of the equipment we consider antique today was quite popular in the days that I started [in the industry]. It makes me feel old.

—Joel Hochberg

Historically, the oldest coin-operated amusement machines were known as novelty games. Before making *Baffle Ball*, David Gottlieb manufactured a novelty machine called the *Husky Grip* that tested a player's strength. By the 1940s,

companies had already invented mechanical baseball games. Other games simulated horse racing, hunting, and Western gunfights. Over the years, the field has grown to include hockey, soccer (known by many as foosball), flying, and even building construction.

One of the most popular themes was the shooting arcade. Taverns began carrying mechanical pistol games in which players shot tiny ball bearings at targets on the other side of a small glass-enclosed cabinet. Larger shooting galleries with rifles became staples at arcades.

We had some wonderful ideas like the *Seeburg Bear Gun*, a classic that old timers still remember. You took an actual rifle that had a cable attached to a console about 6, 8, 10 feet away, and the bear moved from left to right. He had light-sensitive targets in his stomach and on each side. As you shot, he would rear up and growl and turn in the other direction, and you just kept shooting until you ran out of bullets. It [*Bear Gun*] was a huge, big hit; a lot of people had it.

We also had the *Six Gun* game where you had a great big mannequin dressed like a cowboy. He stood at one side and challenged you to a gun fight, and you stood on the other side and had a pair of guns mounted in a little stand-up frame. He would challenge you to draw, like a 1-2-3, and you would pull your gun, and he would lift his arm. If you got him, he would say, "You got me," and if he got you, he would say, "You lost. You're dead," that kind of thing.

The *Six Gun* game was built like a Russian toilet so that it would last forever. And it did.

By and large, you didn't go into an arcade in those days to play a specific game. You went into the arcade to go into the arcade. You went in there, got change for your dollar (of course, some games in those days were still on nickel play), and you just looked around to see what there was to play. You put a couple of nickels in here and put a couple of nickels in there until your dollar was used up.

—Eddie Adlum

By the 1960s, novelty games had become quite sophisticated. Black lights were built into the cabinets to make objects glow against dark backgrounds. One game,

Chicago Coin *Speedway*, had a projection screen for a background. Players steered a race car in front of the screen, dodging the projected images of other cars. If the player came too close to a projected image, the machine made a banging sound to simulate a crash and the player went to the back of the pack.

These were the direct ancestors of modern video games.

Birth of a Visionary

If any one person has worked at every level of the amusement machine industry, it is Joel Hochberg. A jovial, quiet man with a self-effacing sense of humor, Hochberg entered the industry to remain near his ailing mother. He never imagined that years later he would help reestablish a multibillion dollar company and change the evolutionary path of the entire industry.

Born and raised in Brooklyn, New York, Hochberg earned an associate degree in electronics from the New York Institute of Technology. "I never wanted to find out how to make things tick; I wanted to know how to make them tick better." He got his degree in 1956 and began the selective interviewing process at Burroughs Corporation.

One Saturday, a neighbor who worked for Master Automatic Music asked Hochberg to help him repair a jukebox.

He [Hochberg's neighbor] worked for one of the larger companies in the five boroughs area. He asked me one Saturday morning if I could help him. There was a very prominent location that was without music and would have been without music until Monday because the distributor was closed. It [having the jukebox shut off] would cost the company a lot of money, but I think more than the money was the lack of the entertainment required for the weekend in that location.

—Joel Hochberg

It is nearly impossible to understand the impact that jukeboxes made on businesses in the 1950s. At that time, not having a jukebox meant that customers went elsewhere.

Though he had studied electronics, Hochberg knew nothing about jukeboxes. He opened the machine and found a problem with the amplifier. The

jukebox worked within a few hours. Hochberg later found out that his neighbor had never really expected him to be able to fix the problem.

Harry Siskind, then president of Master Automatic Music, was impressed that Hochberg had fixed the jukebox and asked to meet him. Siskind didn't have a job to offer at the time but told Hochberg that he should consider working in the music operators business because he had the "ability to take things with a technical approach."

Accepting a job at Burroughs would have meant Hochberg moving to Pennsylvania, which, because of his mother's dire illness, he was unwilling to do. "My mother was deathly ill, and I really had no idea as to what the prognosis was. She was basically terminal, but I didn't know it. At least I didn't believe it."

Anxious to stay near his mother, Hochberg took a job at Tri-Borough Maintenance. "We did Brooklyn, the Bronx, Queens and Manhattan. We probably did all five boroughs, but it was called Tri-Borough because I think the individuals who formed the company came from three different boroughs." For a salary of \$55 a week, Hochberg worked long hours six days a week and provided his own car. He began by repairing jukeboxes and pool tables.

At this time, New York distributors carried novelty games as well as jukeboxes—pinball was still banned. For the most part, novelty games represented only a small part of the business. The popular novelty themes of the times included shuffle alleys—indoor tabletop bowling lanes on which players used metal pucks to knock down miniature bowling pins. Other popular themes included racing, baseball, and shooting galleries. In New York, where pinball was still illegal, novelty games often turned a good profit.

The biggest part of our business was shuffle alleys and ball bowlers. Remember, I came from the city [New York], and these were legal items. Every bar and grill, every tavern had a shuffle alley.

Baseball was a very popular game. It used a bat and pitching mechanism. In some cases, lights on the playing field [were used to show bases with runners], and in other cases, men rotating on a motor carriage. You had some moving targets, some escalation ramps. You had home run areas that were predetermined, and of course, sometimes [home run] ramps came up and if you were able to hit them, your ball went out of the park.

—Joel Hochberg

Wall boxes were another popular item in the industry. These were tabletop cabinets that linked booths and tables to a central jukebox. Each box had a song list, coin slot, and buttons for ordering songs. Restaurants, diners, and malt shops placed wall boxes on tables and in booths so that customers could select and order songs more conveniently.

... and wall boxes were great for the industry because the machine would play a record once. It's conceivable if a record was popular, that four, five, or six people would select that record—but it would only play it once. The same situation holds true today. Jukeboxes don't dedicate songs to an individual; they just deliver the requirement to play.

—Joel Hochberg

Always the innovator, Hochberg found a way to improve the system. He was the first engineer in his area to place volume switches behind bars and counters so that bartenders and restaurant managers could make the music louder upon request. Location managers welcomed the change. Before this, the only volume control was a knob hidden on the back of the jukebox so that customers couldn't get to it.

Though his mother died shortly after he started work at Tri-Borough, Hochberg continued working for New York amusement companies until 1961. This was during a period in which working within the amusement industry had its hazards.

I've also had a situation where a gentleman who played the game after [I repaired it] lost a lot of money. So he was angry. He said, "If you didn't repair this game I wouldn't have lost." And he wanted to do a number on me.

I've seen a man carrying a gun in his hat. I've had a shot fired at me. Let's change that. . . . Not fired at me directly but fired into the location while I was working on a *United Baseball* game.

—Joel Hochberg

Once, when Hochberg showed up at a bar early one Sunday morning to service a machine, he was attacked and beaten. An investigation into the incident revealed that he'd been mistaken for the bartender.

The next thing I knew, I was being brutalized by a couple of people who were very aggressive because they didn't know who to beat up. The indication was, he's in the bar on Sundays before the bar opens, so there were two people in the bar. They didn't ask what my name was or what the other gentleman's name was. They just came in there. It seems that there was some kind of local area issue, something that had something to do with a relative of one of the people. The bartender's wife was the sister of one of these fellows, and the bartender was mistreating the sister.

—Joel Hochberg

Hochberg also remembers that many people liked him for what he did. Sometimes while working his route, he'd have to run outside to put money in a parking meter, only to discover that people had recognized his car and fed the meter for him.

In 1961 Hochberg took a job with New Plan Realty, which was opening the Cavalier, one of the world's first restaurant/arcades. Built in a new shopping center in Philadelphia, the Cavalier was an enormous endeavor with a 10,000-square-foot dining area and 2,500-square-foot arcade. Hochberg was hired to help build and manage the arcade.

The same year that Hochberg moved to Philadelphia, a group of socially awkward college kids began an experiment that would eventually change Hochberg's life.