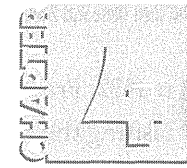

And Then There Was Pong

There were perhaps only five important game manufacturers and five pool table manufacturers and four jukebox manufacturers, and for all intents and purposes, that was the manufacturing side of the amusement machine business.

It stayed that way for quite some time—until 1972. In 1972, Nolan Bushnell, a rather clever electronics engineer from Northern California, adapted Ralph Baer's Magnavox toy for playing ping-pong on the television screen into a coin machine. As the world knows, he called it *Pong.*

—Eddie Adlum

My kid came home from school one day and said that Nolan Bushnell's daughter told the teacher that her father invented *Pong.* Well, I told him to go to Nolan's daughter and say, "If your daddy invented *Pong,* how come he had to ask my daddy to come fix his machine when it broke down?"

—Al Alcorn, former "sort of" vice president of engineering, Atari Corporation

In 1972, President Richard Nixon had all but locked up his re-election by visiting the People's Republic of China and the Soviet Union; the Supreme Court deemed the death penalty cruel and unusual punishment and ruled it unconstitutional; and an investigation by White House counsel John Dean found the Nixon administration innocent of any involvement in the attempted burglary of the Democratic Party headquarters in the Watergate apartment complex.

The Dow Jones Industrial Average hit 1000 points for the first time on November 14, 1972, and the economy looked brighter than it had in five years. Along with a healthy economy came thousands of start-up companies.

On June 27, 1972, Nolan Bushnell and Ted Dabney applied to have Atari incorporated. They founded their company with an initial investment of $250 each. Within ten years, Atari would grow into a $2-billion-a-year entertainment giant, making it the fastest-growing company in U.S. history.

Atari's first office was located in a Santa Clara industrial zone—a crude 1,000-square-foot space in an inexpensive concrete building, made to house start-up companies. These were lean times for the company. It existed on a few small contracts and the limited royalties Bushnell received from *Computer Space.*

Bally, now a very successful pinball and slot machine manufacturer, became one of Atari's first customers, signing a limited contract for Bushnell to develop new extra-wide pinball machines. Bushnell also continued working on a multiplayer version of *Computer Space,* which he hoped to sell to his old employers at Nutting Associates.

> We had a 2,000-square-foot facility. This was the original garage shop—you know, one of those places with a roll-up door, one office, and a bathroom. It had sort of a little reception area, and part of our requirement to the landlords was that they put in another office. That was Ted's lab.
>
> Incubator facilities like that are unique to California. They're cheap and they're made cheap because . . . what they really want you to do, and what Cole Properties, the ones that were running the building wanted, was to sign us for a long lease.
>
> Eighty percent of the companies [that sign up] don't grow or stay there for a long time until the lease is out. But some companies get really big

> quickly. And they'll say, oh, we'll let you out of the lease. You can just roll it into one of our other properties.
>
> **—Nolan Bushnell**

To create a steadier income base, Bushnell and Dabney started a pinball route that included a local bar, some coffee shops, and the Student Union building at Stanford University. Because they could buy the pinball machines cheaply and knew how to maintain them, the route became a profitable asset. It eventually became so lucrative, in fact, that when Dabney left the company, he accepted the route as part of his settlement.

The first full-time employee of Atari Corporation was Cynthia Villanueva, a 17-year-old who used to baby-sit Bushnell's children. She needed a summer job so Bushnell hired her as a receptionist. He instructed her to "put on the show," giving callers the impression that Atari was an established organization rather than a start-up company with more owners than employees.

> Nolan didn't want to answer the phone, he wanted to have somebody else answer it. So he hired a secretary, Cynthia. And when someone would call [she would make them wait and yell], "It's for you Nolan." We'd wait a certain amount of time to make it sound like it was a bigger company, you know it would take longer to go get him.
>
> **—Al Alcorn**

Villanueva's responsibilities did not stop with answering telephones. Because of the company's limited budget, she was called upon to do everything from running errands to building electronic components and placing parts in cabinets. She stayed with Atari for more than a decade, remaining long after Bushnell and Dabney left.

Atari's second employee was a young engineer named Al Alcorn, whom Ted Dabney first met while working at Ampex. Alcorn had just completed a work-study program that allowed him to work summers at Ampex while finishing his engineering degree at Cal-Berkeley.

Short and sturdy, Alcorn was once a member of the same all-city high-school football team as O. J. Simpson. He was naturally gifted when it came to

electronics and had learned how to repair televisions by taking an RCA correspondence course in high school. When he got to college, Alcorn paid for his education by working in a television repair shop.

When Alcorn finished his degree, he found the job market weakening and was hired by Ampex. The company was going through rough times and had a round of layoffs when Nolan Bushnell offered him a job working for Atari. Alcorn agreed to move.

> Nolan hired me when Ampex was going through some setbacks. He offered me a job as the VP of engineering or sort of, VP of R & D or whatever title it was of this company called Syzygy.
>
> He offered me $1,000 a month and a chance to own stock in the company. The stock was worthless; most start-up companies fail anyway. I had actually been making a little bit more than that, but I figured what the heck.
>
> Nolan had a company car. This was a concept I'd never thought of before or conceived of. It was an Oldsmobile station wagon, but like, wow, you can drive a car that isn't even yours and don't have to pay for it. What a concept!
>
> **—Al Alcorn**

Simply an Exercise

Shortly after hiring Alcorn, Bushnell gave him his first project. Bushnell revealed that he had just signed a contract with General Electric to design a home electronic game based on ping-pong. The game should be very simple to play—"one ball, two paddles, and a score. . . . Nothing else on the screen."

Bushnell had made up the entire story. He had not signed a contract or even entered into any discussions with General Electric. In truth, Bushnell wanted to get Alcorn familiar with the process of making games while he designed a more substantial project. Bushnell had recently sold Bally executives on a concept for an outer-space game that combined the true-life physics of *Computer Space* with a race track.

> I found out later this was simply an exercise that Nolan gave me because it was the simplest game that he could think of. He didn't think it had any play

> value. He believed that the next winning game was going to be something more complex than *Computer Space,* not something simpler.
>
> Nolan didn't want to tell me that because it wouldn't motivate me to try hard. He was just going to dispose of it anyway.
>
> **—Al Alcorn**

From his tenure at Ampex, Alcorn was already familiar with the transistor-to-transistor logic (TTL) involved in creating electronic games. He tried to work from the schematic diagrams that Bushnell had drawn while designing *Computer Space* but found them illegible. In the end, Alcorn had to create his own design, based on what he knew about Bushnell's inventions and his own understanding of TTL.

As he worked, Alcorn added enhancements that Bushnell had never envisioned. He replaced the expensive components with much less expensive parts. Bushnell's original vision included paddles that simply batted the ball in the direction it had come from. Feeling that this was inadequate, Alcorn devised a way to add English to the game and aim the ball with the paddles.

Instead of using solid lines to represent paddles, Alcorn broke the paddles into eight segments. If the ball hit the two center segments of the paddle, it flew straight back at a 180-degree angle. If the ball hit the next segments, it ricocheted off at a shallow angle. Hitting the ball with the outer edges of the paddle would send the ball back at a 45-degree angle.

Alcorn also added ball acceleration. The original game simply buzzed along at the same speed until someone finally missed the ball. Alcorn found the game dull and thought that speeding the ball during extended rallies might lend some excitement. He wrote the game so that after the ball had been hit a certain number of times, it would automatically fly faster.

A certain mythology has arisen about the creation of *Pong.* People have written about the meticulous effort that went into creating the resonant pong-sound that occurred whenever the ball struck a paddle. According to Alcorn, that sound was a lucky accident.

> Here I was developing this thing and feeling kind of frustrated because it already had too many parts in it to be a successful consumer product. So I

> felt like I was failing, and Nolan didn't mention that the game had come off better than he'd expected.
>
> Now the issue of sound . . . People have talked about the sound, and I've seen articles written about how intelligently the sound was done and how appropriate the sound was. The truth is, I was running out of parts on the board. Nolan wanted the roar of a crowd of thousands—the approving roar of cheering people when you made a point. Ted Dabney told me to make a boo and a hiss when you lost a point, because for every winner there's a loser.
>
> I said, "Screw it, I don't know how to make any one of those sounds. I don't have enough parts anyhow." Since I had the wire wrapped on the scope, I poked around the sync generator to find an appropriate frequency or a tone. So those sounds were done in a half a day. They were the sounds that were already in the machine.
>
> **—Al Alcorn**

Pong played more like squash than ping-pong. Thanks to Alcorn's segmented paddle, it had become a game of angles, in which banking shots against walls was an important strategy. Players controlled inch-long white lines that represented racquets, which they used to bat the small white square that represented the ball. The background was black.

The game was streamed through a $75 Hitachi black-and-white television that Alcorn picked up at a nearby Payless store. He set the television in a four-foot tall wooden cabinet that looked vaguely like a mailbox. Since the printed circuit boards hadn't been made, Alcorn had to hard-wire everything himself. The inside of the cabinet had hundreds of wires soldered into small boards and looked like the back of a telephone-operator's switchboard.

It took Alcorn nearly three months to build a working prototype. His finished project surprised Bushnell and Dabney. Instead of giving them an interesting exercise, Alcorn had created a fun game that became their flagship product. Bushnell named the game *Pong* and made a few changes, including adding a bread pan for collecting quarters and an instruction card that read simply, "Avoid missing ball for high score." To test the game's marketability, Bushnell and Alcorn installed it in a location along the Atari pinball route.

> Our initial idea was to go into business as a contract design firm and sell our ideas to others for licensing. We had a contract with Bally to design a video game for them, and we saw it as being a big, pretty long project.
>
> So I had Al do this *Pong* game, this ping-pong game. And, dammit, it was fun. We tweaked it a little and it was more fun, and we thought to ourselves, we'll get Bally to take this. We'll complete our contract way, way, way ahead of schedule and life will be happy in the Valley.
>
> So I took *Pong* and offered it to Bally. I said, "Hey, you know we contracted to do a driving game but we got this game instead. Do you want this instead? Will this fill our contract for you?" They played it and said, "This is kind of fun, but it requires two players and if a guy's there all by himself he can't play it." And I said, "Well, we could probably put a one player version in." I sold them pretty hard.
>
> **—Nolan Bushnell**

Andy Capp's Tavern

> Andy Capp's was a peanut-shell-on-the-floor beer bar in Sunnyvale, California. It was nothing special, other than it had a game room in the back that was larger than any that you would see in a bar at that point in time.
>
> **—Nolan Bushnell**

Once, when feeling particularly generous, Bushnell described Andy Capp's Tavern, the location where Atari first tested *Pong,* as a "rustic location." It was a shabby bar located in Sunnyvale, a much smaller town in the pre–high technology days of the early 1970s. Alcorn, who visited the bar while running the pinball route, remembers it as having four or five pinball machines, a jukebox, and a *Computer Space* machine. They installed the prototype in late September 1972.

> We put it [the *Pong* prototype] on a barrel. He had old wine barrels to use as tables and we just put it on top of the table. It wasn't even a full size.
>
> **—Nolan Bushnell**

> Nolan and I sat there the first night and watched people play, and here's the scene. We're sitting there with a couple of beers, and a young man goes up and plays *Computer Space* while his friend plays *Pong*. While we're watching, the first guy goes over and tries *Pong* with his friend.
>
> We went over to him afterward and asked, "Well, what did you think of that machine?" And the guy says, "Oh, it's a great machine. You know, I know the guys who designed it."
>
> "Really! What are they like?"
>
> So [he tells us] this whole bullshit story. I think he was practicing a line for picking up babes.
>
> **—Al Alcorn**

One of the legends of video games is that two days after installing *Pong* in Andy Capp's Tavern, Alcorn got an angry late-night call from Bill Gattis, the tavern manager. According to the story, the machine had stopped working and Gattis wanted it hauled out of his bar.

In truth, Alcorn received the call from Gattis two weeks after installing the machine. It was a friendly call in which the bartender suggested that they fix the machine quickly, since it had developed quite a following. Alcorn frequently visited Andy Capp's while making maintenance runs on Atari's pinball route. He and Bushnell had selected the bar as a good test site because Gattis had always been cooperative.

> He said to me, "Al, this is the weirdest thing. When I opened the bar this morning, there were two or three people at the door waiting to get in. They walked in and played that machine. They didn't buy anything. I've never seen anything like this before."
>
> I went to fix the machine, not knowing what to expect. I opened the coin box to give myself a free game and low and behold, this money gushed out. I grabbed handfuls of it, put it in my pockets, gave the manager my business card, and said, "Next time this happens, you call me at home right away. I can always fix this one."
>
> **—Al Alcorn**

Nolan Bushnell left for Chicago to visit a couple of pinball manufacturers a few days before Alcorn received the call from Andy Capp's Tavern. He had brought a portable *Pong* game to demonstrate to executives at Bally and Midway. Though Bushnell already had an inkling that *Pong* was doing good business at the test site, he had no idea how well it had done. When he returned, an excited Al Alcorn told him that the machine at Andy Capp's Tavern had stopped working because the quarters had overflowed. The news struck Bushnell like a revelation.

Surprised by *Pong*'s success, Bushnell decided that he should manufacture the game himself rather than sell it to an established game maker. The problem was, he had discussed the game with executives at Bally and Midway and stirred up some interest. Now he had to find a way to steer them away from *Pong* while keeping the door open for future projects. In the end, Bushnell played one side against the other.

> Nolan decided he didn't really want Bally to take *Pong* because he knew it was too good. So he met with Bally and Midway and decided to tell Bally that the Midway guys didn't want it. And so the Bally guys decided that they didn't want it.
>
> Then he told the Midway guys that the Bally guys didn't want it. He got them convinced that it was no good. [Once they heard Bally didn't want it] it . . . didn't take much convincing.
>
> **—Al Alcorn**

The Big Debate

There are unanswered questions in the history of video games. One question involves Ralph Baer, the designer of the Magnavox Odyssey, and Nolan Bushnell. It is a question of ownership.

In 1972, while Nutting Associates tried to market *Computer Space* as the beginning of a new generation of arcade games, Magnavox quietly circulated the Odyssey television game around the country in special demonstrations for dealers and distributors. Most demonstrations took place in private showings, but the new device was also displayed at a few trade shows.

The first show began on May 3, 1972, in Phoenix, Arizona. Three weeks later, Odyssey came to the San Francisco Bay area in a large trade show held in the town of Burlingame. According to Magnavox, a Nutting Associates employee named Nolan Bushnell attended the show on May 24. Depositions taken from Magnavox witnesses claimed that while at the show, Bushnell tested Odyssey.

Some time after Atari began marketing *Pong,* in 1972, Magnavox took the California start-up to court. *Pong,* Magnavox argued, violated several of Baer's patents. It infringed upon his patents for projecting electronic games on a television screen, and, more important, it infringed on his concept of electronic ping-pong.

> What they've always alleged was that there was a meeting or a distributor show somewhere in the valley, and I should have, would have, could have been there. So it's one of those pissing matches.
>
> **—Nolan Bushnell**

Atari was up against a stacked deck. First of all, the methodical Ralph Baer considered filing for patents an integral part of the invention process. During his life, Baer was awarded more than seventy patents and was once named "inventor of the year" by the state of New York. He documented everything.

By comparison, Bushnell, with his haphazard style, allowed the mundane details of invention and legal filing to escape him. Even when he created schematics, like the one he had made for *Computer Space,* they were often illegible.

More important, whether Bushnell attended the Magnavox show or missed it, there had been a show.* Magnavox could prove that it had demonstrated Odyssey in Burlingame prior to the creation of *Pong* and even prior to the incorporation of Atari. Magnavox also had Baer's patents and notes, all of which clearly predated *Pong* and *Computer Space.*

Bushnell considered his options. Magnavox had more lawyers and resources than Atari could ever hope to afford. His attorney urged him to take the matter to court, claiming they would win; but when Bushnell asked how much it might cost, the lawyer thought the expenses could be as much

* In later litigation, it was revealed that Bushnell not only attended the Burlingame show but also played the tennis game on Odyssey.

as $1.5 million—more money than Atari had to spend. Atari could not afford to fight, even if it won.

In order for his company to survive, Bushnell had to find another alternative. It came in the form of a settlement. Magnavox offered Bushnell a very inexpensive settlement proposal. Bushnell followed up by asking for special terms in the agreement.

> It was all settled outside and Nolan and Atari got extremely favorable terms. They paid very little. He got away with a very, very, very small licensing fee up front.
>
> Atari became a licensee under a prepaid arrangement. It paid some fixed sum, some ridiculous number like a few hundred grand. I don't remember the details. But he [Nolan] had an extremely advantageous, nonburdensome license from us. And as far as we were concerned, that was the end of our problems with Atari.
>
> If anybody had had any inkling of what was going to happen to this business at Atari, they would never have gotten those terms.
>
> **—Ralph Baer**

Bushnell played the legal action like a chess game. In exchange for settling, Atari became Magnavox's sole licensee. By this time other companies had begun making similar games. While Atari had already paid its licensing fees, future competitors would have to pay stiff royalties to Magnavox. In several later litigations, Magnavox zealously prosecuted all violators.

> Magnavox said, "For $700,000 we'll give you a paid-up license." And Nolan said, wisely, "You got it." So we had a paid license and everybody else had to pay royalties.
>
> That was negotiated in June of 1976, a very key date. It was a week before the consumer electronics show opened, and one of the caveats of that agreement was that Magnavox got the rights to any product we came up with in the next 365 days. Anything we released.
>
> So we said at one point, we're not going to release any consumer products for a year; we'll release them at the next CES [Consumer Electronics Show]. That was the only time we ever kept our mouths shut about a product, and it

> was funny because when the Magnavox attorneys came by to analyze our stuff, we had Steve Bristow show them around. Bristow knew nothing about the consumer stuff—the stuff that Magnavox wanted.
>
> **—Al Alcorn**

> I helped negotiate that deal. We paid so little money, and yet we agreed that they would go after, as part of the settlement, all our other competitors. Well, we were the dominant people, and all of a sudden Magnavox said, "We'll help, we'll give you a sweetheart deal, and we'll beat up on everybody else."
>
> **—Nolan Bushnell**

With the settlement signed, the case never went to court. Bushnell and Baer met in Chicago, on the steps of a courthouse, the day that settlement was sealed. Baer remembered being introduced to Bushnell and shaking hands. They exchanged pleasantries, then went in different directions.

Over the years, Bushnell became a national celebrity as the "father of video games." In the late 1970s, as he prepared to retire, Ralph Baer finally told his story to the press.

> I finally got tired of being a shrinking lily and I started tooting my horn a little bit. But it didn't have any financial effect because it was all over by then.
>
> I also didn't open up my mouth, didn't make any loud press for myself, because guys like Nolan were clients. He was a licensee. He put the business on the map. In fact, without him there would never have been any money in the till. If Nolan wants to say he was the great inventor, hooray Nolan. You're a nice guy, you made a lot of money for us, say anything you want to.
>
> **—Ralph Baer**

Years later, Baer ran into Nolan Bushnell and Gene Lipkin, Atari director of marketing, on the floor of the Consumer Electronics Show. According to Baer, Bushnell introduced him as "the father of video games." Baer smiled and said, "I wish you would have said that to the press."