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Galaga and Vintage Gaming: A Look at *Galaga*'s Place in the Classic Gaming Industry

Because he was speaking in the early videogame days of the 1980's, it is likely that even Steven Spielberg did not fully recognized the weight of his statement when he said that "The aliens have landed, and the world can never be the same again" (Amis, 7). Commenting on such early games as *Missile Command* and *Space Invaders*, Spielberg understood that these early "shooters" had infiltrated American pop culture in such a way that whether directly or not, the lives of most Americans after the 1980's would be influenced by games such as these. 20 years later, his statement continues to ring true today. However, it not difficult to see that most recent videogames look considerably different than their predecessors of the 80's—technological advancements have changed the face of gaming. Yet, as the Namco Arcade web page points out in speaking about the classic games, *Galaga* and *Ms. PacMan*, "These two games are unquestionably the two longest running hits in the history of videogames! After 20 years, they are still a 'must have' for all locations" (www.namcoarcade.com/nai_gamedisplay.asp?gam=mspcglga). One must wonder then, what is it about games such as these that continue to make them popular—why is it that in the face of clearly superior graphics, sound, and interface

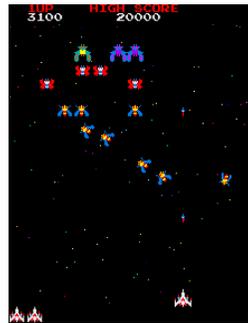
options that primitive games are not only able to coexist, but continue to bring in profits for manufacturers and arcade operators? After conducting much research, including a variety of interviews with those involved in the classic gaming world, it certainly seems that the answer is rooted in the simplicity and nostalgia of these games. In order to best understand this theory, an in-depth analysis of the classic game *Galaga* is offered here.

Game Play and Plot

Speaking in terms of genre, *Galaga* clearly falls into the “shoot em’ up” category for its style of game play. Basically, the controls are simple: a single joystick allows players to move either left or right at the base of the screen, and a single ‘fire’ button allows the player to shoot one bullet at a time (max two bullets on screen at once).



Galaga Control Panel



Galaga Screen Shot

<http://www2.webmagic.com/klov.com/images/G/nGalaga.jpg>

Without a stop in the action once play is started, the sparse plot development is offered only in the instruction booklets and anecdotal word of mouth stories handed down from gamer to gamer: The Galagans are a band of interstellar aliens seeking to reclaim planets they lost in a space war, one of which is yours. Thus, players join the Intergalactic Warrior Fleet with actual fighting as the only training available

(www.classicgaming.com/rotw/galaga.shtml). The game begins with a blank screen, and alien fighters then swoop in from the sides and top in tight formation. Players can shoot the aliens as they fly in, but must take care to avoid the bombs dropped by the incoming warriors. After the initial attack, those aliens left alive reform a position at the top of the screen and then take turns dive bombing the game player, first as single fighters, and then in pairs. After clearing all of the aliens, the stage ends and the player advances to the next level. As players progress in stage, the speed with which the aliens fly in and the speed with which they dive bomb the player increase, while the amount of time between each successive dive bombing decreases.

Essentially, then, the player's goal is simple: shoot every alien to move on to the next stage (hence the shoot em' up genre). In addition to this simple game play, however, *Galaga* also two primary improvements over previous games in this genre: 1. the opportunity to attain double fire ability; and 2. challenge stages after every third round. Before elaborating, though, it is first necessary to understand *Galaga's* roots and history—some of those first games which Steven Spielberg was describing in the early 80's.

Space Invaders and the Shoot Em' Up Genre

Prior to the rise of videogames, pinball machines had proven the most lucrative form of income for the arcade industry in the United States. The majority of these machines were produced by the company Bally, who maintained a considerable profit margin on the machines. Therefore, when Nolan Bushnell tried to sell *Pong*, created by Al Alcorn, to Bally, they remained skeptical and remained true to their brainchild pinball

industry. After a series of setbacks, Bushnell followed up with the now well known introduction of *Pong* at Andy Capps' Bar in Sunnyvale, California. With the immense success of that single *Pong* machine, Bushnell decided that his company, Atari, would independently manufacture more *Pong* machines.

As *Pong* grew in popularity, so did the concept of videogames in general, and the number of arcade games grew to include such titles as *World Cup Football*, *Grand Track 10*, and *Tank*. At the same time, the falling cost of microchips inspired Bob Brown, a designer at Atari, to take *Pong* into the homes of consumers. After licensing the home *Pong* machine to Sears in 1975, Atari went on to sell \$40 million worth of units and profited \$3 million dollars (Herman, 19). These profits would then fund Atari's continued growth and their decision to send the Atari Video Computer System, or VCS, to the home market in 1977.

After observing the explosion of the videogame industry, pinball machine maker Bally decided to enter the home videogame market. They established a separate video division named Midway, responsible for developing their arcade videogame holdings and their home videogame system, the Bally Arcade, also released in 1977.

As videogames were revolutionizing the arcade industry in the United States, a similar transformation was about to take hold of the industry in Japan. Whereas pinball machines were the source of income for American arcades, Japanese arcades were stocked with Pachinko machines, a hybrid pinball and slot machine (Herman, 33). Even after *Pong* was introduced across the Pacific, videogames could not topple the hold that Pachinko machines had on the industry...until the introduction of *Space Invaders*.

Taito, a Japanese software developer, released *Space Invaders* in 1978. The game featured 48 aliens arranged in six rows of eight creatures each. The creatures would move from side to side across the top of the screen, advancing towards the bottom of the screen when they reached the side margins. Aliens on the bottom row could fire lasers at the player who controlled a laterally roving cannon which they controlled with a joystick. The gamer could shoot the cannon and hits would result in the disappearance of the encroaching creature. The goal was simple: shoot all of the 48 aliens to reach the next stage where the aliens would begin closer to the bottom of the screen, and advance at a faster rate.

Space Invaders took the Pachinko parlors by storm, and overtook the arcades in six months (Herman, 33-34). The game was featured two previously unseen traits that fostered its success: 1. animated characters that added personality to the game; and 2. a high score feature coupled with the idealistic opportunity that the game could continue forever if players were sufficiently capable of shooting the aliens fast enough. Gamers were drawn by the opportunity to set new records and establish ability rankings. The success of *Space Invaders* drew the attention of Bally, and Midway licensed the game directly from Taito for U.S. release. The game was a huge success and the shoot em' up genre was born.

As Martin Amis wrote in his book, *Invasion of the Space Invaders*, it was not long before gamers developed the best methods of attack and ways to attain high scores. A variety of videogame guides, including Amis' book, were published with strategies and point values for the different aliens, and out grew the videogame guidebook industry. The success of the original game fostered several "mutant variations" (Amis 49), which

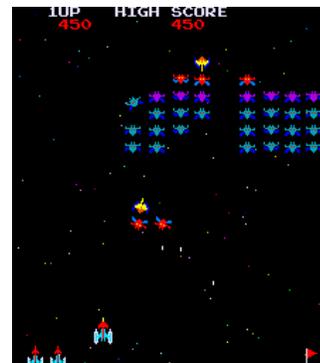
included new aliens and attack patterns. But, as Amis wrote, “by that time, we were all playing *Galaxian*...instead” (Amis 49).

The Rise of Namco and *Galaxian*

Originally named Nakamura Manufacturing Ltd., the Namco corporation began in 1955, by installing rocking horse rides at the top of Tokyo department stores. Later, its electronic animals would be licensed to companies including the Walt Disney Corporation. The company was reorganized in 1958, and adopted the Namco brand name in 1972 with such mission statements as “play is culture,” and “to play is human” (www.namco.com/company/introduction.html). The acquisition of Atari (Japan) Corp., in 1974, enabled Namco to move directly into the coin operated videogame industry. In 1978, the company expanded to the United States and released its first stateside videogame, *Gee-Bee* (www.namco.com/company/timeline.html). It was 1979, however, that helped cement Namco’s rise to prominence in the coin operated market. That year, *Galaxian*, which built upon the lateral moving cannons and shoot em’ up game play of *Space Invaders*, ousted its predecessor and set in motion the developmental and programming innovations that would lead to *Galaga*.



Galaxian Cabinet Title Graphic



Galaxian Screen Shot

<http://www.klov.com/G/Galaxian.html>

The extent to which the Namco corporation maintains its security and privacy make it difficult to obtain information on the programmers, cost of development, and time in development. However, as per website, The *Galaga* Worship Page (<http://www.geocities.com/mogomra/galaga/>), two of the original *Galaxian* programmers included Akira Takundai and Hurashi Nagumo. Licensed directly to Midway, who had also released *Space Invaders*, the game was seen as a sequel of sorts, despite its completely independent production. What *Galaxian* featured over *Space Invaders*, as Masaya Nakamura (founder and CEO of Namco) pointed out was that “*Space Invaders* ‘was black and white, and [had] vertical and horizontal movements only, whereas *Galaxian* was in color and the enemies attacked from various directions” (www.gamespy.com/halloffame/june01/galaxiangalaga/index2.shtm). Rather than advance in rows as the creatures of *Space Invaders* had done, the aliens of *Galaxian* were capable of peeling off from their top formation and dive bombing their opponent—the gamer. Following trends in Japanese science fiction, aliens both in the game, and depicted on the side of the game cabinet, appeared as mechanized insects. The added difficulty associated with the dive bombing mesmerized players, which then lead to a huge increase in production of the associated hardware, including the Z80 microprocessor (of which *Galaxian* utilized only one).

Enter Galaga

Yet, as Steven Kent, author of *The Ultimate History of Video Games*, described in an email interview, Namco overestimated the longevity of *Galaxian*. As such, the company found itself with a huge surplus of Z80 microprocessors. Thus, a Namco

programmer named Shigeru Yoyogi, in association with *Galaxian* programmers Akira Takundai and Hurashi Nagumo, created *Galaga* to utilize the excess hardware. Again, the privacy of Namco make it difficult to discern the cost and time frame associated with the game. Yet, because *Galaxian* was released in 1979, and *Galaga* in 1981, one is able to place the development process at somewhere between a year and six months taking into account *Galaxian*'s initial success and subsequent decline in the arcade.

Although not intentionally designed as a sequel to *Galaxian*, the similarity between the games makes it difficult to ignore the lineage of the two games. As Steve Kent explained, what made *Galaga* great was that “it mixed superb game controls with interesting action” (email interview). Further elaborated on in the Gamespy Hall of Fame,

“*Galaga* became an instant classic that's generally recognized as one of the all-time great arcade games. The game design wasn't extremely different from that of *Galaxian*; rather than primarily focusing on innovation, it perfected a proven formula. The graphics were more refined and lively, and the enemies were more diverse and imaginatively designed. Graphics weren't the only area of improvement. Walking into an arcade, you could find the *Galaga* machines by sound alone. While some other games of the time, like *Defender* (Williams, 1980) and *Tempest* (Atari, 1980), had very vivid sound effects, few if any games had such memorable music as *Galaga*. From the lilting, almost baroque opening theme to the manic tune that played when you earned a high score, *Galaga* provided the soundtrack for early arcade gaming”

www.gamespy.com/halloffame/june01/galaxiangalaga/index2.shtm

By utilizing three of the Z80 processors, the programmers were able to include a variety of upgrades that insured *Galaga*'s longevity in the arcade. The first of these was the side swooping entry of the aliens prior to their formation at the top of the screen. Given the opportunity to blast away at the circling creatures while avoiding their bombs made game play more fluid and dynamic than it had been in *Galaxian*. Second, the

gamer was able to increase the amount of on-screen fire power two-fold as the ship was able to fire fast enough to keep two missiles on the screen at once. The increase in fire power lead to more alien kills, higher scores, and a heightened sense of action—the level of excitement perceived by gamers was considerably higher in *Galaga* than it had been in *Galaxian*. Finally, the defining characteristic of *Galaga* were the unique aliens—one of which could momentarily capture the player’s ship. If this alien bandit was then shot at the appropriate time, the ship could be regained for double ship control, or the ability to have four missiles on-screen at once.

This ability to increase fire power proved most valuable in the final *Galaga* innovation: the challenge stage. After every third stage, players were treated to the bonus round where aliens would fly in and swirl around without dropping bombs or dive bombing. Point were awarded not only for each alien shot, but special point rewards were awarded for killing all of the aliens in a certain pack, and all 50 of the aliens in the stage. By maximizing one’s fire power, player’s were able to insure their success on the bonus stages, thereby maximizing their score, and elevating them on the high score list—the ultimate end reward.

Thus, one can see that *Galaga* included a number of features that elevated it above *Galaxian*. Although it utilized the same control panel, the hardware upgrades enabled programmers to increase the quality of game play. The increased animation, distinct sound, and amplified level of firepower and action meant that gamers would find *Galaga* worthy of another quarter for quite some time.



Galaxian Cabinet-1979

(*Galaxian* Cabinet <http://www.klov.com/G/Galaxian.html>)



Galaga Cabinet-1981

(*Galaga* Cabinet <http://www.klov.com/G/Galaga.html>)



Galaga Challenge Stage

(*Galaga* Challenge Stage

<http://www.gamespy.com/halloffame/june01/galaxiangalaga/index3.shtm>)

The “Class of ’81” Reunion and The Notion of Classic Gaming

Today, if one goes to an arcade looking for *Galaga*, it is likely that rather than find an original *Galaga* machine, gamers are likely to find the *Ms. PacMan/Galaga* combination cabinet that was released by Namco in 2001. The combination was released in response to popular demand by arcade operators who continued to report profits on the games, but whose machines were suffering from monitor and microprocessor failure. The “new” cabinet featured *Ms. PacMan* graphics one side, and *Galaga* graphics on the opposing half. Speaking with Mr. Frank Costantino, a public relations director for Namco America, revealed that the decision to re-release the game came after a lunch conversation between himself and other company heads. With the idea drawn out on paper napkins, the concept was that the games would be marketed together under the header “Class of ’81,” in reference to their original dual 1981 releases. In addition to the original games, the decision was made to include several other features to increase the

appeal of the product to new, younger gamers who were not around for the originals. These features included “speedy” versions of *Ms. PacMan* and *Galaga*, as well as the option to buy in continuations after all the player’s lives had been expended. The games were released both as stand up units, and the classic “cocktail” cabinets that made the machines popular in bars and restaurants. According to Mr. Costantino, “the instant success of these machines after their release indicated that there remains a place for classic games such as these in the arcade market of today.”

This success instantly returns us to the question posed at the start of this paper: Why have some of these simple games remained popular? In order to find an answer, several interviews via email were conducted. These interviews included: Ralph Baer, inventor of the Odyssey home videogame system (and the Milton Bradley game *Simon*); Steven Kent, author of *The Ultimate History of Video Games*; Chris Cavanaugh, editor-in-chief of *Classic Gaming Magazine*; and John Hardie, founder of the Classic Gaming Expo (exclusively devoted to the vintage gaming industry).

Upon asking the question why classic games continue to remain popular, all four had similar answers: simplicity. As Mr. Baer noted, in reference to *Simon*,

“its gameplay is simple and compelling...everybody gets the hang in seconds and no instructions or long training period is required to get immediate pleasure out of playing the game. I believe the same characteristics attend *PacMan* and other vintage games...they’re simply easy and fun to play and that’ll never wear off.”

Similar sentiments were echoed by Mr. Cavanaugh and Mr. Hardie who each noted that the key was nostalgia. “I believe one part of it stems from nostalgia...People like to take a step back in time and play a few games of *Ms. PacMan* or dig out their old Atari’s or Intellivisions because it takes them back to a simpler time in their life” (Chris Cavanaugh

via email interview). “Simplicity. That's the key to all nostalgia. A need to go back to a simpler time” (John Hardie via email interview).

Then, asked whether newer games with improved sound and graphics, and an increased number of buttons/interface opportunities, were better than these vintage games, both Mr. Hardie and Mr. Kent replied that the newer games were not necessarily better, but were different. According to Mr. Kent, games rely on their increased complexity to make the games more sophisticated. Both replied that the majority of new games rely on previously established “tried and true” styles of game play. There are few improvements or innovations made from generation to generation of each new fighting or sports game.

Furthermore, many of the interviewees replied that the newer games of today require different skills on the part of the player than those games of the past. As Leonard Herman pointed out, “One skill needed today is endurance...In 1982 you were lucky if a game lasted ten minutes...Today's games can go on for weeks” (Leonard Herman via email interview). This thought was expanded upon by Mr. Cavanaugh who mentioned that “[today] you need to invest more time in to the game...It's pretty rare when you can just sit down for a few minutes and blast away at aliens (like in *Galaga*)” (Chris Cavanaugh via email interview).

Ultimately, though, the basic premise of game development has not changed. Asked whether the driving factors behind the development of games has changed, most argued that they have not. While some would like to altruistically argue that games are developed as an art, it was perhaps, Mr. Hardie who put it best: “the bottom line is, and always has been marketing” (John Harding via interview). Leonard Herman continued in

that vein by explaining that “companies are not going to spend money developing games if they don't expect a significant return on their investment” (Leonard Herman via interview). What has changed, rather than the forces which drive software development, are the methods pursued in the achievement of profit goals. Whereas games such as *Pong*, *Galaxian*, and *Galaga* could originally be programmed by a small team, today's games “now come from teams of 75 people spending as much as \$45 million (*Shenmue*)” (Steven Kent via email interview).

The Future of Classic Gaming

Apart from the decision to re-issue *Ms. PacMan* and *Galaga*, and its ensuing arcade success, ample evidence exists that the classic gaming genre will continue to flourish. Several websites exist that are solely devoted not only to preserving screen shots and hardware information, but also to offering forums for the continued exchange of vintage gaming materials between gamers. These websites include www.classicgaming.com, www.digitalpress.com, and the classic videogame nexus, among others. In addition, a variety of publications, including *Classic Gaming Magazine*, exist in conjunction with such conventions as the Classic Gaming Expo, and Videotopia to propagate the expansion of older games to the newer players of today. Asked whether or not he felt that there was a place for classic games in today's market, Mr. Cavanaugh replied:

“I think the vintage gaming will hold up quite well as time goes on. There are so many people dedicated to keeping them alive while also preserving in both the literal and figurative sense. It seems more and more conventions keep popping up and the more established ones seem to be attracting more people every year. Classic Gaming Expo in Las Vegas (www.cgexpo.com) has become such a party for us all to get together

in place and just play games for the sake of playing them. Smaller get togethers are also constantly going on in various parts of the country. I think once people are bitten by the classic gaming bug it pretty much stays with them for life” (Chris Cavanaugh via email interview).

Conclusion:

Returning to Steven Spielberg’s opening comments, it does, in fact, seem apparent that the aliens have landed. The story of *Space Invaders*, how it led to *Galaxian*, and the ultimate culmination of the series with *Galaga*, remains an excellent example of how the aliens have shaped American culture and lifestyle. Out of the success created by these space invaders grew Namco, one of today’s videogame industry leaders. Namco continues to provide games that push the programming envelope. Yet, as its release of *Ms. PacMan* and *Galaga* clearly indicate, some of their previous projects continue to provide playing enjoyment for their audience long after their initial introduction. And as Chris Cavanaugh strongly supports, that sort of gaming associated with older games, vintage gaming, has found a niche among gamers that takes its roots in the nostalgia and simplicity associated with their simple plot and easy maneuvers. It certainly appears that the future of vintage gaming appears promising, and that rather than face replacement by newer games of more sophisticated technology, some classic games—particularly *Galaga*—will find success with gamers not only because it takes them back to a simpler day, but also because that is how it all got started in the first place.



Galaga Screen Shot

Galaga Screen Shot

Both Screen Shots From: <http://www.klov.com/G/Galaga.html>

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