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<div align="center">Breaking into the Future: The Significance of First-Generation Video Games</div>

You are suddenly and inexplicably transported to an arcade in the year 1971. In some ways, you find that it's quite similar to modern arcades; there are bright colors, ugly carpet, and the sound of people having fun. Yet, there's one glaring difference: most of the machines seem to be for pinball. There's not a video game in sight! As you walk through the strange arcade, you spot a small crowd gathered by one particular machine. On its screen, a few blocky white shapes zoom around. "It's a video game, but it looks so boring," you think to yourself. "Why are people playing it?" In the early 1970s, video games were a new and largely unknown medium. All games have the goal of bringing an enjoyable experience to their players, but the first generation of video games also had the important duty of introducing the public to gaming. In order to accomplish this, they needed to be easy for the average person to understand. Take *Pong*, for example. Developed by Atari in 1971, it was a simplified version of table tennis. Players could control their paddles and bounce a ball across the screen to score against the opponent. Five years later, *Breakout* also had players taking control of a paddle and bouncing a ball. This time, however, the aim was to break bricks and earn as many points as possible. Although these games were very successful at the time, it's hard to imagine them faring as well if they were introduced today. It may seem that there was very little progress during this early period. But by viewing games like *Pong* and *Breakout* through the lenses of abstraction theory and the MDA model (Mechanics-Dynamics-Aesthetics), we can better understand how they convinced the first gamers to keep playing and set the course for gaming to grow and develop as a medium.

Before we get to the good stuff, however, we must acquaint ourselves with the lenses. The theory of abstraction explains which actions a player is or is not allowed to take within a video game. In the real world, there are countless ways to interact with objects, but a game designer can only implement a finite set of activities. In other words, games can only depict their subject matter with a limited amount of detail. This may seem like a problem, an obstacle to overcome in the creation of a game, but abstraction can be a tool used for the benefit of the player. A game that abstracts something familiar is "more accessible to new players, because they can use the fiction to make inferences about the rules" (Juul). New players might not know how a game works at first, but the story of the game can assist them in learning how to play. In this context, "story" doesn't necessarily refer to narrative. For example, in a game that is an abstraction of a sport, its story can include the rules of that sport in real life. In a game about space exploration, its story might include gravity. Abstraction can also make a game simpler; if there are fewer variables to keep track of, then a game becomes easier to understand. For example, as Juul suggests, "the [number] of possible actions is more manageable when players can only attack each other from the front or the back; it makes the game easier to learn." His example refers to a modern fighting game, but the same logic can be applied to our first-generation games as well. Now, on to the next lens.

The MDA framework allows for clearer discussion and understanding of game design. It identifies a game's key design components as its mechanics, dynamics, and aesthetics, or MDA. Mechanics are defined as "the various actions, behaviors and control mechanisms afforded to the player within a game context. Together with the game's content (levels, assets and so on) the mechanics support overall gameplay dynamics" (Hunicke et al. 3). In other words, they are the ways in which a player can interact with the game. Aesthetics are not a game's visual style, but rather the emotional experience it provides to the player, such as discovery, narrative, or challenge. They are usually what entice a player to play the game. From a designer's perspective, a game's mechanics create its dynamics, which in turn create its aesthetic experiences. However, different players see

the same games from different points of view. According to Hunicke et al., "When working with games, it is helpful to consider both the designer and player perspectives. . . . [T]hinking about the player encourages experience-driven (as opposed to feature-driven) design" (2). Put another way, the quality of the experience (or aesthetic) often matters more to the player than the number of features (or mechanics) in a game. The goal of any game should be to deliver an enjoyable experience to its players. If it can accomplish this goal, then success will surely follow. This is especially true of the first-generation of video games, and analyzing them through these lenses will reveal just how they were able to flourish, starting with *Pong*.

The combination of *Pong*'s simplicity and engaging gameplay experience allowed it to be an incredibly successful first-generation game. But for those who haven't played it, what was it like? *Pong* is a two-player, competitive, video-game version of table tennis. Each player controls a paddle, which can move up or down, to hit a ball back and forth across the screen. If one player misses the ball, the other player scores a point, and the goal is to reach a certain number of points. It seems awfully simple, and yet it was exactly what video games as a medium needed to get off to a strong start. That's because *Pong* is an abstraction of a pre-existing, real-life game. The creators of *Pong* knew that constructing a game with a familiar subject matter would make it more approachable. Someone who had never played a video game before would be able to see a ball bouncing off of two paddles on a screen and predict what the rules might be. Once that person starts playing, they'd find a game that is easy to understand because of its simple level of abstraction. Many scenarios that are possible in real table tennis are notably missing in *Pong*. The player can only move their paddle up or down, not in any other direction. The ball will keep bouncing until someone misses it. There is no net in the middle of the table for the ball to get caught on, nor are there sides of the table for it to fall off of. By omitting these details, the game allows its players to more easily learn the controls.

Now the first gamers knew how to play, but why did they keep playing? What made *Pong* such an enjoyable experience? Just like its subject matter, *Pong*'s mechanics are quite simple. The player can control their paddle, moving it up and down, and use it to bounce the ball from one side of the screen to the other. While the ball always moves in a straight line, its speed and angle vary depending on where it lands on the paddle. When one player misses the ball, the other scores a point. Both players' scores are displayed at the top of the screen. These mechanics create interesting dynamics, such as one player trying to hit the ball so it bounces at a strange angle or speed. The other player might respond by following the ball with their paddle in an effort to predict its movements. These dynamics come together to create *Pong*'s aesthetic experiences, the most apparent of which is *challenge*. Just like real table tennis, the game requires a certain amount of skill in order to win. One must be able to follow the movements of the ball, react quickly enough with the paddle, and outmaneuver the opponent. For some players, proving that they are the best makes *Pong* more enjoyable. An equally important aesthetic is *fellowship*, or the social nature of the game. As a two-player experience, *Pong* allows players to spend time with their friends, or even make new ones. Whether it was for one of these aesthetics or for others, early gamers had quite a few reasons to keep playing, and *Pong* became a great success. However, it was only the beginning.

Subsequent games like *Breakout* offered somewhat more complex experiences. *Breakout* is essentially a single-player version of *Pong*. The player controls a paddle, which can move left and right, to bounce a ball and use it to break bricks. When they break, the bricks award a certain number of points. If the player misses the ball, they lose a life. The goal is to score as many points as possible before running out of lives. Even from that brief description, it's clear that *Breakout* has more variables to keep track of in terms of mechanics than *Pong* did five years prior. There is a life system, for example. Even if they miss the ball, the player can keep playing without starting over, but only a certain number of times. This creates a dynamic where the player is aware of their limited lives and actively tries to preserve them. Additionally, the bricks have different point values

depending on which row they are in, with bricks closer to the top being worth more. The game communicates this point difference to the player through color and sounds, which were not available in *Pong*. The aesthetic of challenge returns from *Pong*, as players must still keep their eye on the ball and react quickly with the paddle. This time, however, fellowship is replaced with *submission*, or playing in order to pass the time. *Breakout*'s repetitive yet fast-paced gameplay loop makes it a great way to waste a few minutes on a boring afternoon.

Because of these and other aesthetic experiences, *Breakout* became just as successful as its predecessor. The success was due not only to the advancement in mechanics, but also to the game's level of abstraction. At first glance, it may not be obvious what real-life experience *Breakout* is supposed to abstract. Why is the player in a strange space with a bunch of bricks, and why is the ball strong enough to break them? Looking at the game's arcade cabinet yields a clue: there is a drawing of a prisoner breaking through the title with a hammer. Apparently, *Breakout* is an abstraction of a prison break, yet it is simplified almost beyond recognition. The player can't choose to dig under the wall instead of breaking through it. There is no threat in the form of guards to prevent an escape. There is only the paddle, the ball, and the bricks. However, at this point in video game history, players were willing to look past these limitations in favor of the interesting gameplay it provided. This highlights the ways in which games as a medium were able to grow in the years since *Pong*. They were given the space to become more complex, in terms of both mechanics and abstraction, while still creating an enjoyable experience.

It's clear that the first generation of video games were not as primitive and unchanging as they may appear. They were, in fact, growing and developing from the start. Viewing these games through the lenses of the MDA model and abstraction reveals how they were able to capture the first gamers' attention and become more complex. In the 1970s, video games were a new and largely unknown medium. Early games like *Pong* were tasked with introducing people to the concept of gaming. They accomplished this by combining a simple, approachable subject matter

with mechanics that were easy to understand, yet still interesting. Once the first gamers were familiarized with the medium, the games they played started to become more elaborate. *Breakout* was then able to provide new and more complex mechanics, as well as an enjoyable experience. In the years between *Pong* and *Breakout*, video games as a medium took a number of significant baby steps that set the stage for further growth and development in the decades to come. Many games that we enjoy today owe their success to these first few titles. So, the next time you start a new RPG you've been looking forward to, or play a round of Mario Kart with your friends, remember that it was all possible because of a few blocky white shapes in an arcade.

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