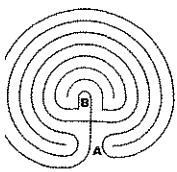


LABYRINTH AND MAZE

Video Game Navigation Challenges

Since Plutarch wrote about the myth of the Minotaur, labyrinths and mazes have been visual motifs, both as architectural spaces and as metaphors. Physically, labyrinths and mazes are bounded spaces to be traversed; their main purpose is to delay the walker as he goes from point A to point B. This delay can be achieved by extending the distance between those two points, tracing meandering paths or branching those paths and forcing the walker to guess the correct one. Confusion and disorientation are also ways to obstruct the path to the exit. Metaphorically, literary labyrinths and mazes thrive on just such confusion as well as on the impossibility of their representation – think, for example, of Borges' short tale "La Biblioteca de Babel" (The Library of Babel) (1995). The video game, as a digital medium whose basic properties include spatiality (Murray 1997, p. 79), has also taken up the maze as a common motif and added new properties to it. Most significantly, instead of just recreating physical spaces, some games represent impossible spaces that until recently were only conceivable in literature.



the classic labyrinth.

In the gaming context, the general term for any intricate structure is "labyrinth"; this term refers to all labyrinthine structures, including mazes. The terms "labyrinth" and "maze" tend to be used interchangeably, even though Umberto Eco (1984, pp. 80-81) and Hermann Kern (2000, p. 23) have (separately) made a very useful distinction between the two. The classic labyrinth is unicursal – that is, it consists of one single winding path that folds within itself; the labyrinth in Chartres Cathedral is the classic example of this type. Though walkers cannot get lost traversing such a labyrinth, they are disorientated and delayed in the seemingly simple process of going from one point to another. Labyrinths do not present a test to their visitors; rather, they are a way to stretch the distance from one point to another. The absence of a difficult task along with the existence of a unique path, make labyrinths an unproductive structure in video games. If there is only a single path the game feels as though it is "on rails" like a theme park ride: the user cannot choose where to go. Unicursal structures are thus scarce in video games. Even games that go "on rails," such as *House of the Dead* (1997), offer branching paths (though the player cannot really get lost because all branches eventually lead to the same place).

The maze is a special type of labyrinth that was born as a literary construct and later became a visual space (Kern 2000, p. 23). Mazes are more complex than classical labyrinths; they are multicursal, meaning that there are many ways in which they can be traversed. They are characterized by branching paths and dead ends so that the walker is forced to choose her direction. Video games favor maze structures since navigating them already constitutes a challenge, which can be further

amplified by obstacles along the path, such as enemies, chasms or projectiles. They represent a consistent architectural location, imitating a space that is in accordance with our perception of the physical world. Games such as *Wolfenstein 3D* (1992) or *Castlevania: Symphony of the Night* (1997) present spaces that can be mapped and traced as if they were real. These spaces are stable and unchangeable.

When dealing with mazes and labyrinths, one must also bear in mind the fact that having a complete view of the circuit is very different from being inside the circuit. Solving a maze from a top-down view, as in *Maze Craze* (1980), is relatively easier than solving it while walking inside it, as in *3D Monster Maze* (1982). Looking in on the maze from above, the walker knows where she starts and where she is supposed to go and can preview the route she wants to take. From a first-person point of view, on the other hand, the walker is forced to navigate in order to learn what the structure of the space is and to make a mental map of it.

The quintessential top-down maze game is *Pac-Man* (1980), which presents a multicursal structure, but one in which the player cannot get lost because she has a complete view of the playfield. The meandering paths are meant to delay and hinder the movement from one spot on the screen to another. Conversely, in *Pac-Man Vs.* (2005), up to four players control the ghosts simultaneously chasing Pac-Man in a 3D maze, but they have a limited view of the space around them and do not have a map. In this case, the playfield is more disorienting and feels more like the maze that it is.

The paths in video game labyrinths can also be dynamic. They can include, for example, walls that open and close so that timing becomes an important factor in their navigation. *Lock 'n' Chase* (1981), for instance, is an interesting variation on the *Pac-Man* model: the player character is the famous thief Lupin, who must pick up the treasures in a maze without getting caught. The doors play an important strategic role, as the player can open and close them (for a limited time) in order to stall the policemen chasing him. Other interesting examples of dynamic mazes (though they are not usually referred to as such) are the popular *Snake*-type games, such as *Nibbles* (1990). In *Nibbles*, the player must move a snake around the screen, picking up food and thereby elongating the snake's body. The player must avoid hitting walls – either those surrounding the playfield or those of the obstacles that appear in the middle of it – as well as the snake's own body, which becomes yet another wall and one in constant motion, at that. Because the snake can only move forward, not pull back, the player must be careful not to end up in a cul-de-sac as a result of the snake's meandering, since that would mean that the game is over. Video games can challenge traditional concepts of mazes by creating liminal spaces that seem to reproduce physical spaces but in fact incorporate ever-changing, unmappable features. This topic has already been addressed by some philosophers, though not in the context of video games. In addition to classical labyrinths and multicursal mazes, Eco proposed a third type of labyrinthine space: the rhizome. Based on a concept first proposed by Gilles Deleuze and Félix Guattari, Eco describes the rhizome as a structure in which every point is interconnected with every other point. Eco equates encyclopedias with labyrinths, which makes it all the more appropriate that the structure of the Internet is often considered to be a rhizome. The encyclopedic properties of video games as digital media (Murray 1997, p. 85) also make it

possible to integrate some of the qualities of the rhizome into the creation of digital spaces that are unstable, untraceable and volatile. This variability increases the challenges of navigation, since the inherent confusion caused by navigating the maze is combined with the confusion caused by encountering digital elements that have no real-world equivalents.

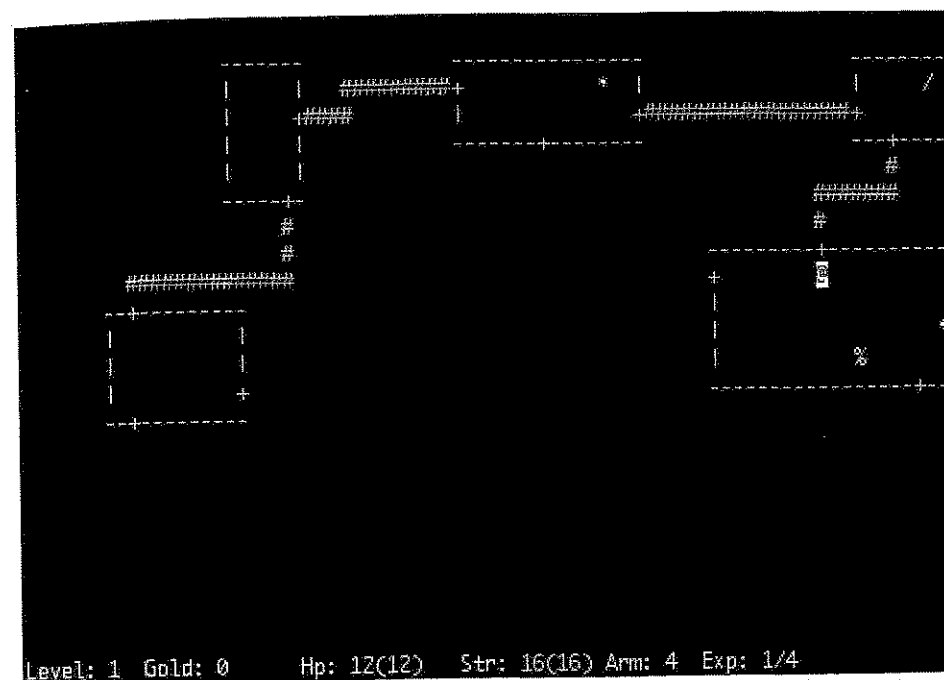
At times, the complication can arise simply from a segmented representation of the whole space. This is the case, for instance, in the original *Prince of Persia* (1990), in which finding the way out of the dungeon in the first level is made more complex by having to traverse the space screen by screen. This fragmentation can also be exploited to create unmappable spaces, which constitute mazes in and of themselves. The signpost maze in *The Legend of Zelda: The Minish Cap* (2005) is one such maze, generated through the segmented representation of the space. The player must choose the correct exit to the next screen according to a given clue. For example, the player goes left in the first screen, then right, which does not take her back to the previous screen, but is actually the next step in the maze. If the player chooses the wrong exit, the player character, Link, will end up back in the first screen of the maze.

The challenge can also be increased by the possibility of creating spaces procedurally, so that a map is created on the fly. This is, for example, the case in *Rogue* (1985), in which the graphics are constructed with ASCII characters, and the player discloses the space as she navigates. The dungeon map is generated anew whenever a game starts, increasing the replay value by offering potentially infinite dungeon configurations.

Labyrinths as ways of directing and delaying navigation and mazes as challenges to traverse are not only good assets for video game worlds. The properties of digital media make them even more challenging by making the spaces they occupy dynamic, unstable and ever-changing or by proposing new spatial configurations that players are not familiar with in the real world.

The author wishes to thank Professor Manuel Aguirre, who introduced her to the study of labyrinths and other fictional spaces and encouraged her to pursue the study of video games.

♦ Borges, J. L. (1995), *Ficciones*, Alianza Editorial, Madrid. ♦ Eco, U. (1984), *Semiotics and the Philosophy of Language*, Indiana University Press, Bloomington. ♦ Kern, H. (2000), *Through the Labyrinth: Designs and Meanings over 5000 Years*, Prestel, Munich. ♦ Murray, J. H. (1997), *Hamlet On The Holodeck: The Future Of Narrative In Cyberspace*, The MIT Press, Cambridge MA. ♦ *3D Monster Maze* (Sinclair ZX81) (1982), developed by Malcolm Evans, published by J.K. Greye Software. ♦ *Castlevania: Symphony of the Night* (Sony PlayStation) (1997), developed and published by Konami, Japan Release. ♦ *House of the Dead* (Arcade) (1997), developed and published by Sega, US Release. ♦ *The Legend of Zelda: The Minish Cap* (Gameboy Advance) (2005), developed by Flagship Co. Ltd., published by Nintendo of America, US Release. ♦ *Lock 'n' Chase* (Arcade) (1981), developed by Data East, published by Taito. ♦ *Maze Craze: A Game of Cops 'n' Robbers* (Atari 2600) (1980), developed and published by Atari, US Release. ♦ *Nibbles* (DOS) (1990), developed and published by Microsoft Game Studios. ♦ *Pac-Man* (Arcade) (1980), developed by Namco, Published by Midway, US Release. ♦ *Pac-Man Vs.* (GameCube) (2005), developed by Nintendo, published by Namco, US Release. ♦ *Prince of Persia* (DOS) (1990), developed and published by Broderbund Software. ♦ *Rogue* (DOS) (1985), developed and published by Artificial Intelligence Design. ♦ *Wolfenstein 3D* (DOS) (1992), developed



First level of *Rogue*, procedurally generated.