

Understanding Japanese Design Philosophy: Designing a *Zelda*-Styled dungeon

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Abstract: *Differences in culture inform differences in forms of expression, including video games. As a result Japanese and American video games approach certain aspects of design in different ways. This thesis investigates Japanese design by focusing on Zelda design and then demonstrates mastery over it by constructing a Zelda dungeon in the Half Life 2 engine.*

I. INTRODUCTION

A cultural divide between the East and the West has always existed. Eastern cultures are very old and have remarkably maintained traditions over centuries, despite attempts at the opposite like the Chinese Cultural Revolution. On the other hand, Western cultures, especially America, were birthed out of a desire to reject the old and break from their history. Each culture has different behaviors, attitudes and values, where the West holds personal freedom very high; the East has a greater focus on honor and respect. These differences permeate through every expression of both cultures including art, music, architecture, movies and video games.

Ever since the debut of the Nintendo Entertainment System [1] in 1983, there has been a divide between video games designed using a Japanese philosophy and games designed using an American philosophy. While both design styles have many similarities, like a focus around finding the fun, they approach player experience in some different ways. Western games like the *Call of Duty* [2] series focus on immediate and clear player

gratification through the use of achievements and visual rewards. While Japanese games also deliberately reward the player, it is often delayed gratification and includes less meta-gaming in its rewards system. *Super Mario Bros.* [3] is a great example where the player can find many secrets such as the hidden warp zone which rewards exploration without explicitly telling the player that they have accomplished something. Due to the variety of video game genres, this thesis only further considers Action-Adventure/Role-Playing games.

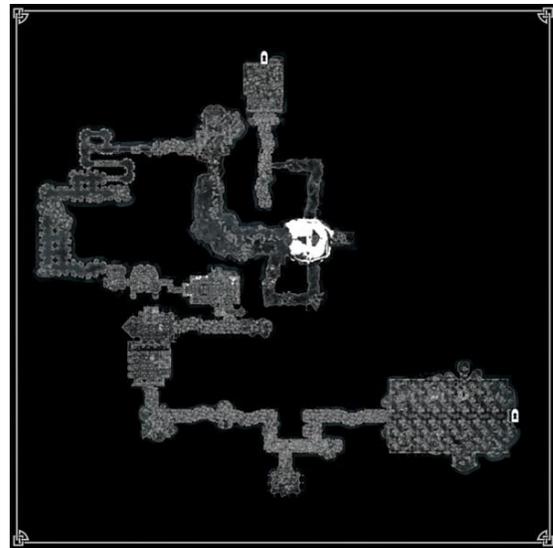


Figure 1: The dungeon map of Bleak Falls Barrow's first zone from *The Elder Scrolls V: Skyrim* [7]. Notice the linear path from beginning to end.

Two game series that clearly demonstrate this divide in design philosophies are Nintendo's *The Legend of Zelda* [4] series, developed in a Japanese-style, and Bethesda's *Elder Scrolls* [5]

series, developed in a Western-style. *The Elder Scrolls V: Skyrim* [6] opted for a plethora of linear dungeons (see Figure 1) to elicit a sense of wonder through its breadth of content and environments instead of the exploration offered in individual dungeons. While its level design is linear, *The Elder Scrolls V: Skyrim* allows the player to explore its world at their pace. The *Legend of Zelda: A Link to the Past* [8], on the other hand, requires the player to take an active role in exploration to complete the levels and rewards players by increasing their set of tools and paths they can take (see Figure 2). It is this latter set of examples that this mastery focuses on: the philosophy of obscuring the critical path from the player and creating a sense of wonder and joy in discovering it.



Figure 2: The first floor map of The East Palace in *The Legend of Zelda: A Link to the Past* [9]. Note the variety of paths the player can take.

This work investigates the differences between the two design philosophies and then applies the Japanese style by creating a *Zelda*-style dungeon in *Half Life 2*'s Source Engine. This artifact demonstrates the underlining

principles that govern *Zelda* dungeon design, which is built in a Japanese style. It incorporates the specific techniques that the best *Zelda* dungeons use, detailed in the literature review, while avoiding common mistakes in Japanese designs.

II. LITERATURE REVIEW

Video games, like any art form, are influenced by the culture in which they were born. Therefore this study begins its review with a brief overview of big picture cultural differences between Japan and America before moving into a discussion of design differences. Lastly, this section analyzes *Zelda* specific philosophy and basic takeaways that are included in the design of the artifact.

A. Overall Cultural Differences

Perhaps the most important aspect of American culture is the emphasis on personal freedom [10]. The country was founded on the principle that individuals should be allowed to choose their political and religious beliefs freely, without interference from others, which was unlike much of Europe at the time. Similarly, Americans enjoy free markets with consumer choice that creates competition.

Keiji Inafune, producer of *Dead Rising*[11] and *Lost Planet*[12], describes Americans as “excited by the unknown” referencing their origins as a hunting society. He hypothesized that if an American was hunting for deer and encountered a bear instead, he would shoot it and consider the unexpected a bonus. The very fact that Americans have the constitutional right to bear arms is significant when compared to other nations. Ever since the end of the Second World War to present day, America emerged as the primary superpower fueled by the strongest military on the planet.

While the origins of America were rooted in hunting and trapping society, Japanese culture originates in its wet-rice agriculture and its identity as an isolated island nation. Inafune suggests that in Japan, people want to plan out their course of attack, with guidance and

structure. Where Americans might enjoy the thrill of the unknown, the Japanese have anxiety about it.



Figure 3: Traditional shinsengumi uniform [13]. Notice the bright and contrasting colors.



Figure 4: Union Civil War uniform [14]. Notice the dull coloring.

Japanese culture is very old when compared to American culture. John Oppliger, employee at AnimeNation.net, boasts of the several thousand years of artistic traditions that Japan has, including the pictorial and symbolic nature of their writing system, which is unique when compared to the English script [10]. This divide can be further observed looking at both nations military uniforms before Japan's ports were forcibly opened by Commodore Perry in 1858 (see Figures 3 and 4). The Japanese uniform is brightly colored and elaborate while the American civil-war one is duller and more practical.

Lastly, Japan has not had a significant military presence since the end of the Second World War.

B. Overall Design Differences

With the cultural context set up highlighting important differences between the birth places of American and Japanese games, one can understand major design differences between Japanese and American games.

American games include lots of player choice in their games from letting player customize how the player character looks, as seen in *Mass Effect* [22], to being able to choose their next destinations as seen in *The Elder Scrolls V: Skyrim*. Player agency is extremely important in American games because people who play American games greatly enjoy the empowerment associated with their design. In fact, several genres were birthed out of this desire of player agency, namely the god game, for example *Populous* [16], and the open world, consider *Ultima I* [17], genres.

This philosophy of player choice applies even to how the player camera is designed; most western games let the player control the camera. *Metal Gear Solid 3* [18] was re-

released as *Metal Gear Solid 3: Subsistence* partially to please American gamers who prefer a controllable camera since the original's camera was not.

Perhaps the most recent and important manifestation of player agency in American games comes from games that allow the player to make critical moral decisions for the player character, as seen in *Infamous* [19] and *Spec Ops: The Line* [20]. These preferences in taste logically follow from the emphasis America has on personal freedom.

The most popular American games, especially recently, include shooting guns whether first person like *Call of Duty: Ghosts* [21] or third person like *Gears of War: Judgment* [22]. This naturally follows considering the prevalence of gun culture in America.

From an art standpoint, American games place a heavy emphasis on realism, especially after the transition into the third dimension. Series like *The Elder Scrolls* and *Call of Duty* push the limits of how realistic environments and characters can be with each new entry.

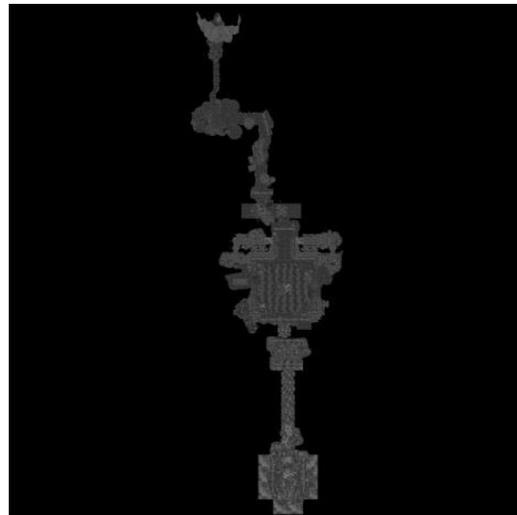


Figure 5: Map of Angarvunde: a typical cave in *Skyrim*. Notice the linear path through it [23].

Despite the prevalence of player choice in the overall design of American games, the individual levels that the player traverses are often very linear, whether it is a *Call of Duty* level, a *Skyrim* cave system (see Figure 5), or a *Mass Effect* mission. Western gamers enjoy deciding what immediate goal to attack next, but once that choice has been made they like moving straight to achieve that particular goal.

Like American games, Japanese games are heavily influenced by the culture surrounding it. The most important element in Japanese design, and the one that conflicts with Western design the most, is the focus on having a clear structure in the game. Inafune describes the Japanese as wanting the time to plan ahead for their next move and before executing it and seeing the predictable outcomes of their actions [10]. He connects this back to the origins of the society, which was in wet-rice agriculture.

This emphasis on structure manifests itself in a variety of ways, such as the Japanese Role-Playing Game genre or JRPG. JRPG franchises like *Final Fantasy* [24] and *Persona* [25] have linear stories with very clear end goals. The player knows long before the end of the game who the villain is and what needs to be done to stop his scheme. In *Final Fantasy VII* [26], the player controls Cloud Strife and company to stop Sephiroth's evil plan to bring down a meteor on the planet. While there are many twists and turns in the story, it is clear that Sephiroth needs to be dealt with long before the player actually fights him. Hiroyuki Kobayashi, developer of several *Resident Evil* [27] games, argues that a linear story keeps the flow of the game smooth from beginning to end, much like a novel [10].

Even when a JRPG gives the player freedom, the player still always has a clear objective to move the story along. *Final Fantasy VI* [28] is a

good example of this; after the villain, Kefka, gains the power of the goddesses and ruins the world, the player no longer has a clear place to go to next. The player lost his party after the calamity and is instructed to defeat Kefka once and for all. However, the player can explore the remains of the world at his leisure, finding old allies to aid him against Kefka. Even though the player is given an opportunity to go to various places, the player knows that their final destination is Kefka's tower and that in order to progress further, he needs to go there.

Another form of structure in JRPGs is in its combat systems, which are usually either turn-based or pseudo real-time. This gives the player ample time to analyze his situation before reacting to it. Secondly, the results of player actions are predictable, using a fire spell results in the enemy taking fire-based damage. The focus on gameplay in JRPGs is less about skill and execution and more about making the correct decisions and planning ahead. This style of gameplay contrasts heavily with the intense heat-of-the-moment action that American shooter games like *Call of Duty* offer.



Figure 6: Cloud Strife from *Final Fantasy VII* [29]. His look is archetypical of Japanese male heroes.

JRPGs are very structured even when it comes to art. Players generally do not have the freedom to influence how their characters look or what gender they are. Instead the development team offers the player a focused and crafted look for each character that plays into the character personality and narrative. For example, in *Final Fantasy VII*, Cloud Strife's long spiky hair and bishōnen, or "pretty-boy", look compliment his impressive combat abilities and his disillusioned state of being (see Figure 6).

Lastly, JRPGs include structure even in their camera system. Few JRPGs allow the player to influence the camera. Instead developers use fixed cameras and pre-rendered backgrounds to control what the player sees at any moment and how they see it. This allows them to better craft the exact experience they want their players to have rather than attempting to account for every way a scene could be viewed.



Figure 7: Tartarus from *Persona 3* [31].

Despite the trend of Japanese games maintaining strict authorial control, they also tend to have levels with branching paths and confusing layouts. Though the player must traverse through a given area, they must navigate it themselves without being explicitly guided. A good example of this is the Tartarus dungeon in *Persona 3* [30]. *Persona 3* forces the player to explore sections of Tartarus at certain points in the game, but the layout of Tartarus requires the player to figure their way up to the next floor (see Figure 7).

In terms of subject matter, Japanese games often are located in a strange fantasy world filled with wondrous creatures and magical creatures. The narratives involve topics from coming-of-age to the purpose of life. Considering the demilitarization of Japan after the Second World War and its currently high rate of teenage suicide [32], it's not surprising to see these themes resonate with the population as opposed to ones of modern warfare and guns.

C. *Zelda* specific design patterns

Having explored many of the basic design philosophies of Japanese games, *Zelda* specific design techniques can be better understood. It's important to note that not all *Zelda* design decisions are products of Japanese design trends. Many are simply made for the better of the franchise, or guided by its directing figures, such as Shigeru Miyamoto. For the purposes

of this mastery and the construction of its artifact, *Zelda* specific design decisions have priority over general Japanese trends. At the end of this section is a summary of specific features and techniques that this mastery's artifact borrows from *Zelda*.

Even though *Zelda* games have been praised and reviewed by many, there are surprisingly few academic analyses of its level design. One of the few [33] is by Mike Stout discussing the original *Legend of Zelda* [34]. In it, he discusses four major elements that make the design work: Level Flow, Intensity Ramping, Variety and Training.

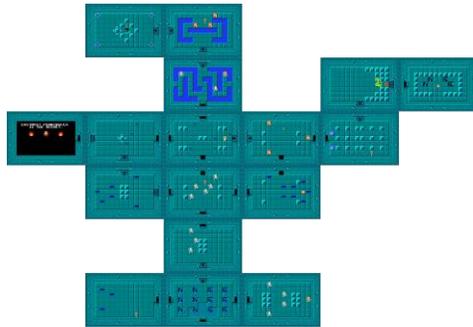


Figure 8: A top-down map of the first dungeon in *The Legend of Zelda* [35]. This layout is typical of *Zelda* dungeons: confusing, but with a critical path.

Level flow is the way in which the physical spacing in a level connects with itself. A level that is a long corridor has a very different level flow compared to one with many interconnected passages (see Figure 8).

Intensity ramping refers to the way that difficulty increases as the game goes on. Typically, games start out easy when they introduce new concepts and then force mastery from the player later on.

Variety is the diversity of obstacles and challenges presented to the player. Presenting the player with the same types of challenges becomes boring for the player, making it important to introduce new obstacles.

Training is how the game teaches the player new mechanics and how they are tested afterwards. Most games use the first level as a tutorial, teaching the player the game's overall gameplay.

Though Stout discussed these ideas about the original *The Legend of Zelda*, a 2D game, they equally apply to 3D *Zelda* games, such as *The Legend of Zelda: Ocarina of Time* [36] or *OoT*. While dungeons in every *Zelda* game are informative and provide design insight, this mastery focuses on *OoT*, due to its level of universal acclaim by both critics and fans [37].



Figure 9: Atrium room of *OoT*'s first dungeon, *The Deku Tree* [38]. On the ground floor is a spider web, preventing entry below it.

OoT makes frequent use of atriums, rooms that have a visible, central area, that tease the player with a place they want to enter but cannot at first. The player has to progress through enough of the dungeon before they can enter this area. This technique is used by the following dungeons or levels from *OoT*: *The Deku Tree* (see Figure 9), *Dodongo's Cavern*, *Forest Temple*, *Fire Temple*, *Water Temple* and *Spirit Temple*. In *The Deku Tree*'s case, a spider web on the ground floor prevents the player from accessing the area below it until he reaches the top of the room and jumps onto the web, breaking it and unveiling a new area.

This creates a sense of wonder and curiosity in the player that drives him forward to continue to explore and progress through the dungeon. The inclusion of an atrium room is a feature of this mastery's artifact.



Figure 10: A locked door in *OoT* preventing access until the player opens it with a key [39].



Figure 11: A barred door in *OoT* preventing access until the torches in the room are all lit [40].

Two basic techniques that *Zelda* dungeons use to control level flow are locked doors (see Figure 10) and barred doors (see Figure 11). A locked door blocks the player until he unlocks it with a key, which is then consumed. A barred door stays shut until some condition is met, oftentimes flipping a switch or lighting a set of torches. Furthermore, a special type of locked door called the boss door prevents entry into the boss room until the player unlocks it with the boss key. This mastery's

artifact has both locked doors and barred doors in its design.



Figure 12: Floating ferry in *OoT*'s Shadow Temple. It sails on mist as the player rides it until it suddenly shakes and sinks into a dark pit [41].

In most *Zelda* dungeons there is a puzzle or two that has a strong aesthetic element to it, raising it above simply being a cognitive challenge. While such elements are hard to precisely define, they have enormous impact on player experience. Consider the ship floating on mist in *OoT*'s Shadow Temple (see Figure 12). The situation is set up as a common puzzle with an image of the trident, a sacred relic, on the center of the deck. The player knows that this means to play a special song on the ocarina. After, the bells begin to ring and the ferry begins to move. A pair of enemies greets the player, but the boat sinks after a set period of time, whether or not the enemies have been defeated. This creates a strong moment of tension that is highly memorable. From a mechanics standpoint, the boat could have been simply a rectangular platform, but by using a boat plays off the familiar theme of a ferry carrying passengers over the river Styx in Greek mythology. This mastery's artifact includes similar visual set-pieces in order to capture the imagination of the player.



Figure 13: Notice the multiple and winding paths of *Oot*'s second dungeon: Dodongo's Cavern [42].

Zelda temples also tend to hide the critical path so that the player must carefully navigate the paths in order to progress through it. Consider the layout of Dodongo's Cavern, the second dungeon in *OoT* (see Figure 13).

Zelda design also consistently ensures that whenever a consumable resource, such as arrows, is needed to get out of a situation that they are provided for the player. An example of this is when the player battles King Dodongo, in *OoT*. Only bombs can cause the beast to become vulnerable, but the player can only store a limited amount of bombs, therefore the room has an infinite number of bombs for the player to use. This mastery's artifact always provides the player with the resources they need to succeed.



Figure 14: The hover boots allow the player to walk across wide gaps in *OoT* [43].

the Deku Stick in its use as a weapon and as an agent to burn objects, Hookshot in its ability to both pull objects to the player and to pull the player to objects, Bow and Arrow in its use as a ranged weapon and in its ability to light on fire if it flies through a burning torch, and Hover Boots in ability to let the player walk on air (see Figure 14) and be pushed by wind. This mastery's artifact incorporates one item in its dungeon: the Fire Crossbow.

Lastly, the best *Zelda* temples incorporate puzzles that are initially easy and intuitive, but can be layered to be more complex and challenging. This creates a positive cerebral experience that doesn't halt gameplay progress.



Figure 15: An early hookshot puzzle in *OoT*'s Water Temple [44].



Other dungeon-wide techniques include the use of items that enable exploration and dynamically create interesting gameplay, like Figure 16: A later hookshot puzzle in *OoT*'s [45] Water Temple. The player already knows the basics of the hookshot before encountering this puzzle.



Figure 17: Only after mastering the hookshot and its upgraded version, the longshot, does the player battle against the dungeon's boss: Morpha in *OoT*'s Water Temple [46].

The Water Temple in *OoT* provides good examples of hookshot puzzles. Early on in the dungeon, the player faces some simple situations that require the player to appropriately use the hookshot (see Figure 15). Later on, however, the player must hookshot from sinking platform to sinking platform in order to progress (see Figure 16). Another timed puzzle forces a quick and accurate longshot, an upgrade to the hookshot, before a gate falls and blocks the player. Lastly, accurate uses of the longshot are required to bring down the boss of the dungeon (see Figure 17). This mastery's artifact includes intensity ramping regarding the use of dungeon items just as in *Zelda*.

Another piece of literature that is important to this mastery is a detailed reaction to a first-time playthrough of *OoT* by a player who is unfamiliar with *Zelda*-styled dungeon design [47]. This review focuses on an honest reaction to the game's puzzles, level flow and overall fun factor. It offers a down-to-earth, real and extensive user-story that is unbiased by nostalgia or enthusiasm for the franchise or game-style, which is rare due to the exposure of *The Legend of Zelda*.

In conclusion, the *Zelda* elements that this mastery's artifact includes are:

- Central atrium room
- Careful intensity ramping with puzzles throughout the dungeon
- Locked doors and barred doors to control level flow
- Unique items found in the dungeon
- Aesthetic set pieces that capture the player's imagination
- Care to provide players with necessary resources
- Interconnected level layout that obscures the critical path
- Training basic puzzle elements before combining them

III. METHODOLOGY

The purpose of this thesis is to demonstrate understanding and communicate the basic principles of Japanese design philosophy by creating an artifact level built in the style of *Zelda* dungeons. There are several reasons why this work targets *Zelda*. First and foremost, *Zelda* is a classic Japanese franchise with a long history. Developed by Nintendo, one of the biggest leaders in Japanese design, *Zelda* helped define what Japanese game design was by emerging as one of the earliest

classics in the Action/Adventure genre. Secondly, *Zelda* is a household name and well known for its high level of popular and critical acclaim. Lastly, *Zelda* is still relevant with several recent releases in the series, such as *The Legend of Zelda: Skyward Sword* [48] on the Nintendo Wii or more recently, *The Legend of Zelda: A Link Between Worlds* [49] on the Nintendo 3DS. Because of these reasons, mastering *Zelda* design through practice proves a general understanding of Japanese game design.

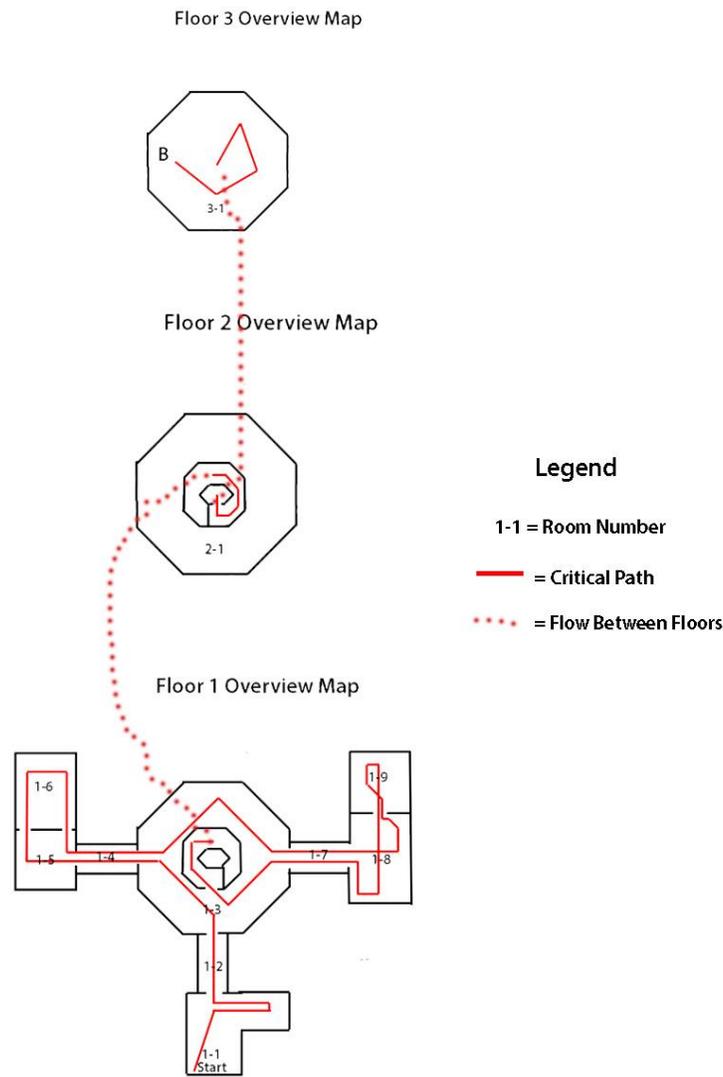


Figure 18: Overview map of Beta artifact level

A. Pre-Production

The basic Japanese design philosophies as described in the Literature Review are:

- An emphasis on structure and authorial control in design as seen in the linear storyline of most Japanese Role Playing Games (JRPGs) like the *Final Fantasy* franchise
- Clear game-long objectives such as defeating Ganondorf in multiple entries of *The Legend of Zelda* franchise
- Non-linear level designs that require navigation from the player such as the massive dungeon called Tartarus in *Persona 3* (Figure 7)
- A focus on fantasy and abstract settings while de-emphasizing realism.

In addition to standard Japanese design philosophies; *Zelda* design also includes the following:

- Central atrium room
- Careful intensity ramping with puzzles throughout the dungeon
- Locked doors and barred doors to control level flow
- Unique items found in the dungeon
- Aesthetic set pieces that capture the player's imagination
- Care to provide players with necessary resources
- Interconnected level layout that obscures the critical path
- Training basic puzzle elements before combining them

B. Level Playthrough

The level itself involves the player navigating a large temple, solving puzzles and slaying foes within. They start out with just the ability to jump and swing a melee weapon. As they progress through the level, they encounter more difficult puzzles and find the fire crossbow to help them. Finally, they use all the tricks learned through the dungeon against a climactic boss encounter. The following overview was the beta version, or the first iteration of the artifact to be tested.

Overview Map Floor 1

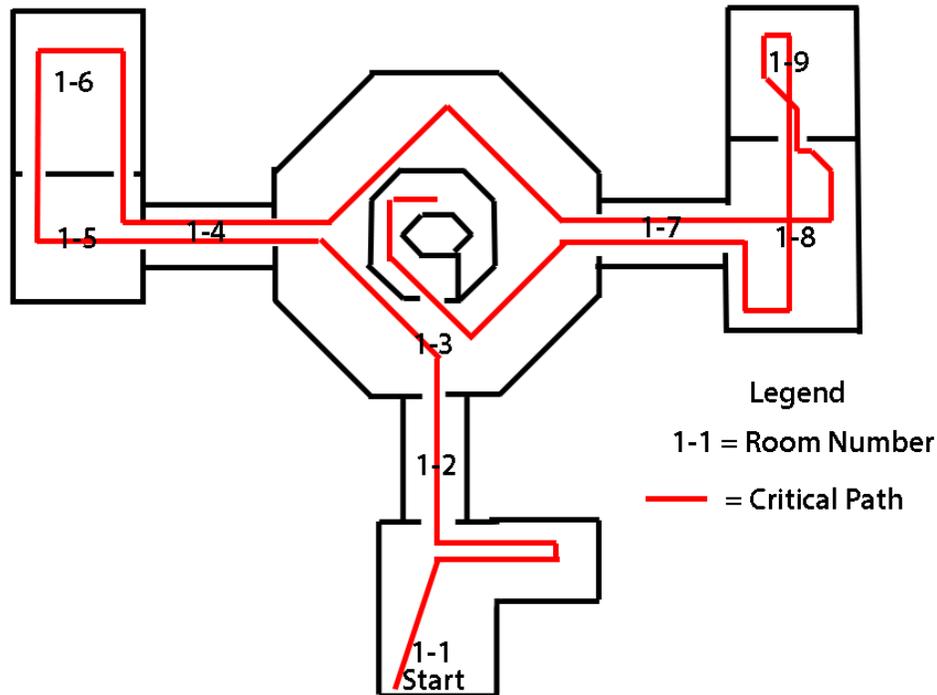


Figure 19: Overview map of Beta level artifact's First Floor

The following is a brief room-by-room design summary in order of the critical path. For a more detailed analysis, see the Detailed Design section of the Level Abstract in Appendix A.

1-1: Teaches basic platforming, moving platforms, locked doors, treasure chests and keys. Contains a key.

1-2: Teaches bottomless pits and basic melee combat.

1-3: Floor 1 of central atrium room with multiple possible paths, with some initially inaccessible.

1-4: Reinforces platforming, bottomless pits and melee combat.

1-5: Includes intensity ramping of basic moving platforms. Introduces barred doors.

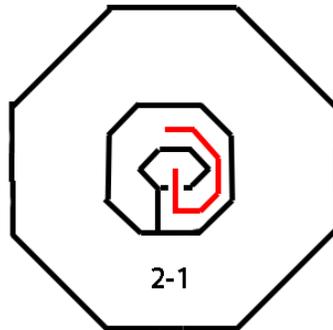
1-6: Includes intensity ramping of melee combat. Contains a key. Barred doors lock the player in until all enemies are defeated.

1-7: Reinforces basic platforming and bottomless pits

1-8: Tests advanced platforming and teases player with paths they cannot go through immediately. Preludes torch puzzle.

1-9: Tests melee combat. Contains fire crossbow. Teaches that fire crossbow ignites torches.

Overview Map Floor 2



Legend

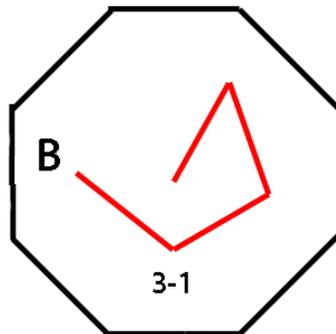
2-1 = Room Number

— = Critical Path

Figure 20: Overview map of Beta level artifact's Second Floor

2-1: Floor 2 of central atrium room. Teaches a mechanic for the boss battle

Overview Map Floor 3



Legend

3-1 = Room Number

— = Critical Path

B = Iron Dragon Boss

Figure 21: Overview map of Beta level artifact's floor 3

3-1: Dungeon Boss Battle with Iron Dragon, a long train that travels along a mine track shooting at the player. Reinforces and tests new usages of familiar technique.

C. Survey Information

After reaching the first beta milestone, the artifact was ready for testing and iteration based on tester feedback. A short pre and post-test questionnaire were created to provide the author with focused feedback for the artifact (see Appendix B). Questions in the pre-test questionnaire include:

- **What game genres are you familiar with?**
- **How old are you?**

Questions in the post-test questionnaire include:

- **Did the artifact remind you of any other games? If so which ones?**
- **If you could make a change to the level what would it be?**

Feedback that highlighted trouble areas indicated areas that need further iteration. Testing then reoccurs until the level achieves its goals of re-creating the *Zelda* experience: that is an environmental puzzle-oriented action-adventure level. Players were asked what they liked and disliked about the level in addition to reporting which games it reminded them of and in what areas. An overwhelming majority of players that tested at all post-Beta stages of development cited *Zelda* as a similar game.

D. Testers and Test Environment

All testers were students at the Guildhall at SMU that did not know what they were testing. Testing took place in an empty room. The author instructed testers to fill out the pre-test questionnaire, after which testers then played through the level. Testers played the level with PC controls and wore headphones.

Testers were encouraged to think out loud while playing through the level. The author silently recorded down his own observations while the testers played through the level and only spoke to assist the player in fatal bugs. After completion of the level, testers then filled out the post-test questionnaire.

IV. DATA AND ANALYSIS

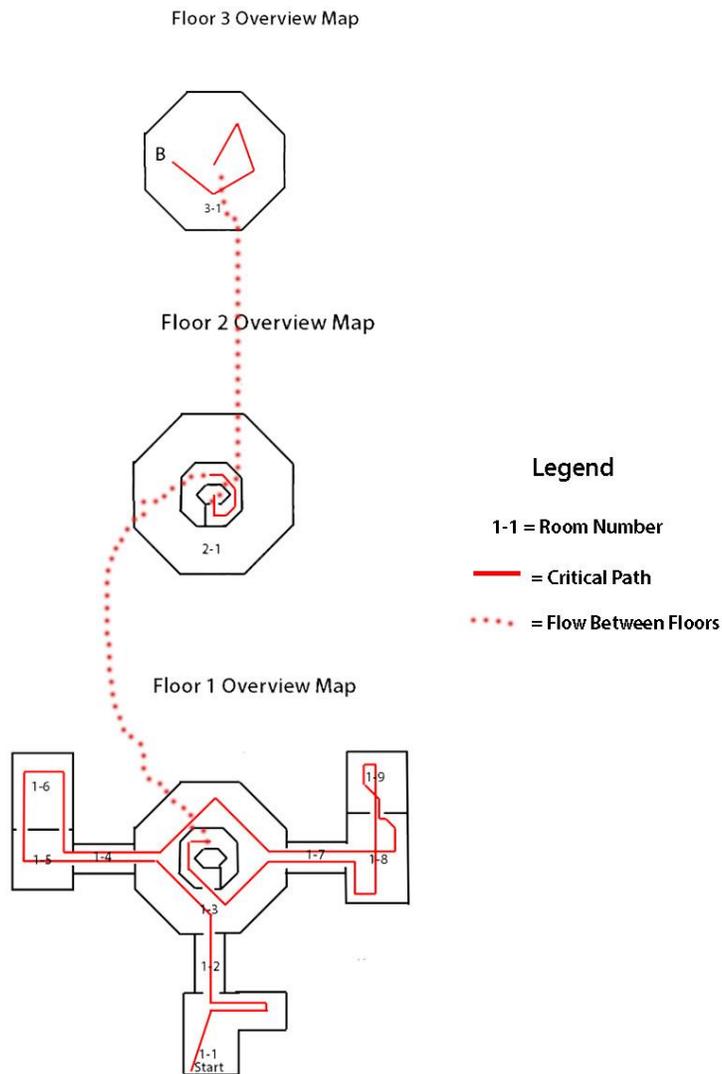


Figure 22: Overview map of Initial Beta artifact level

A. Tester Demographics

All testers were students at the Guildhall at SMU that did not know what they were testing. Their ages range from 22 to over 33 and their time playing video games per week ranged from 5 to over 30. Collectively, they have played multiple genres of games, such as Action/Adventure and RPG, on a variety of platforms, such as consoles and handhelds. Each iteration had at least six testers before testing a new version of the artifact.

B. Initial Beta Testing

There were seven testers for the initial beta version of the artifact. Testers enjoyed getting the fire crossbow and using it to light torches and solve puzzles. Most testers enjoyed the boss battle with the Iron Dragon and thought it was suitably epic for the end to the level. Testers also enjoyed the music and sound effects.

Testers also found numerous issues with the artifact. The first was that while testers enjoyed the boss battle with the Iron Dragon, they found the rollercoaster mine track (see Figure 23) to be at odds with the rest of the level, which has more of a fantasy and mysterious sense to it. Only one other room besides the room chambers had any mine tracks, which caused the inconsistency.



Figure 23: Mine tracks in boss chambers

Testers also found the boss battle to be somewhat difficult or tedious as shooting the Iron Dragon while in motion was difficult and they were not trained for it. Testers also criticized the controls as being awkward and cumbersome. Since the crossbow fires automatically, shooting a moving target requires the player to keep up with it, which is difficult both because of the Iron Dragon's speed and its erratic path.

Some were off put by the jumping mechanics and others by an unintended camera bug when entering the third person camera (see Figures 24-26) from the first person one. *Half Life 2* is exclusively a first person game, so getting the third person camera to work at all was a challenge, but transitions between third and first person created unexpected problems. Specifically, Alyx's entire model would rotate when the player looked around in first person, causing

her and the camera to maintain the same orientation when returning to third person.



Figure 26: Atrium room: Normal third person camera

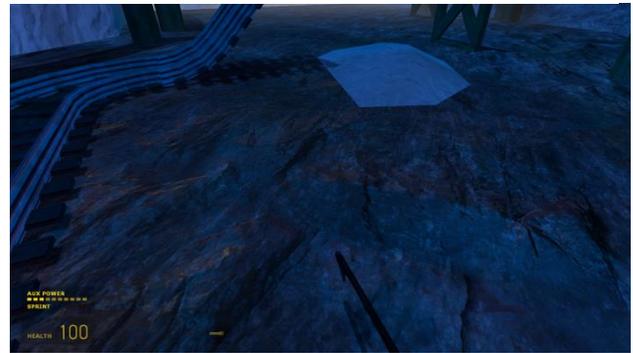


Figure 25: Atrium room: Normal first person camera



Figure 24: Atrium room: Bugged third person camera

C. Initial Beta Revisions

One of the first changes included adding more mine tracks in the non-boss environments to foreshadow the Iron Dragon boss battle. The author chose to add them in the atrium room, 1-3, because of how often the player traverses through it in comparison to other rooms (see Figure 24).

While building the geometry to contain these new areas, the author also decided to include a boss key in the atrium room to add yet another path the player could not go to initially. This also creates more anticipation for the upcoming boss battle. The boss door was placed in 2-1, preventing entry into the central column without the boss key (see Figure 27).

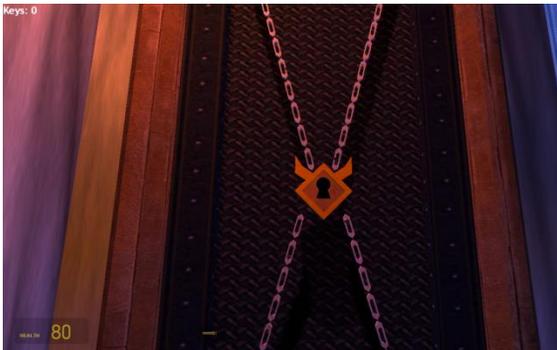


Figure 27: The Boss Door in room 2-1

Additionally, the author added another mechanic to the Iron Dragon boss battle by incorporating torches that would lower a beam, stopping the Iron Dragon as it approached (see Figure 28). This design allows players to influence the Iron Dragon's movement and then attack him when he's immobile and vulnerable. However, the torches would extinguish after five seconds, requiring good timing and observation of the Iron Dragon's path through the mine tracks.



Figure 28: The Iron Dragon continues its motion after the torch extinguished

Lastly, the first-to-third person bug was fixed, reducing unintended friction with the camera system. The player's orientation had to be manually preserved through scripting once they entered first person and then restored upon returning to third person.

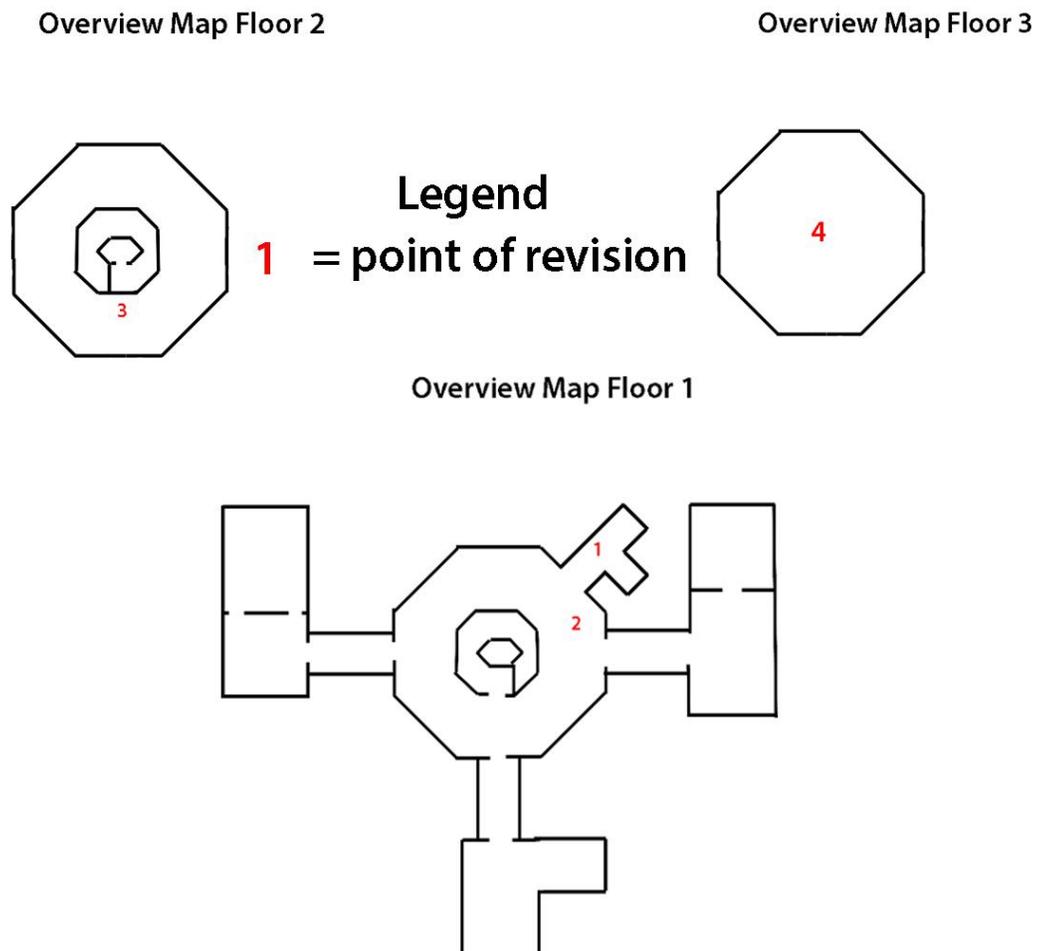


Figure 29: Overview Map of Second Beta Artifact level

Points of Revision

- 1: The boss key and the surrounding corridor were added in the atrium room. The player must lower a drawbridge to gain access to it.
- 2: Mine tracks were added to the atrium room to reinforce the mining theme of the dungeon.
- 3: The boss door restricting access to the inner ice column. Requires the boss key to open.
- 4: A new boss mechanic was added so that the player could shoot torches to lower a stop beam that halts the boss if it is near.

D. Second Beta Testing

Six testers played the second beta of the artifact. Testers agreed with the previous set regarding the parts of the level that were enjoyable. They enjoyed using the fire crossbow in combat and in puzzle solving and the boss battle with the Iron Dragon. The music was also praised for increasing immersion in the level.

Several testers did not figure out the new gate mechanic in the boss battle and simply lined up their shots well to defeat it. The dark boss chambers were intended to increase the impact of the Iron Dragon's dynamic headlight moving along with the boss, but it was so dark that some players did not notice the torches (see Figure 30).



Figure 30: The Boss Chambers are not well lit

Players also found aiming the crossbow and jumping to be stiff. One player was unable to complete the playthrough due to a collision issue with one of the mine tracks that misdirected her off the critical path.

E. Second Beta Revisions

To address the new problems with the boss fight, the boss room and the torches were brightened. Since the opening cinematic does a good job showing the player how they work, the next method of enticing players to use them was exaggerating their appearance.

The author then added more mine track clutter in various rooms; continuing to reinforce the mining theme of the level. Unfortunately, without making changes to the code, the core jumping physics were unable to be changed to address the concerns testers brought up.

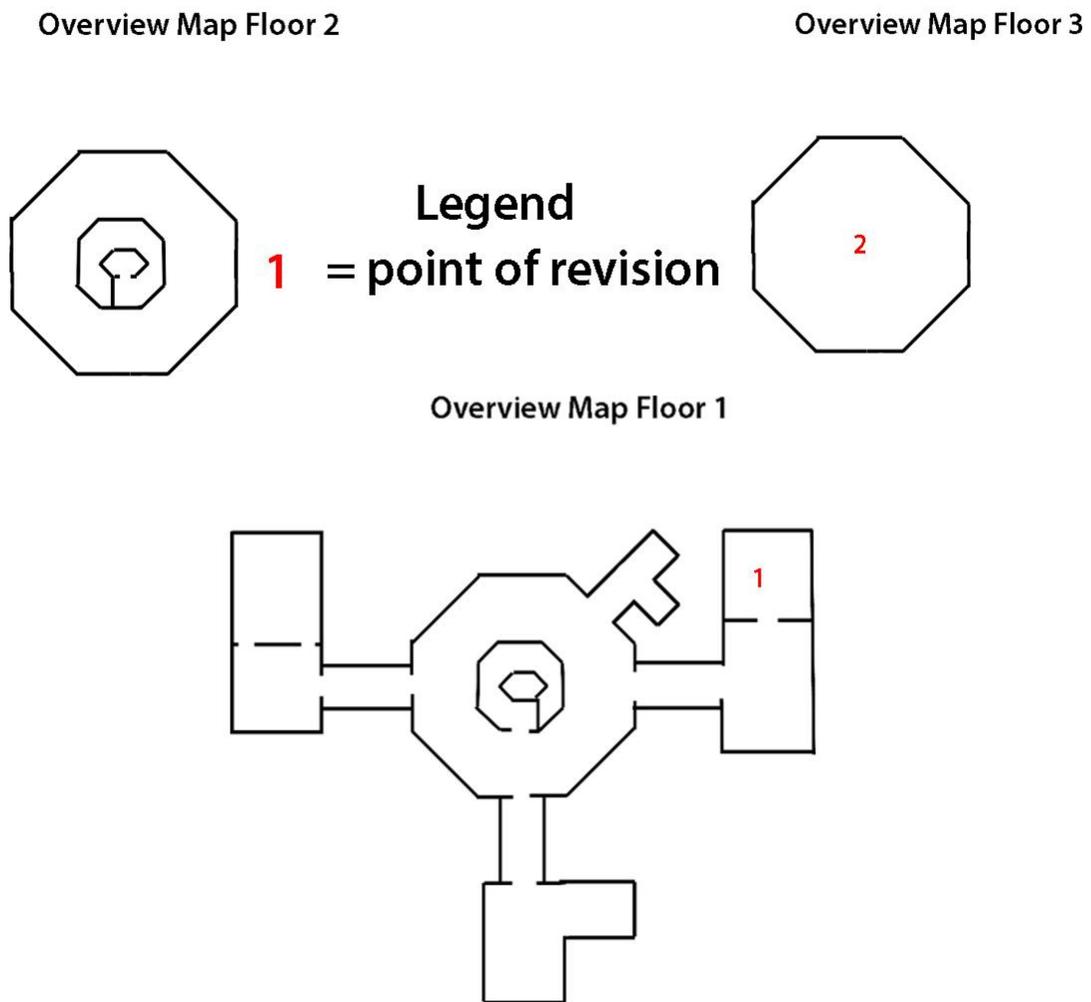


Figure 31: Overview map of RTM artifact level

Points of Revision

- 1: Inclusion of more mine tracks to establish the visual theme
- 2: Addition of brighter lights to illuminate torches that drop beams to stop the Iron Dragon

F. Zelda Design Traits

The artifact uses multiple *Zelda* design techniques. Perhaps the most prominent one is its door system: using a combination of unlocked, locked and barred doors to control level progression and redirect players to other areas of the temple. This technique is used as early as the first room, 1-1, where the player encounters a locked door and must find a key in the room to gain further access (see Figure 32).



Figure 32: A locked door in room 1-1.

The first barred door is introduced in 1-5 where it blocks the player from taking a certain path (see Figure 33). In its second appearance in 1-6, a barred door locks behind the player until he has defeated all the enemies in the room.



Figure 33: A Barred door in room 1-5.

Additionally, there is a special locked door called the boss door that blocks the way to the boss in 2-1 (see Figure 34). This door only

opens with the boss key. The use of this special locked door creates anticipation for what is to come in addition to giving players a sense of progression. A couple of testers upon seeing the boss door began to guess what was behind it.



Figure 34: A Boss door in room 2-1.

Since *Half Life 2: Episode 2* was used as the engine for the game; the controls had to be changed significantly from a standard FPS to an action-adventure game. This meant setting up a third person camera with an option to enter first person to look and aim. A 3rd person camera gives players a wider view of the environment when compared to 1st person camera which assists puzzle-solving. Additionally, it lets players see the character's feet, which is important for jumping between platforms. It was important that the control scheme was as similar to 3D *Zelda* as possible to create the best player experience.

Another important *Zelda* trait of the artifact is how it increases the intensity of its challenges. Basic platforming is introduced in 1-1 where the player jumps from a static platform to a moving one, but there is no way for the player to die, reducing punishment and allowing for experimentation. Later platforming challenges increase and the player has to jump from moving platform to moving platform. Likewise, the first torch puzzle is a lit one next to an unlit one, helping the player

figure out to light it. Later on in the Iron Dragon boss battle, players must light a torch at a specific time in order to stop the boss from moving, leaving it vulnerable to being shot.

From a puzzle standpoint, the player is primed for puzzles before they are tested with them. For example, there is a puzzle in 1-9 that requires the player to light an unlit torch in order to bring down a drawbridge (see Figure 35).



Figure 35: Player solving torch puzzle in room 1-9. The left torch is automatically lit.

Throughout the level, the player sees lit torches associated with things in the active state, whether that is on moving platforms in 1-1, 1-5 and 1-8, unlocked doors in 1-2, 1-3, 1-4, or drawbridges that have fallen in 1-8. The player also sees unlit torches with drawbridges that are in the upright state in 1-8 that contrast with the lit torches that correspond with a lowered drawbridge. The puzzle scenario in 1-9 also shows one lit torch with an unlit one next to it, encouraging players to make them match. The last important thing 1-9 does specifically is that it prevents players from proceeding until they figure out to light the torch with the fire crossbow. Naturally, some players do not find the puzzle solution intuitive, and try various other strategies. *Zelda* frequently locks players inside rooms when training them to prevent them from

aimlessly exploring the dungeon for other options when the solution is in a particular room, reducing unnecessary friction between the player and the game.

Another example of puzzle training is in the artifact's boss intro cutscene. The Iron Dragon boss moves into the battle arena and then stops in front of a lit torch with a lowered beam blocking the train. It then resumes motion once the torch fizzles out and the stop beam rises (see Figure 36). This helps players figure out how the torches work in the boss chamber which is related but different to their function in other parts of the dungeon.



Figure 36: The Iron Dragon resuming motion as the beam rises.

Finally, the last important *Zelda* design trait of the artifact is the inclusion of a central atrium room, 1-3 (see Figure 37). Atrium rooms give players a sense of direction in a dungeon and reduce the length of backtracking when heading back from exploring one wing of the dungeon. Additionally, because it has multiple paths that are not immediately available to them, it gives players a place to go when they are lost or confused.



Figure 37: Room 1-3 is the dungeon's atrium room.

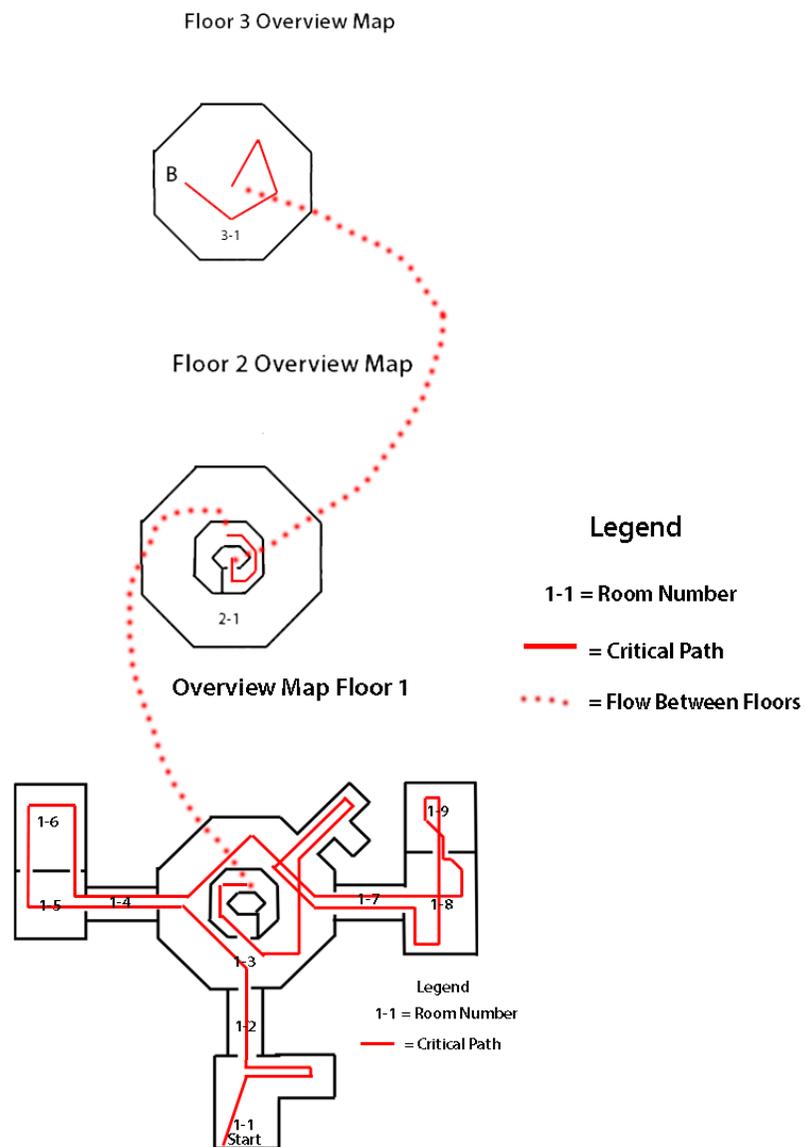


Figure 38: Overview Map of Final Level

V. CONCLUSIONS

A cultural divide has always existed between the East and the West. Each culture has different behaviors, attitudes and values, where the West holds personal freedom very high; the East has a greater focus on honor and respect. These differences permeate through every expression of both cultures including art, music, architecture, movies and video games.

American design philosophy tends to focus on immediate gratification and player choice, while Japanese design places an emphasis on authorial control and structure. *Zelda* design specifically focuses on carefully teaching players simple mechanics and then letting players figure out more complex variations of those mechanics later in the level.

The purpose of this study is to demonstrate mastery of Japanese video game design principles through construction of a level inspired by *The Legend of Zelda* series in *Half Life 2's* Source engine. The artifact is a three level dungeon with the fire crossbow as its dungeon item. In order to win, the player must find keys, solve puzzles and navigate their way to the third floor and finally defeat a boss.

There were three versions of the artifact: initial beta, second beta and RTM. In between the three, the level was tested and iterated upon. The major takeaways from the initial beta version were that the boss was too hard to hit, a third-person to first-person camera bug was making movement difficult and the rollercoaster mine track felt out of place in regards to the rest of the temple. The camera bug was solved and a new mechanic was added to the boss battle that allowed players to stop the boss from moving for a brief period

of time. Lastly, more mine tracks were placed in various rooms to reinforce the aesthetics of the boss.

The major takeaways from the second beta were that the new boss mechanic was ignored, there were various points of minor friction and that the overall control scheme was clunky. The level was polished with fixes to visual and collision errors. The torches in the boss room were brightened to help them stand out in the otherwise dark room. Additionally, a bug was fixed in the intro to the boss battle that obscured conveyance of the new mechanic. Unfortunately, the controls were not able to be meaningfully iterated on through scripting.

The major takeaways from this mastery include:

- Managing level flow through doors creates lets the designer control the player experience
- The joy of an adventure level comes from discovery not explicit directions
- Structure allows designers to know what the player minimal skill level is
- Smooth difficulty curves arise when players are forced to learn specific techniques at certain points in a level

Future studies should survey a much larger sample for feedback on low probability failure cases, whether bugs or design flaws. They should also consider including a complete second floor to emulate the scope of a traditional *Zelda* dungeon. Additionally, future studies may want to consider using a different engine. While *Half Life 2* has an impressive array of physics simulations to offer, it lacks assets that work in a fantasy setting. *The Elder Scrolls V: Skyrim* is another viable engine to

construct a *Zelda* dungeon in. Lastly, future studies should consider a wider range of *Zelda*

titles before designing the dungeon.

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VII. APPENDIX A



Figure 39: Marin explores a room in the Crystal Mines

Level Abstract: Crystal Mines

Version 1.0

Designer: Matthew Langer
Document Date: 3/23/2014
Intended Level Delivery Date: Middle of mod 9

Level Abstract

Quick Summary

“Crystal Mines” is a *Zelda*-styled level made in *Half Life 2*'s Source engine. It takes place in the medieval, magical land of Florencia. The protagonist, Marin, is on a mission to rescue her kingly father from one of the lords of darkness corrupting the land. Marin must rescue her father in the abandoned Crystal Mines, protected by challenging puzzles and dangerous foes. Being a level inspired by *Zelda*, especially *The Legend of Zelda: Ocarina of Time*, “Crystal Mines” focuses on environmental puzzle-solving and exploration of a vast temple. Specific gameplay includes mastering the unique items hidden in the dungeon: the fire crossbow.

Design Techniques

“Crystal Mines” includes numerous techniques specifically used in *Zelda*, a classic video game franchise designed in a Japanese philosophy. By emulating the underlying philosophies that guides the design of *Zelda*, the construction of this dungeon demonstrates understanding over Japanese design principles and mastery over *Zelda* design.

This dungeon includes all four techniques mentioned in Mike Stout's article: Level Flow, Intensity Ramping, Variety and Training. The level is designed to facilitate player flow whenever possible to prevent boredom and frustration. This is seen by its inclusion of yet another important technique: a central atrium room (1-3 and 2-1). By branching multiple rooms off an atrium, the amount of backtracking is reduced when the player ventures from one edge of the dungeon to the other. Intensity Ramping is seen throughout the dungeon as both combat encounters and puzzles scale in difficulty throughout the dungeon, constantly keeping the player interested and engaged. Variety can especially be seen in the style of the puzzles in this dungeon. Because the player earns two dungeon items, a variety of puzzle mechanics are in this dungeon, including torches, moving platforms, drawbridges, fans, wooden walls and wooden doors. Training is used by each of the three corridor rooms (1-2, 1-4, 1-7) by introducing new puzzle mechanics or new variations of using them in a bite-sized chunk for the player to process and solve.

Another included technique is a boss battle at the end of the dungeon (3-1) that incorporates puzzle elements previously seen in the dungeon. Specifically, the Iron Dragon boss requires the player to use his fire crossbow to light torches, which each lower a stop beam that can stop the might mine cart for a short period of time to give the player a clear shot on the boss.

Hook(s)

Fun puzzles to solve that ramp in difficulty and complexity

Temple to explore full of rewards and unexpected dangers

Unique item that empowers the player: Fire Crossbow

End Boss, Iron Dragon, that requires expert use of skills learned in temple

Environment that plays on light and darkness to create visual interest

A journey to rescue to your father

Gameplay Highlights

The gameplay style of “Crystal Mines” is meant to imitate *The Legend of Zelda* franchises design of its major dungeons, specifically *The Legend of Zelda: Ocarina of Time*. This includes gameplay such as exploring and discovering the critical path, collecting and using unique items to solve puzzles and fighting against epic bosses.

Setting Summary

Theme	Exploring an ancient and dangerous Temple
Mood	Discovery, wonder and joy
Setting	Unknown, outside of dungeon is a forest and mountain background
Time of Day	Noon
Season	Spring
Weather	Calm and Bright

Mission Difficulty

Position	Difficulty	Reasons
Beginning	2	The beginning of “Crystal Mines” teaches the player the basic mechanics and rules of traditional <i>Zelda</i> design in a safe environment before it ramps up in difficulty. The first room is impossible to die in and teaches locked doors, keys, treasure chests and moving platforms. The next rooms teach basic melee combat and barred doors.
Middle	5	Once the player gets the unique item in the dungeon: the Fire Crossbow, the level begins to test their skills at a higher level. Platforming challenges ramp up as well as the technique and thinking involved in the cerebral puzzles.
End	7	Once the player reaches the third floor, he must master the skills he learned in an epic boss encounter with the Iron Dragon.

Scale: 1-10 (1 is Easiest and 10 is Hardest)

Mission Metrics

Play Time	15-25 minutes
Critical Path	Floor 1 Main(102*196units) + Floor 2 Main(112*196units) + Floor 1 Revisited (44 * 196) + Floor 2 Revisited (43 * 196 units) = Critical path Length = 60638 units

Physical Area	[Room 1-1 (4 tiles*7 tiles) + Room 1-2 (2 tiles*4 tiles) + Room 1-3 (10 tiles*10 tiles – 2 tiles*3 tiles*3 tiles) + Room 1-4 (4 tiles*2 tiles) + Room 1-5 (4 tiles*4 tiles) + Room 1-6 (4 tiles*5 tiles) + Room 1-7 (4 tiles*2 tiles) + Room 1-8 (4 tiles*6 tiles) + Room 1-9 (4 tiles*4 tiles) + Room 2-1 (10 tiles*10 tiles – 2 tiles*3 tiles*3 tiles)] * (196 units/1 tile)^2 = Total Area = 28,466,256 units^2
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Characters

Character	Description
<p>Marin</p>  <p>Figure 40: Concept Art of Alyx Vance, the character model for Marin[1]</p>	<p>Marin is on a mission to rescue her father, Dracula, from the clutches of the evil king. Dracula has been kidnapped and is under hostage in the Shadow Temple by one of the lords of darkness. Marin begins in the entrance of the shadow temple armed with only a sword to deal with the various obstacles in her path.</p>
<p>Dracula</p>	<p>Dracula was an old kind king of Florencia until the great king of evil re-emerged. Dracula tried to fight against the evil along with the other six king of Florencia, but was defeated and is being held hostage in the Shadow Temple.</p>



Figure 41: Eli Vance, from Half Life 2. Character model for Marin's father, Dracula [2].

Zombies



Figure 42: A zombie from Half Life 2[3].

Minions of the evil king. They chaotically roam the world of Florencia bringing destruction in their wake. While filled to the brim with evil, they lack the brains or brawn to be a major threat to Marin individually, but can gang up on her with numbers. Zombies attack no more elegantly than by walking up to Marin and swinging their arms at her.

Antlion

Minions of the evil king. Antlions are even more



Figure 43: An Antlion Soldier from *Half Life 2*[4].

mindless than zombies are. They simple search for food to eat. Marin is included in that rather large category of things. Antlions attack with their large claws, but do not deal a lot of damage.

Phantom Mining Train: Iron Dragon



Figure 44: *Phantom Mining Train, Iron Dragon*

Trusted lord of the evil king. This lord of darkness rules the ancient mines and personally guards Marin's father and keeps him in captivity. Defeating the Iron Dragon is Marin's objective in "Crystal Mines". As with all Lords of Darkness, the Antlion King wants nothing more for the evil king to rule the world and destroy all who oppose him.

Visual Themes

Theme	Description
Ice Cave	Underground Ice themed level. Snow mounds wherever Antlions spawn. Mine tracks indicate places where humans once gathered crystals for resources. Fantasy temple that has non-realistic architecture i.e. floating platforms everywhere. Visual design is intended to exude wonder and awe, not practicality and purpose. Majestic and grand.

Key Theme References



Figure 45: Corridor in OoT's Shadow Temple with a pair of fans on stone walls. Reference for texturing and lighting, general 'feel'[5]

Key Theme References (Cont.)



Figure 46: Structure of open domed boss room [6]

Key Theme References (Cont.)



Figure 47: Geometry and lighting of stone corridor [7]



Figure 48: Central stone column [8]

Level Summary

Campaign

Context

“Crystal Mines” takes place in a far off land full of magic and wonder. In a corner of this world, one adventurer, Marin, seeks to rescue her captured father in a strange temple. Armed with only a crowbar, Marin bravely ventures into a long last place full of mystery and danger.

Backstory

In the land of Florencia, there was a trio of goddesses that kept the land safe from evil. But one day, long ago, they disappeared and left humanity alone. Then, a great evil was born from the earth itself. This evil spread itself across the land and put the world in a state of ruin. Taking the seven kings of the world hostage, he locked them in temples across the land, each guarded by one of his seven powerful lords of darkness. Marin, one of the princesses of the stolen kings, sets out on an adventure to rescue them and bring peace back to the world. But in order to do so, she must pass through the dangerous temple, collect ancient, powerful artifacts, fight off one of the lords of darkness and rescue her royal father.

Aftermath

Marin defeats the lord of darkness, Iron Dragon, in the temple and finds her father at the top. They reunite and the level ends.

Objective(s)

- Rescue your father
 - Find your father
 - Defeat the Lord of Darkness guarding him
 - Survive through the temple
 - Objective completes when player meets up with her father
- Explore the Ancient Temple
 - Use keys to open locked doors
 - Find ancient artifacts of power (Fire Crossbow)
 - Solve dangerous puzzles
 - Slay evil enemies
 - Objective completes when player enters boss room

Overview Map

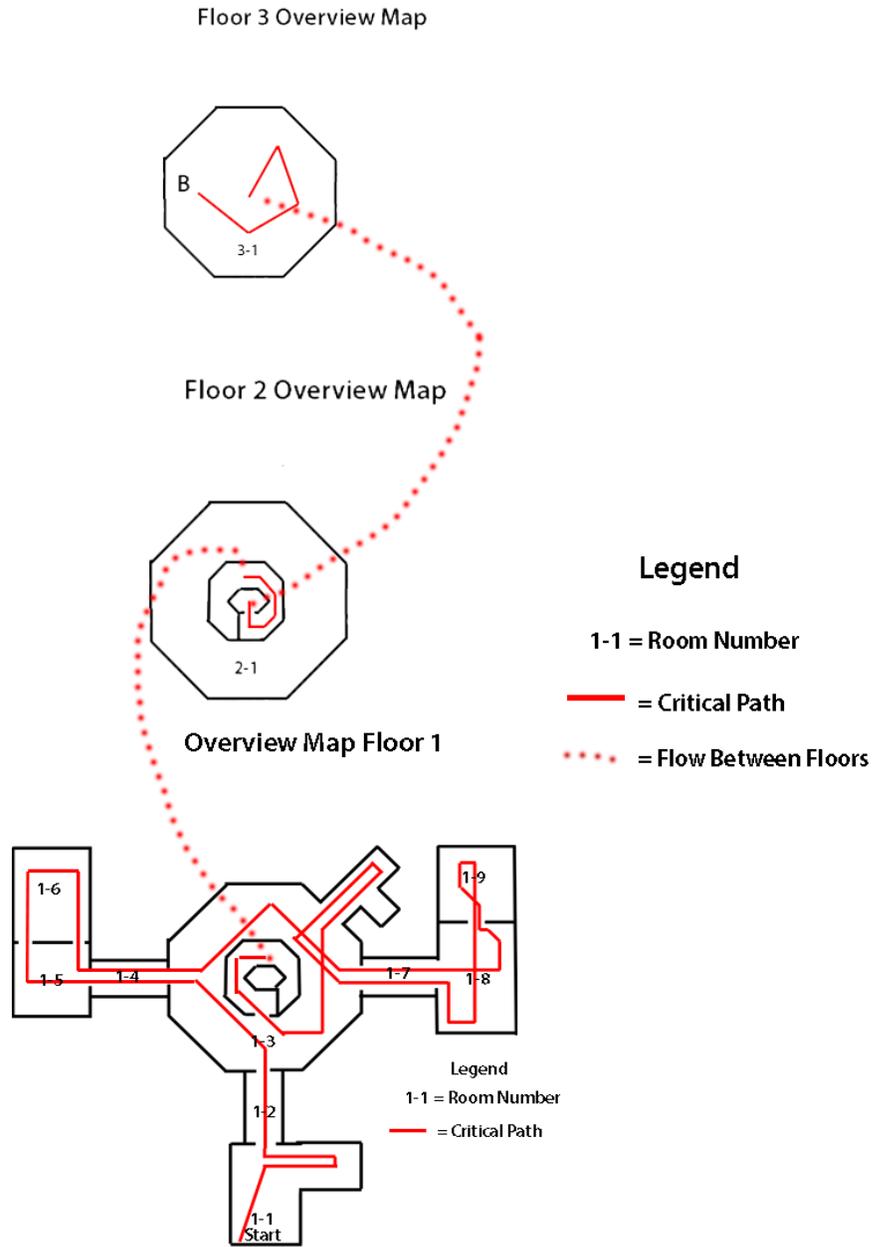


Figure 49: Overview Map

Detailed Design

Detailed Walkthrough

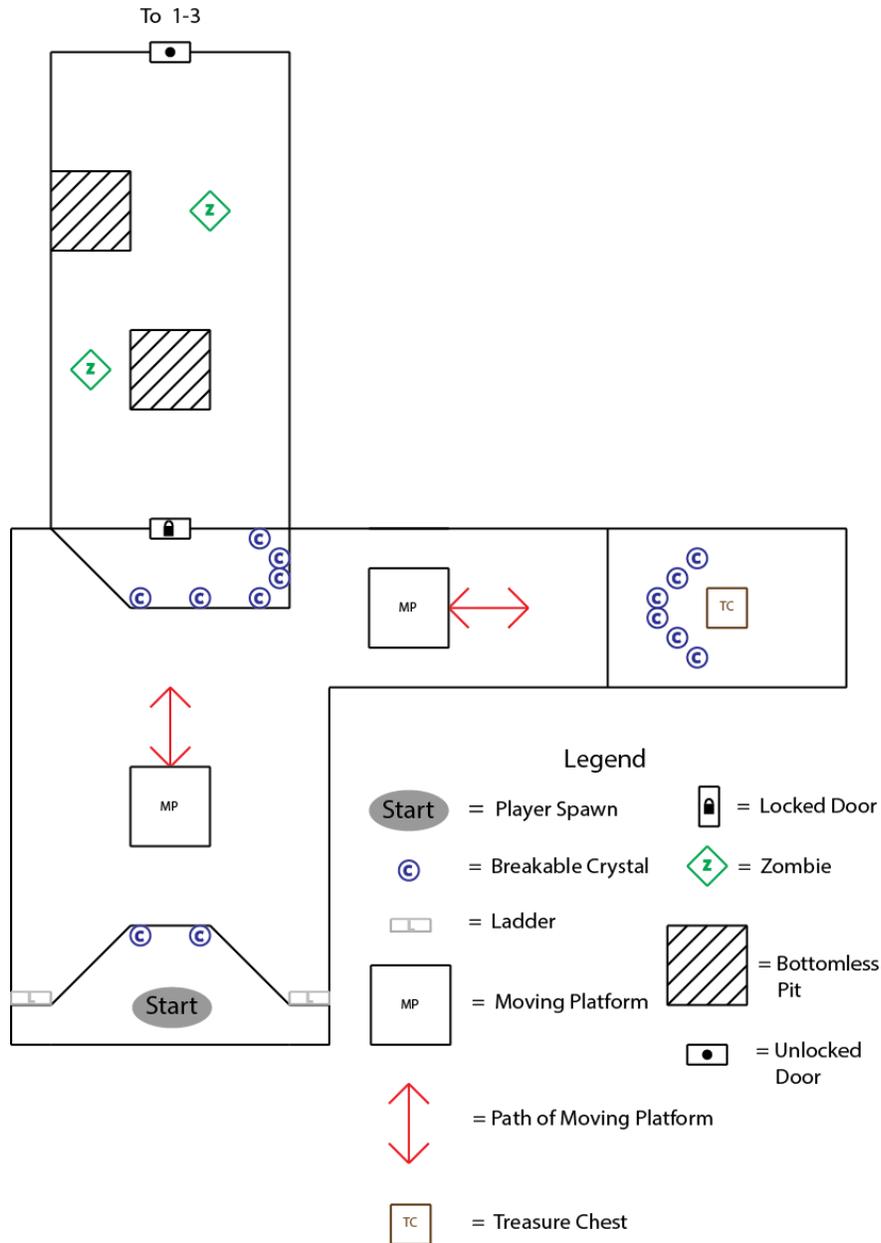


Figure 50: Critical Path of rooms 1-1 and 1-2

Initial Loadout

- The player starts exclusively with a crowbar and the ability to jump

Gameplay

Room 1-1 Japanese Design Technique: Training

Room 1-1 Flow Summary: The player begins on a small ledge with a moving platform directly in front of them. He must jump from it onto a still platform that has a locked door. From here, the player jumps onto a second moving platform that leads to a treasure chest that contains a key. The player then finishes the jumping puzzle by heading to the locked door and using the key to open it.

This introductory room sets up several things for the player in a Japanese style. First, the player must figure out to jump on moving platforms and to use the key on the locked door to leave. This forced training is common in *Zelda* temples. Secondly, the player cannot die in this room, as missing jumps simply causes the player to fall to the floor instead of dying. *Zelda* also tends to tutor basic concepts to the player in areas in which failure is impossible. Third, this room foreshadows future elements and shows them to the player, namely torches, chests, keys and locked door. By showing them lit torches now, unlit torches are suspicious when seen later. Again, *OoT* specifically had several torches in the deku tree before the player had to light unlit ones. By showing the player what the norm is, the puzzle elements pop out more and draw the player's attention.

Room 1-2 Japanese Design Technique: Training

Room 1-2 Flow Summary: This short corridor serves as an introduction to basic melee combat and to death pits. By only containing two weak zombies, this room eases the player into combat and acts as a tutorial for how to fight against enemies. Also, by only having two small pits, the player learns about them without frustration and is now aware of this mechanic when it later is more difficult. Like Room 1-1, this corridor is a tutorial room in similar fashion to *Zelda* tutorial areas that present the player with a simple problem that is made more difficult later on.

Detailed Walkthrough (Cont.)

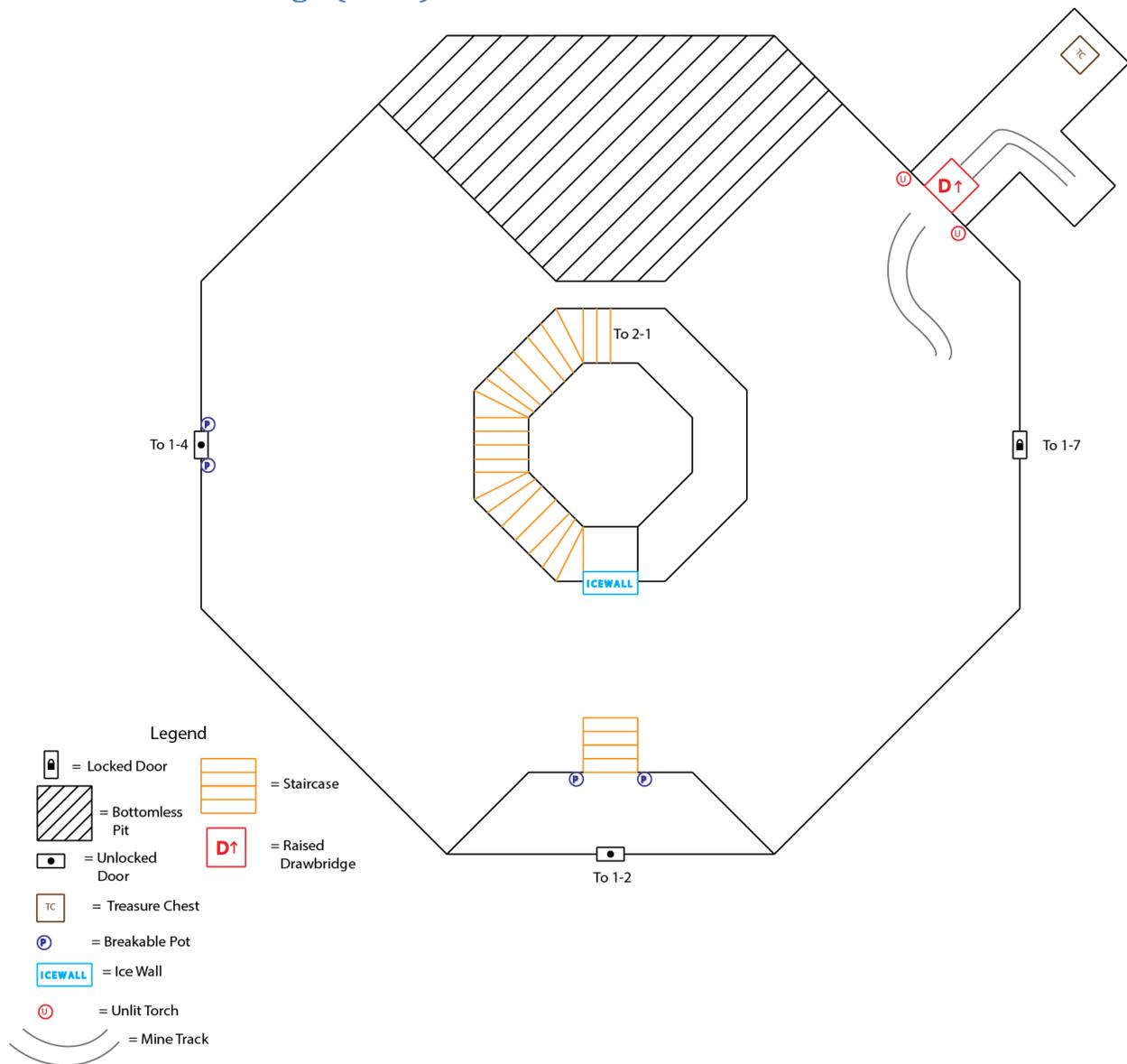


Figure 51: Critical Path of Room 1-3

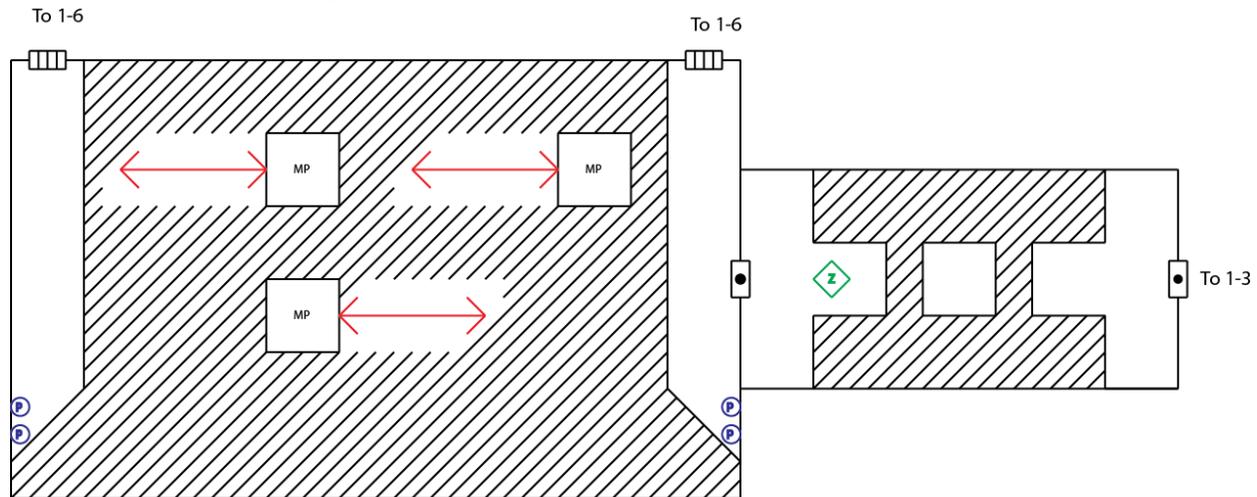
Gameplay

Room 1-3 Japanese Design Technique: Central Atrium Room Floor 1

Room 1-3 Flow Summary: This room is floor 1 of the central atrium of the dungeon: Atrium rooms are key to *Zelda* temples. Like the atrium room in Dodongo's Cavern in *OoT*, this room hints to the player where they need to go (up a floor) without explicitly telling them. It also serves as an aesthetic moment as the player enters the first majestic space in the temple. As with most *Zelda* atriums, this room has no combat to allow the player to orient themselves and decide where to go. This is also the first time the player has been presented with multiple paths that are currently blocked to them: one by a locked door, one by an ice wall and another with a

raised drawbridge with two unlit torches next to it. Zelda dungeons consistently have atrium rooms that contain paths that are not initially available to the player. Lastly, it serves as a navigational anchor point for the player since they traverse it so often. This aligns most especially with the atrium room in *OoT's* Forest Temple where the player must enter and exit it multiple times.

Detailed Walkthrough (Cont.)



Legend

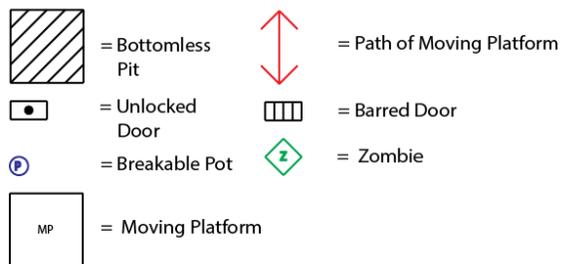


Figure 52: Critical Path of rooms 1-4 and 1-5

Gameplay

Room 1-4 Japanese Design Technique: Training

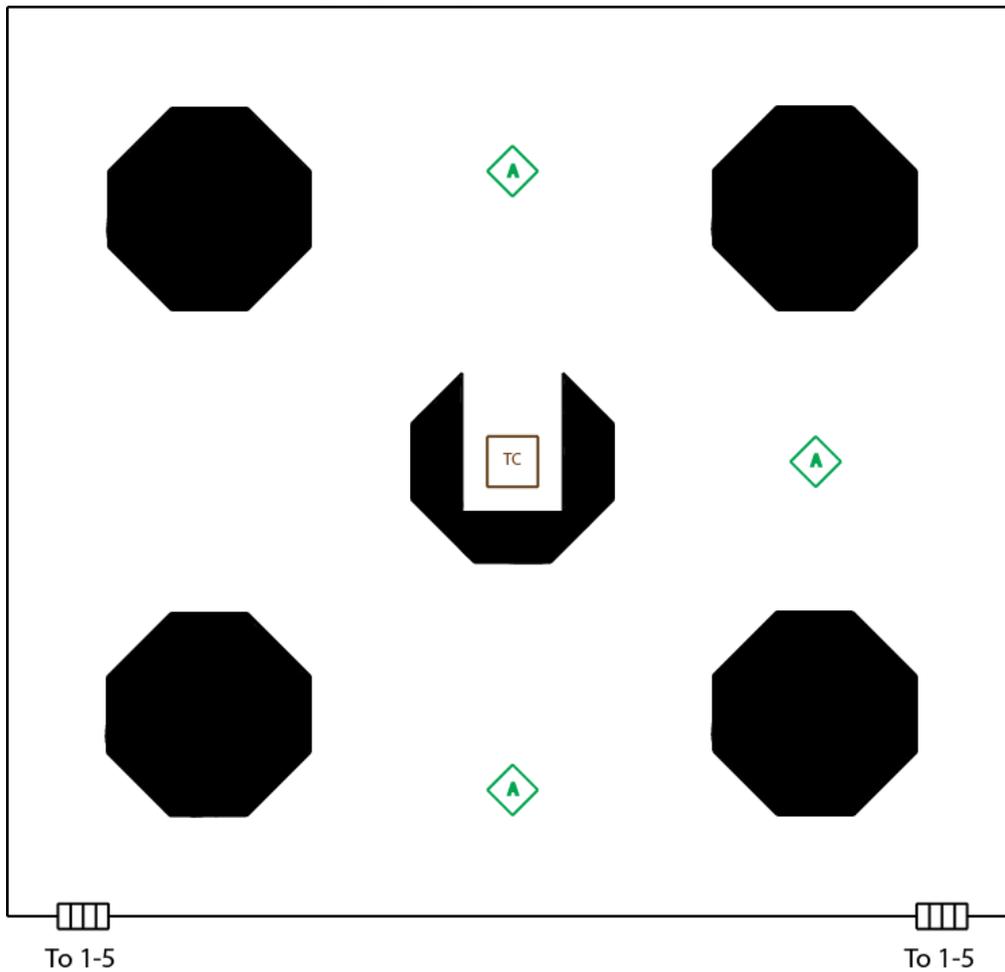
Room 1-4 Flow Summary: This simple corridor that reinforces both the platforming challenge introduced earlier as well as the combat challenge and precludes the more difficult one ahead. *Zelda* dungeons constantly reinforce mechanics and challenges to ensure that the player is not blindsided when several old ideas combine later into a complex problem.

Room 1-5 Japanese Design Technique: Intensity Ramping

Room 1-5 Flow Summary: This room forces the player for the first time to jump from one moving platform to another. This is called intensity ramping and is a crucial part of *Zelda* dungeons. Player's become bored if they must solve the same puzzles over and over, but are frustrated and confused if they have to solve puzzles that are completely unrelated from previous ones. Therefore this room presents them with a familiar challenge, but with a twist that makes it more difficult. This room further reinforces the connection between torches and moving platforms that the player has to interact with later. Lastly, this room introduces yet

another type of door: the barred door. This door only opens when an unknown condition is met. In this case, the first barred door opens from the other side and serves as a shortcut back from room 1-6. The second room is initially open and closes once the player passes through it.

Detailed Walkthrough (Cont.)



Legend

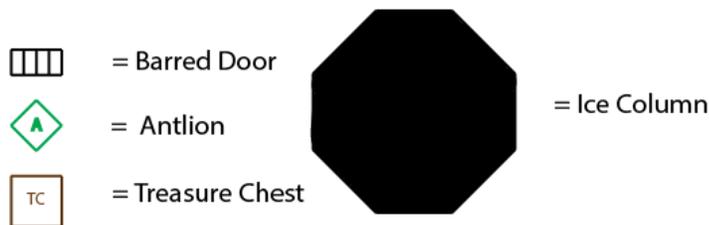


Figure 53: Critical Path of Room 1-6

Gameplay

Room 1-6 Japanese Design Technique: Training

Room 1-6 Flow Summary: This room immediately introduces to the player that unlocked doors can become barred, preventing the player from leaving until an unknown condition has been met. *Zelda* dungeons use this to bring to the player’s attention that they must complete a task to proceed without telling them what they need to do. This gives the player a goal without spoiling the fun in discovering what must be done. Since the other door in this room began

barred, the player has no choice but to search around. This room specifically aides in getting the player to explore the room by having five large pillars that block line of sight. This causes the player to move around in order to see the entire room, eventually discovering a treasure chest with another key in one of the columns. After the player obtains the key, three antlions ambush the player. In *Zelda* dungeons, it is common for enemies to appear out of nowhere at specific points. Because antlions are a new enemy, only a few appear. Once the player defeats them, the bars on both doors disappear and he can now exit the room. This last bit teaches the player that defeating the enemies in a room is a common trigger to removing bars from doors. In *Zelda*, killing every enemy in a room is often, but not always, the condition for barred doors to become unlocked.

Detailed Walkthrough (Cont.)

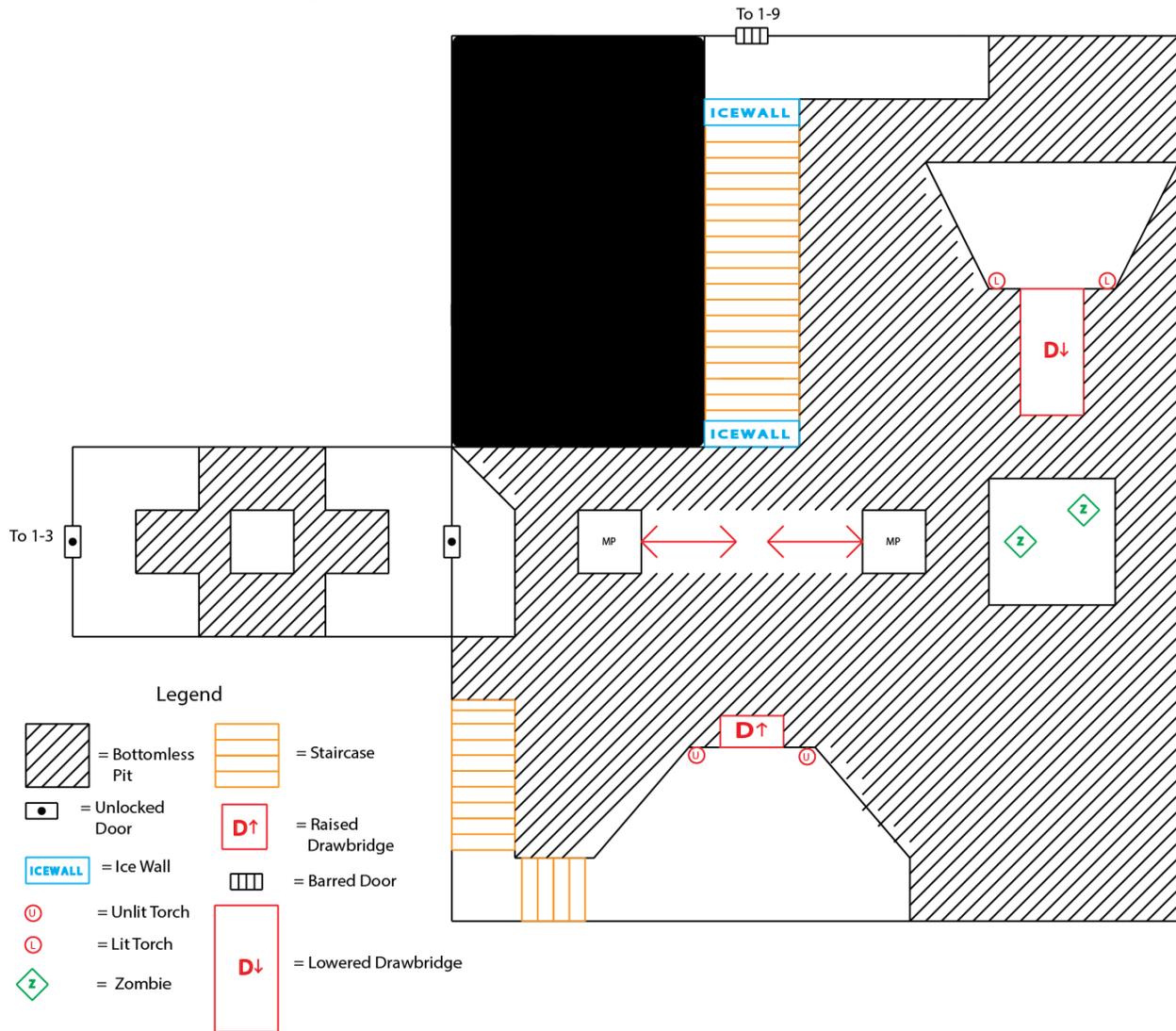


Figure 54: Critical Path for Rooms 1-7 and 1-8

Gameplay

Room 1-7 Japanese Design Technique: Training

Room 1-7 Flow Summary: This room similar to the previous corridor room, 1-4, and serves the same purpose by reinforcing platforming puzzles. The geometry is different enough to force the player to move off the center in order to reach the floating platform, but is easy enough not to slow the player down as they progress into the dungeon.

Room 1-8 Japanese Design Technique: Training

Room 1-8 Flow Summary: This is the second room to present the player with unlit torches and a raised drawbridge, representing a path they cannot take. This room additionally is the first to

combine platforming with combat. Two zombies stand on a platform and wait for the player. The intensity ramping is mostly caused by the anxiety of falling off while battling against an enemy. Lastly, this room also presents the player with an ice wall blocking their escape after they jump down towards the unlocked barred door. Once they enter 1-9, the barred door locks them in.

Detailed Walkthrough (Cont.)

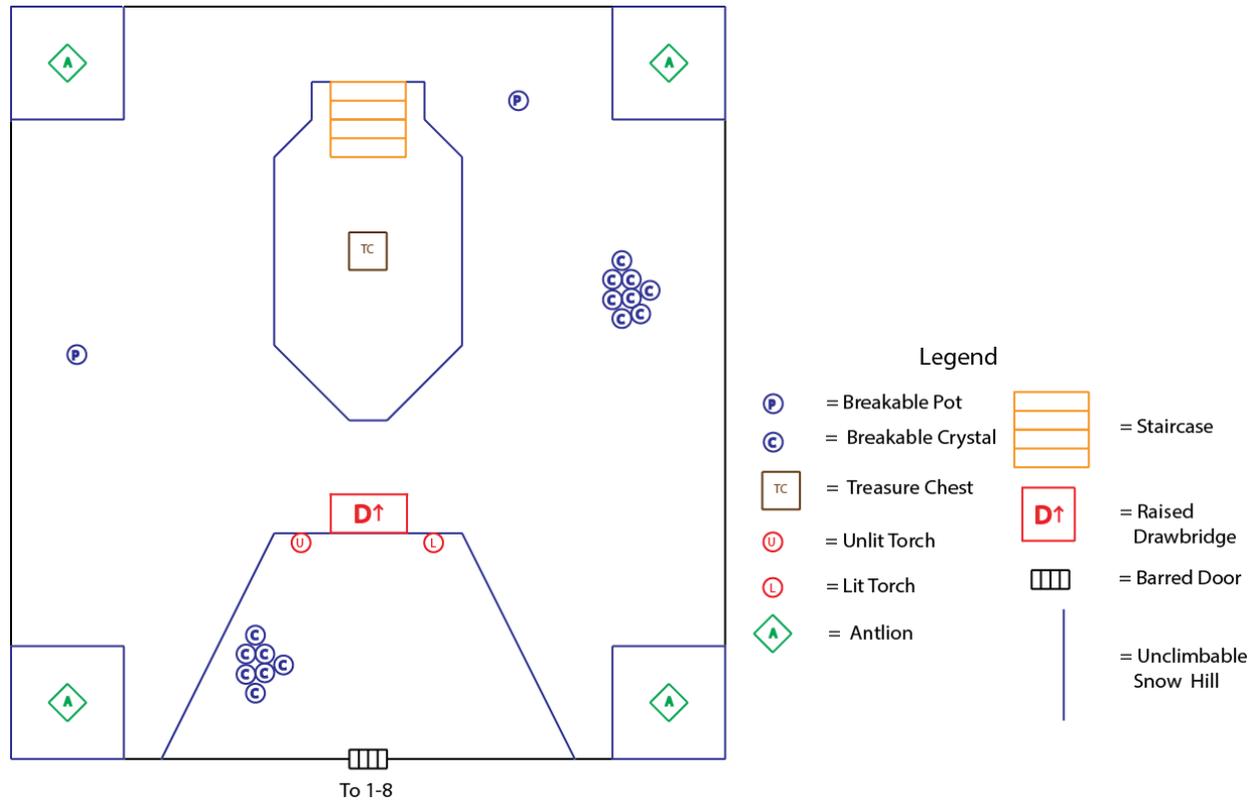


Figure 55: Critical Path for Room 1-9

Gameplay

Room 1-9 Japanese Design Technique: Intensity Ramping (combat), Training (fire crossbow)

Room 1-9 Flow Summary: This room has another instance of a raised drawbridge with one torch lit and another one unlit next to it. Additionally, the unlocked door they entered from immediately becomes barred upon entry. There is also a raised structure in the center with a treasure chest, but the player must first jump off their ledge to get to it. Once the player opens the chest and gets the fire crossbow, four antlions surface from each corner of the room and ambush the player. Since the player has seen antlions before, four ambush the player this time. While the intensity ramps up in combat, it is not challenging enough to prevent them from learning how to use their new item. Once the player kills the enemies, the bars remove from the door, creating a pattern that killing the enemies in the room removes the bars of a door. Lastly, and most importantly, the player is unable to jump back up to the ledge that they started on without figuring out to light the torch with the fire crossbow which lowers the drawbridge. *Zelda* dungeons always force the player to learn basic interactions with the environment before layering such elements in more elaborate puzzles. Since the torch is wooden, this also subtly teaches the player that the fire crossbow has special interactions with wooden objects. Once the drawbridge falls, the player can jump up and exit the room.

Detailed Walkthrough (Cont.)

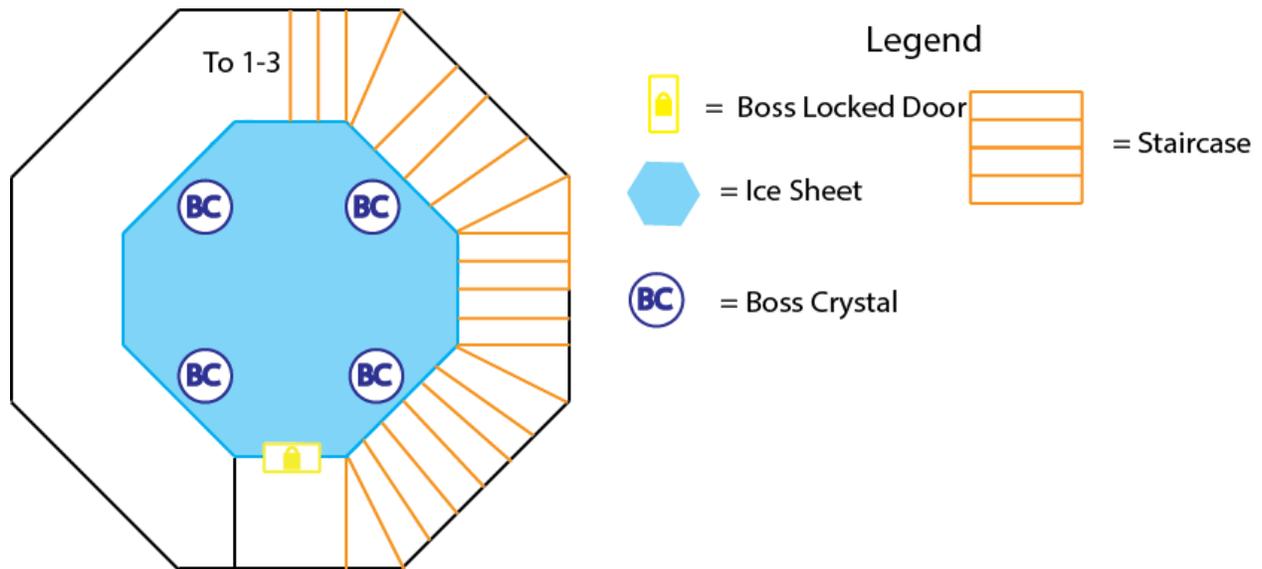


Figure 56: Critical Path for Room 2-1

Gameplay

Room 2-1 Japanese Design Technique: Central Atrium Room Floor 2

Room 2-1 Flow Summary: After the player breaks the ice wall in the first floor of the atrium room (room 1-3), he climbs a circular staircase up to the second floor and arrives at room 2-1. Right before the player leaves the staircase, he sees the last door mechanic: the boss door. Similar to locked doors, the boss door is locked and must be opened with a key. But this door can only be opened with the boss key. *Zelda* dungeons frequently show the player where their final destination is, but do not give them access to it right away. This gives the player a long-term goal while exploring the dungeon. For example, in *OoT's* Fire Temple, the player sees the boss door in the second room he explores. Once the player enters the central ice column, the door bars fall behind locking him in. The player must learn to destroy the Boss Crystals before the ice breaks below him and a platform takes him to the third floor to battle the boss. The Boss Crystals become more important in the boss battle with the Iron Dragon where the player must shoot them off of the moving mine cart.

Detailed Walkthrough (Cont.)

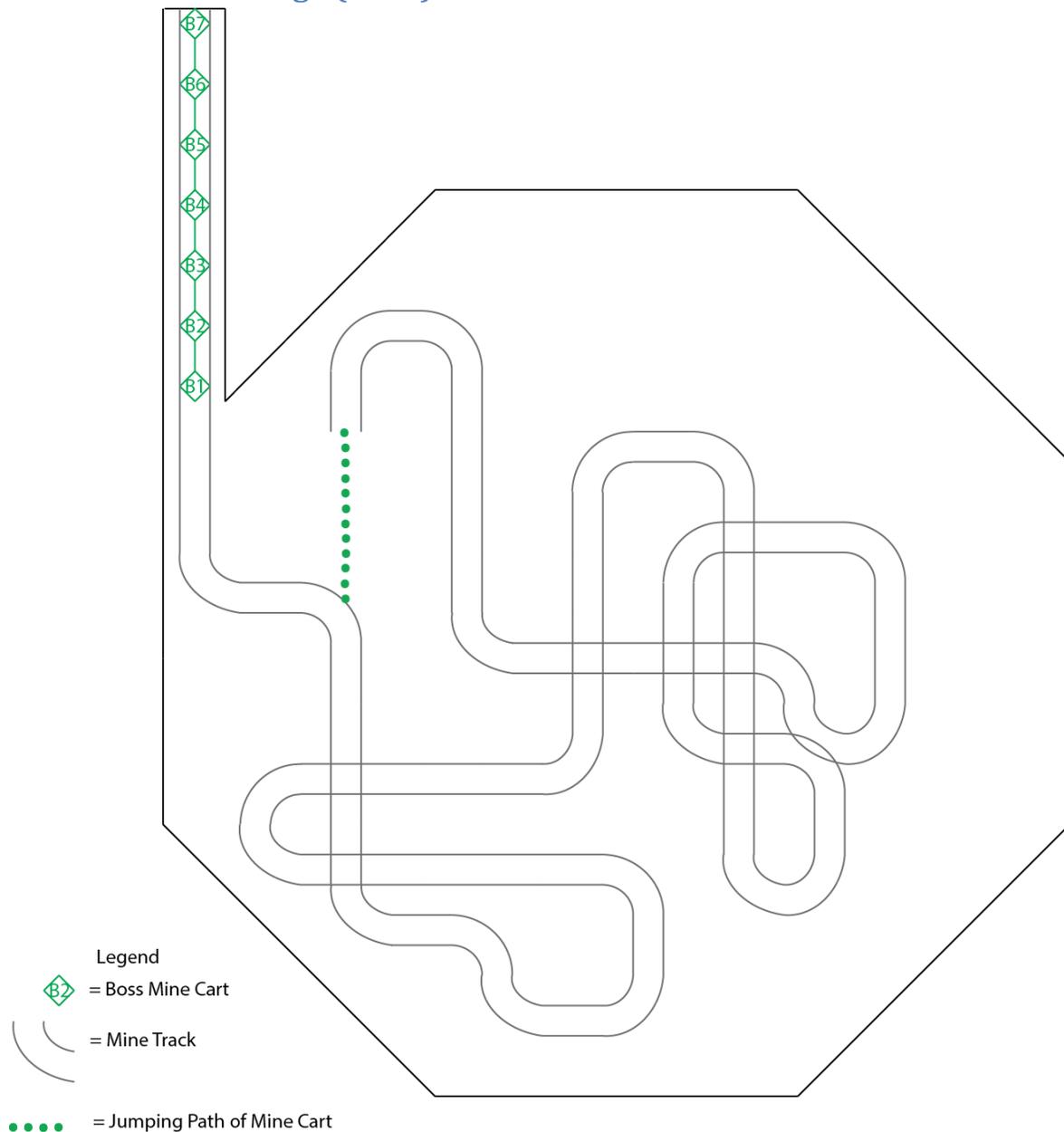


Figure 57: Critical Path for Rooms 3-1 and 3-2

Gameplay

Room 3-1 Japanese Design Technique: Dungeon Boss

Room 3-1 Flow Summary: After the player shoots the four Boss Crystals in 2-1, a platform rises him in up to the center of 3-1, preventing him from leaving. A short cinematic plays immediately once the platform reaches the room, showing the Iron Dragon moving out of the cavern it was in, shooting down an ice wall. A stop beam controlled by a nearby lit torch halts the train until the torch extinguishes, letting the dungeon boss, *Phantom Mining Train Iron*

Dragon continue its movement. *Zelda* bosses, let alone all Japanese bosses, have dramatic appearances that set up the climactic fight. The Iron Dragon follows the mine track while shooting at the player the whole time. The player has to shoot off the six Boss Crystals on mine carts B2-B7. The difficulty is that the train moves very erratically which forces the player to shoot the torches that control stop beams to halt the train, giving the player free shots on the Iron Dragon. The Iron Dragon, however, speeds up when shot preventing the player from getting more than one attack for free. As with *Zelda* boss encounters, this battle forces the player to use his new item effectively. The fire crossbow is required to both damage the boss and light the torches that drop the stop beams.

References

- 1) Figure 40: http://img1.wikia.nocookie.net/_cb20120416081803/half-life/en/images/thumb/2/2b/Alyx_Vance.png/250px-Alyx_Vance.png
- 2) Figure 41: http://2half-life1freeman.webs.com/HalfLife2_EliVance.jpg
- 3) Figure 42: http://img1.wikia.nocookie.net/_cb20090527180423/half-life/en/images/8/83/Zombie_HL2.jpg
- 4) Figure 43: <https://developer.valvesoftware.com/w/images/thumb/b/b6/350px-Antlion.jpg>
- 5) Figure 45: http://static.gamesradar.com/images/mb/GamesRadar/us/Games/L/Legend%20of%20Zelda%20Ocarina%20of%20Time%203D/Everything%20Else/Guide/07_Shadow%20Temple/ShadowTemple03--article_image.jpg
- 6) Figure 46: http://upload.wikimedia.org/wikipedia/commons/2/22/Roman_Pantheon_Dome.JPG
- 7) Figure 47: <http://i295.photobucket.com/albums/mm142/cassandra091298/corridor.jpg>
- 8) Figure 48: http://4.bp.blogspot.com/_762aaQL71yE/ULePCCuA7qI/AAAAAAAAARPI/OIqVBaHNjeY/s1600/Martello+Tower+%25E2%2580%259CY%25E2%2580%259D+by+Piercy+Conner+Architects07.jpg

VIII. APPENDIX B

Pre-Test Questionnaire Master's Version

How old are you?

<18 18-21 22-26 27-32 33+

How often did you play video games per week Pre-Guildhall?

<5 hours 5-10 hours 10-15 hours 20-30 hours 30+ hours

What game genres are you familiar with?

Action/Adventure FPS MOBA Strategy Sports MMO
Platformer Puzzle RPG Other: _____

What platforms have you regularly played games on?

Consoles Handhelds PC Other: _____

Post-Test Questionnaire Master's Version

What was the most enjoyable part of the level?

What was the most frustrating part of the level?

How was the pacing of the level?

Did you get stuck anywhere in the level? If so where and why?

What is the theme of the environment of the level? Was it consistent?

Did the artifact remind you of any other games? If so which ones?

Which aspects of this level enhanced the association with the game(s) listed above?

Gameplay

Visuals – Environment

Visuals – Character

Visuals – Weapons/Equipment

Boss

Music

Post-Test Questionnaire Master's Version

Which aspects of this level detracted the association with the game(s) listed above?

Gameplay

Visuals – Environment

Visuals – Character

Visuals – Weapons/Equipment

Boss

Music

If you could make a change to the level what would it be?