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How the Dungeons of The Legend of Zelda Challenge Players to Find the Way For Themselves

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**How the dungeons of *The Legend of Zelda* challenge
players to find the way for themselves**

by

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Introduction

I grew up enthralled by video games, and no series has engaged me more than *The Legend of Zelda*. The dungeons in Zelda games stand out in particular, with their mysterious ambiance, perplexing conundrums, and intricate passageways. These dungeons have left such an imprint on my mind that I have grown curious to know why. What is it really, that makes a Zelda dungeon special?

A dungeon in a Zelda or Zelda-like game is a closed off and tightly interconnected area of the game that leads the player through a series of challenges, such as solving puzzles or battling monsters. The goal is to reach the end of the dungeon and conquer the dungeon boss (a unique and extra dangerous monster). But labyrinthine corridors lead the player astray, frustrating their attempts at navigation. The player must overcome the dungeon through exploration and spatial reasoning (understanding their environment). When they do, they will feel triumphant because they were able to transform confusion into clarity; they experience an "aha moment".

That is how I personally experience a Zelda dungeon, and this experience guides me when designing my own Zelda-like dungeons. The purpose of this paper is to describe the mechanism of that experience. My question is: how do the interconnected dungeons of *The Legend of Zelda* create an "aha moment" for the player? This question contains two parts. First, what makes a Zelda dungeon interconnected? And, how does that interconnectedness allow the player to navigate triumphantly?

My answer then, will follow in two parts. First, a dungeon is a navigational puzzle, where the solution to the puzzle is the critical path. The dungeon is interconnected because the critical path is obfuscated through locks and keys (obstacles and prerequisites), and through optional routes that make up the exploratory path. This obfuscation results in an interconnected space that evokes the player to ask the guiding question: "where do I need to go?"

This "need to go" question is answered by the player using spatial reasoning, when they explore and understand the environment of the dungeon. The player is empowered to do so because the dungeon is a cohesive shared space, allowing them make inferences about the layout of the dungeon. Furthermore, the dungeon coheres to an organized structure, allowing the player to fully grasp the interconnectedness of the dungeon despite its complexity. A dungeon is rewarding to navigate because every time the player uncovers part of the critical path, they experience a triumphant "aha moment" earned by their own spatial reasoning.

This paper will develop a framework to describe how the interconnected dungeons of Zelda and Zelda-like games create an "aha moment" for the player. I will describe the critical path, and two ways which the critical path is obfuscated into a puzzle. Then I will cover two ways this puzzle is made to be successfully solved by the player.

My primary source is *The Legend of Zelda: Ocarina of Time* which I analyzed for this research. The appendix includes my diagrams and notes. I also consulted existing research regarding Zelda dungeons, especially the work of Mark Brown [1] and Joris Dormans [3]. Finally, I drew extensively from my personal experience with the *Legend of Zelda* series, and my experience designing dungeons for Zelda-like games.

As with any game design advice, please do not take my stance as authoritative. This is nothing more than a framework that works for me, but I hope it will be useful to others as well.

Critical Path

A dungeon may include puzzles within it that the player must solve to progress. However, the dungeon is also a puzzle in and of itself. The solution to the dungeon puzzle is the optimal route that the player must follow to reach the end. We will call this route the critical path [5]. On its own, the critical path is linear, meaning that each step of the critical path leads only to the next. The critical path includes only the parts of the dungeon that are required to reach the end, there are no diversions or optional routes.

Now imagine that a dungeon is nothing more than the critical path, comprised of one great long tunnel of challenges to do. The entire player experience could be described by the critical path, as it includes everything the player does in their journey to reach the end. But this kind of dungeon is not a puzzle, because the solution is trivial. The challenge presented by a dungeon is finding the critical path, not merely following it.

To present a challenge, the dungeon obfuscates the critical path, by hiding the solution and making it more complex and interconnected. This requires the player to ask the "need to go" question, because the critical path is no longer obvious. The player's experience is no longer following the critical path, but discovering the critical path by answering the "need to go" question. The triumphant "aha moment" is earned whenever the player learns something new about the critical path, especially when making progress through the dungeon.

There are two obfuscation techniques which I will discuss in the next two sections. They are locks and keys (obstacles with prerequisites), and the exploratory path (optional routes beyond the critical path).

Locks and Keys

The first way which the critical path is obfuscated is with locks and keys. A lock and key is any obstacle (a lock) that cannot be passed until the player meets a prerequisite (the key). A lock asks the "need to go" question which is answered with an "aha moment" by the key.

Locks and keys can take on any appearance [4]. Often they are literally locked doors that require a key to open. However, they can be anything that requires the player to perform a certain task before making progress in the dungeon. For example, a bridge lowered by a lever, a cracked wall destroyed with explosives, or a pit crossed with a grappling hook. Dungeons include a diversity of locks and keys to create gameplay variety.

To introduce complexity and hide the critical path, the dungeon separates the key from its lock, placing the key away from the primary route. This creates a detour that the player must follow until they can return with the key. The critical path still includes this detour (since it is required to complete the dungeon) but the correct route is harder to find because there are now two options, one of which is blocked by a lock.

Locks and keys can be categorized by how the keys relate to their locks. These types affect the critical path in different ways. The categorizations are as follows:

One Key, One Lock: This is a single key that bypasses a single lock. It includes switches that open doors, or kicking a ladder down to open a shortcut. If the key is positioned distant from its lock, this type can introduce a detour into the critical path.

Zelda's small keys and locked doors are a variation of this type. Small keys can be used on any locked door, which introduces nonlinearity in cases where the player can make a choice about which small key to get first and which locked doors to use them on.

Many Keys, One Lock: This is a collection of keys which together bypass a single lock. This may be five key shards that make up a special key, or defeating four ghosts to break a seal. This introduces detours like the "one key, one lock" types, as well as nonlinearity in cases where the many keys can be found in any order.

One Key, Many Locks: This is a single key which bypasses many locks. This is usually a "key item" which is a new ability that the player can use to navigate the dungeon. For example, the Hookshot can be used to cross certain gaps. A key item can recontextualize the entire dungeon, if there are many locks for that key introduced throughout the dungeon up to that point.

Together, these locks and keys transform the critical path from a linear corridor of tasks into a complex, branching web of obstacles and detours. They may even introduce nonlinearity in cases where many keys can be found in any order. This obfuscation makes a dungeon more challenging to navigate, as reaching the end requires finding every key.

Exploratory Path

Another method of obfuscating the critical path is by introducing routes that are not required to reach the end of the dungeon. Separate from the critical path, this is the exploratory path. The purpose of the exploratory path is to make the dungeon more interconnected, with more routes between areas of the dungeon. This interconnectedness obfuscates the critical path because the player must explore many potential routes, not all of which are part of the solution.

The exploratory path also creates player agency, because they can choose where they "want to go" in addition to pursuing the "need to go" question required by the critical path. The "need to go" question is core to the player's experience, but can sometimes be restrictive if the player can't ever divert from the "intended route". This is a problem especially in dungeons with a very linear solution. The exploratory path addresses this problem by giving more options to players, while preserving the critical path.

Like locks and keys, the exploratory path takes on many appearances. The exploratory path also often serves multiple purposes, obfuscating the critical path as well as improving the experience of the dungeon in other ways. Here are some examples:

Optional Routes: Optional routes are detours away from the critical path that don't lead to required keys [5]. Instead, they will often offer optional collectibles, such as a health upgrade or consumable items. Optional routes obfuscate the critical path by introducing more routes to consider, and reward curious players by giving them more things to find.

Alternative Routes: Alternative routes split the critical path into multiple routes that each lead to the correct solution, introducing nonlinearity. Sometimes well-hidden alternative routes even

bypass required keys to reward curious players. Alternative routes make the dungeon more interconnected and complex, but also more benevolent because there are more ways the player can take to reach the end of the dungeon.

Shortcuts: Shortcuts are routes that connect a later part of the critical path to an earlier part, typically made available only once the player has reached the later part already. This might be opening a locked door from the unlocked side, or dropping down a ladder from a higher ledge. Shortcuts make the dungeon more interconnected, as well as easier to navigate by allowing players to navigate more quickly to areas they have been before.

The exploratory path obfuscates the critical path by introducing interconnectedness beyond the critical path. This complexity poses the "need to go" question of the dungeon, and the player must seek to navigate the dungeon by answering that question. However, for the player to have a rewarding "aha moment" the dungeon must not only be complex, it must be solvable with spatial reasoning. Otherwise, the player is left to frustrated wandering.

To accomplish this, the dungeon allows the player to make inferences about its structure. In the next two sections, I will describe two ways that a dungeon is made solvable: shared-space (structural cohesion) and organization.

Shared Space

Finding the critical path is not rewarding due to complexity alone, otherwise the "best" dungeons would be utterly incomprehensible. Rather, the "aha moment" happens when the player gleans new information about the critical path using spatial reasoning. Spatial reasoning is our ability to think about and understand an environment. When the player engages in spatial reasoning, they gather information about their environment and make inferences that allow them to better navigate the dungeon. When they reach the end, they feel triumphant because they made it there by their own reasoning; a plan coming to fruition.

Spatial reasoning is possible because a dungeon is not an arbitrary maze, but a cohesive "shared space" where each area can be understood in relation to the rest. Shared space means that the dungeon is interconnected in ways that reveal information to the player. Every time the player asks "where do I need to go?" there is an answer available if they look for it; they are never left to wander without purpose.

To this end, shared space governs two principals about locks and keys. First, the lock is visible to the player before they find the key. This tells the player that they need a key. Second, the key is visible before it is reachable (such as a lever located on a prominent, yet inaccessible ledge). This tells the player where the key is. This leaves only how to get to the key, a problem which is simpler to tackle because it is now well-defined. The dungeon is hiding nothing from the player besides what they know they need to find.

Dungeons also make some parts of the critical path visible before they are reachable, even when there are no keys. This may be windows looking into other rooms, or bridges that cross above an area. This approach may inform some vague direction to the player. However, the main purpose of making later areas visible is so when the player reaches that part, they may look back and exclaim "That's the area I was in before!" This is another "aha moment" earned by a realization about the interconnectedness of the dungeon, through spatial reasoning.

Another way a dungeon is a shared space is through the reuse of space. The critical path overlaps with itself whenever the player must backtrack to an area they have been before. When this happens, the player already has an idea of the solution due to their previous knowledge of that area. This prior knowledge helps the player solve the dungeon.

The reuse of space is especially important in cases where something has changed to recontextualize that space. This may be a new key or shortcut, but some dungeons go further by including broad transformations to the environment. For example: filling an area with water, or changing the direction of gravity. These state-changing mechanics are a complex lock and key that is solvable because the player can utilize their previous knowledge of a reused area to navigate the space in any condition.

When the dungeon is a shared space, the player is not only thinking of the critical path, but of an entire interconnected environment. They are empowered to use their spatial reasoning to decide how to proceed, intelligently and with intent. When they learn something new, or make progress along the critical path, they are rewarded with an "aha moment" because they did so through their own effort.

Organization

To further aid the player in their spatial reasoning, a dungeon contains organizational patterns that help the player orient themselves. The obfuscation of the critical path is not random, but

rather conforms to an overarching layout. This organization provides a mental shortcut that allows the player to effectively grasp the layout of the dungeon, despite its complexity.

Organization looks different between dungeons. For example, a dungeon could be a tower, where the player makes progress by reaching the next floor. Or a dungeon might be modeled after familiar real-world locations, such as a hotel, school, or museum. There is one layout that is common in many Zelda-like games, which I will describe here in more detail. That layout is the entrance, hub, spokes, and gauntlet [1] [4].

Entrance

The entrance is a linear section at the start of a dungeon, before it opens up for the player to make choices. In the entrance, the critical path is easy to follow. This introduces the player to the mechanics of the dungeon, and allows them to get their bearings in a new environment.

Hub

The hub is a centralized and heavily reused space in a dungeon. The player will revisit the hub frequently as they make progress. This makes the hub a nucleation point for the complexity of the critical path, as most diverting routes begin and eventually end in the hub.

The hub also serves as a landmark. When the player returns to the hub, they know exactly where they are and they can get their bearing. To reinforce this, the hub often includes memorable set-pieces, such as a dramatic statue. This set-piece often doubles as a lock leading to the end of the dungeon, which provides a long term objective for the player.

Spokes

From the hub, the dungeon branches into spokes. Each spoke is a route that makes a big loop, away from the hub and returning to it. Each spoke ends with a key required for the critical path. This may be a key that unlocks the next spoke, or part of a key that unlocks the final spoke.

Each spoke is mostly independent from other spokes, so every key required to complete a spoke is contained within the same spoke. If there are connections between spokes they are typically part of the exploratory path. In this way, each spoke is a discrete "chunk" allowing the player to focus on one part of the dungeon at a time.

Gauntlet

The gauntlet is the final stretch of the dungeon, the last bit of the critical path after the player finds the last required key (often the dungeon boss key). The gauntlet contains no more diversions, though there may still be tasks to complete.

The gauntlet is linear and typically fast-paced. When the player reaches the gauntlet, they have answered the "need to go" question of the entire dungeon. The gauntlet is the final fulfillment of the "aha moment" because at this point the dungeon is solved. The rest is a triumphant race to the finish line.

Conclusion

A dungeon is a navigational puzzle whose solution is the critical path. The critical path is obfuscated making the solution difficult to find. This presents a "need to go" question that is answered when the player uncovers part of the critical path. The player is empowered to do so because the dungeon allows them to navigate with spatial reasoning. When the player learns something new by answering part of the "need to go" question, they are rewarded by a triumphant "aha moment" because they succeeded through their own ability.

The solution to the dungeon is obfuscated, therefore the player must engage in spatial reasoning, therefore the player will feel triumphant when they solve the dungeon.

This research describes one possible framework for understanding the player experience of Zelda-like dungeons. I covered several techniques that contribute to obfuscation and spatial reasoning, including the exploratory path, locks and keys, shared space, and organization. This research contributes to a better understanding of how players experience Zelda-like dungeons, and provides a framework for designers to better replicate this experience.

However, there is more complexity to dungeons than what is covered by this research. For one example, I barely touched on what Mark Brown calls "Puzzle Box" dungeons, those which use state-changing mechanics like dynamic water levels [1]. I explained these mechanics as a type of lock and key, however their impact is far more complex than most locks and keys.

Furthermore, the design techniques I describe are rarely so discrete. Dungeons are made by game designers, not algorithms. The exploratory path may be required. There may be no critical path. Some dungeons blur the line between dungeon and "not dungeon". The point is that not all

dungeons are easily defined. So, while I assert that this framework is useful in many cases, it is hardly comprehensive.

Further research would work towards better describing more complex dungeons, as well as innovating the genre to create new types of dungeons. One opportunity is the expansion of the exploratory path. This is shown in the dungeons of *Elden Ring* which are obfuscated almost entirely by the exploratory path, with very few locks and keys. Another innovation is "knowledge locks" which are a soft type of lock and key where progressing only requires knowing something about the game. These are utilized in *TUNIC*, which hides alternative routes in plain sight.

I hope that this analysis may provide an "aha moment" for you, the reader.

Acknowledgements

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References

[1] Mark Brown, 2016. "Boss Keys: A game-by-game analysis of non-linear level design in games like *Zelda*, *Dark Souls*, and *Metroid*"

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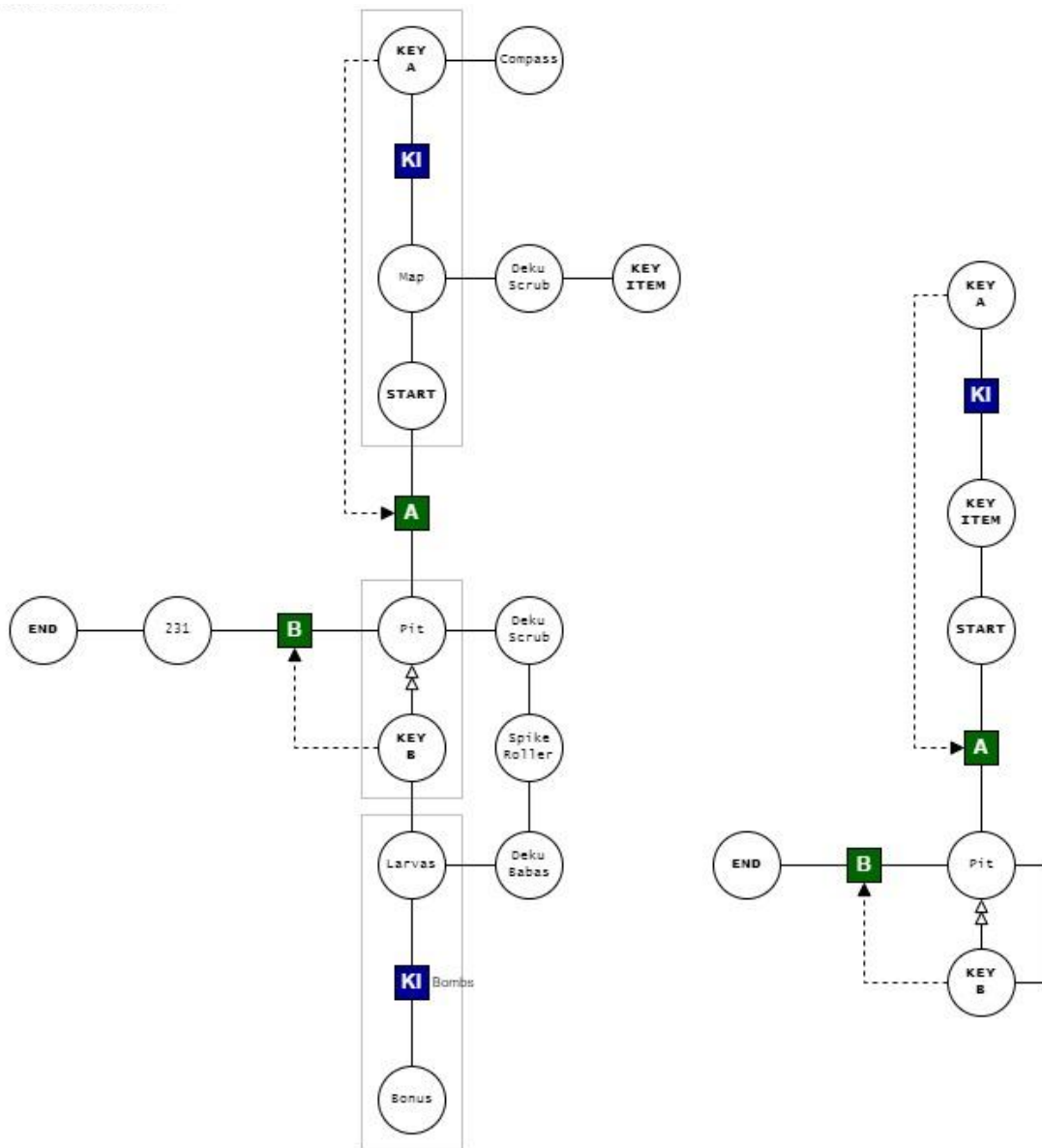
<https://www.gamedeveloper.com/design/emotion-engineering-a-scientific-approach>

Diagrams

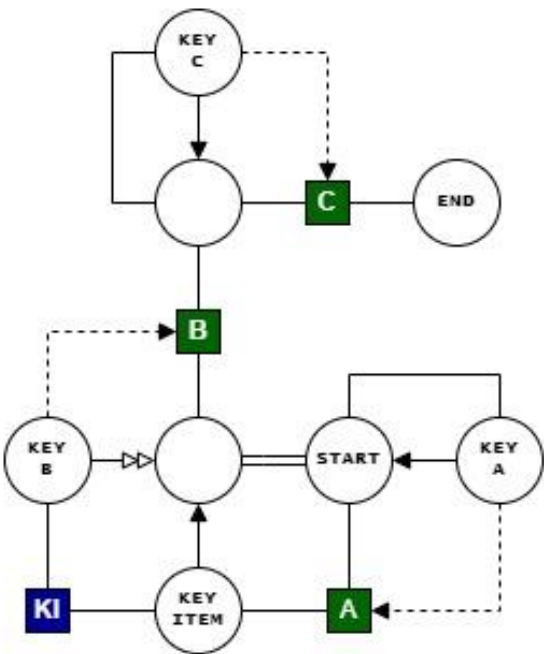
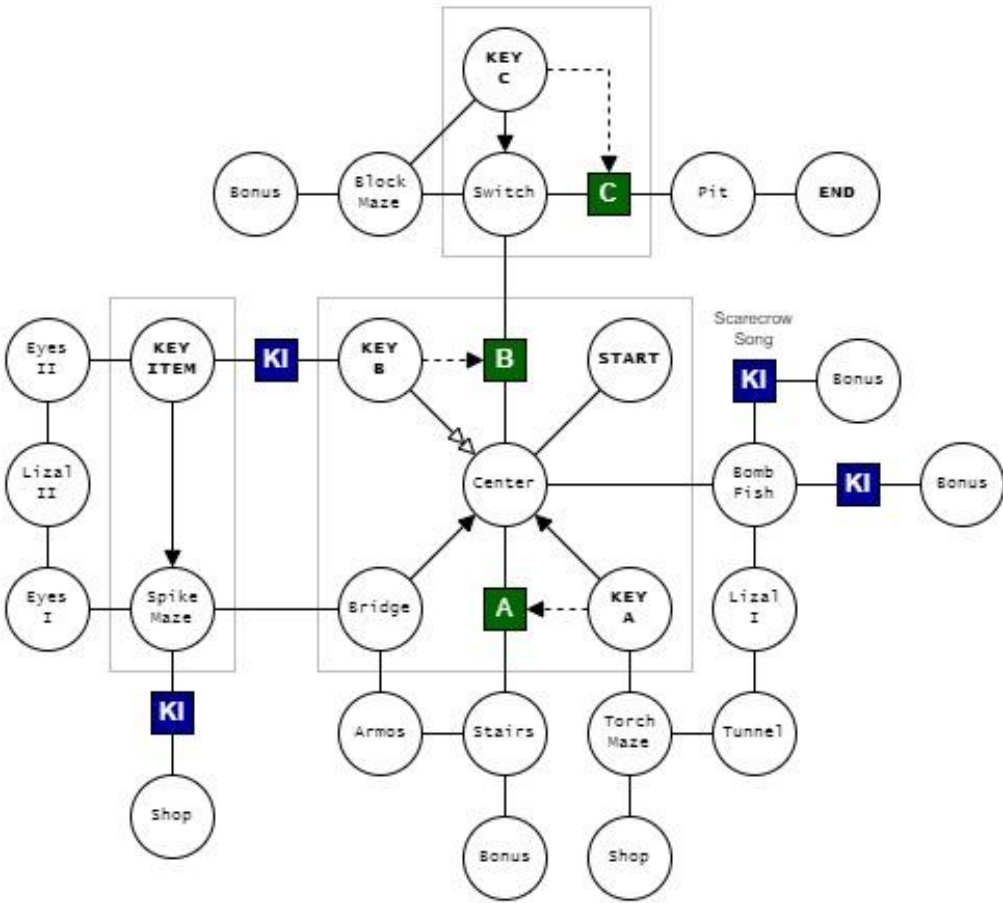
The following diagrams are maps of the first five dungeons from *The Legend of Zelda: Ocarina of Time*, which were created as part of this research project. They are modeled after Dormans' mission and space graphs [3]. The simplified diagrams show only the critical path, and are similar to Mark Brown's progression graphs [2]. These diagrams were influential in my analysis, but are not required to understand it. They are included here for reference and curiosity.

OOT1 - Great Deku Tree

<https://www.youtube.com/watch?v=915111111111>

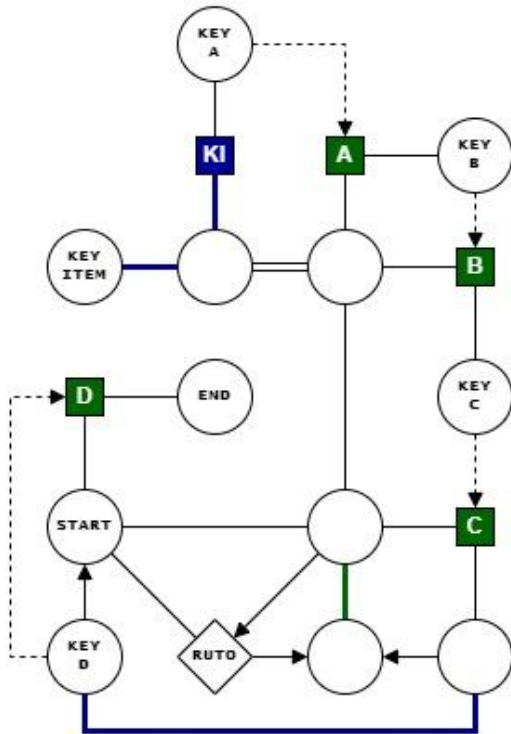
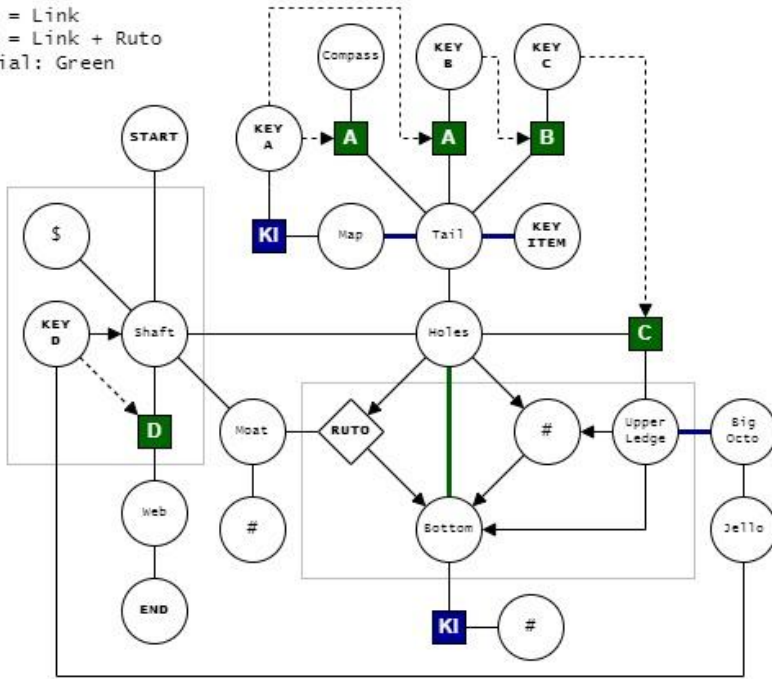


OOT2 - Dodongo's Cavern

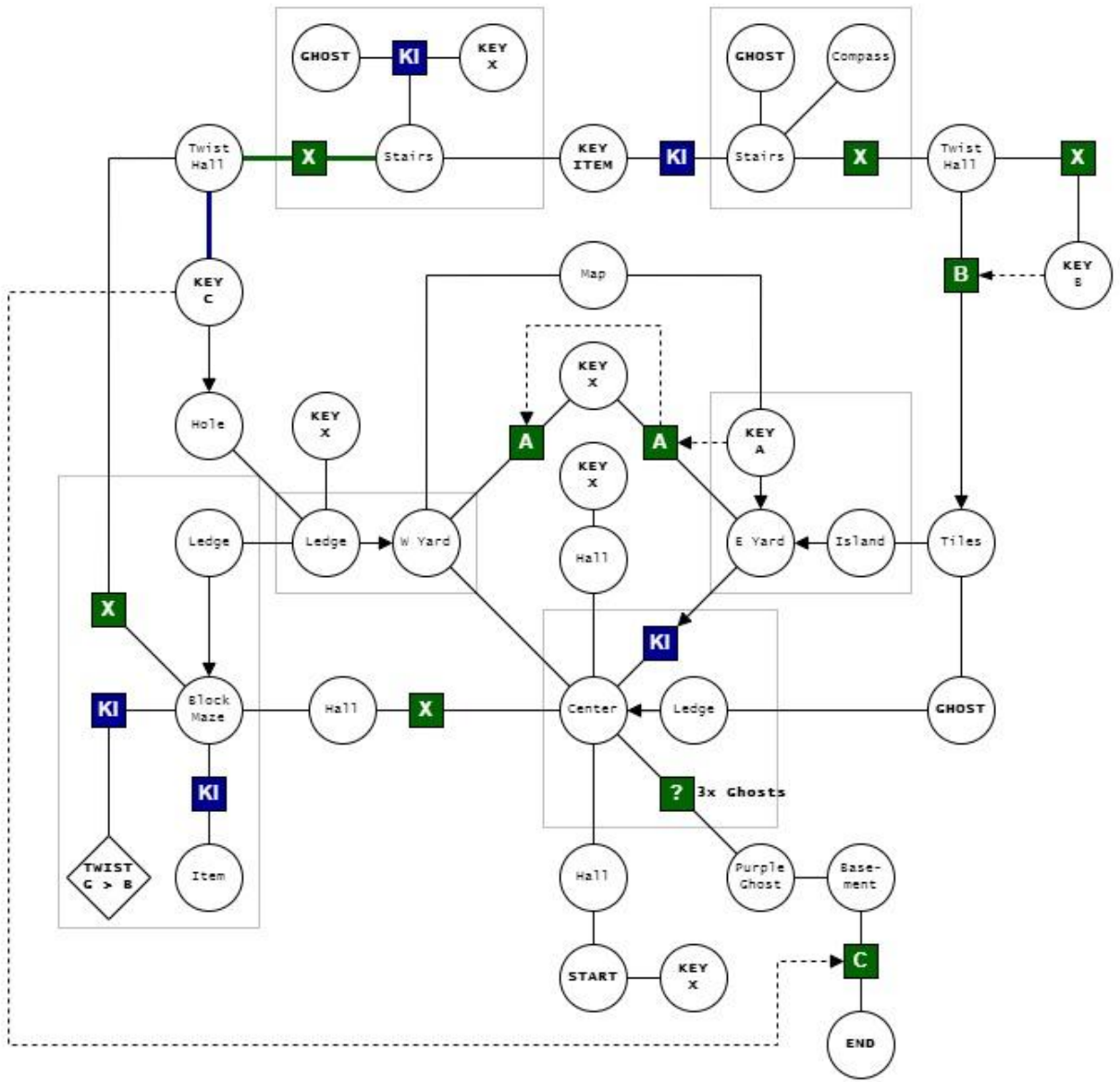


OOT3 - Jabu Jabu's Belly

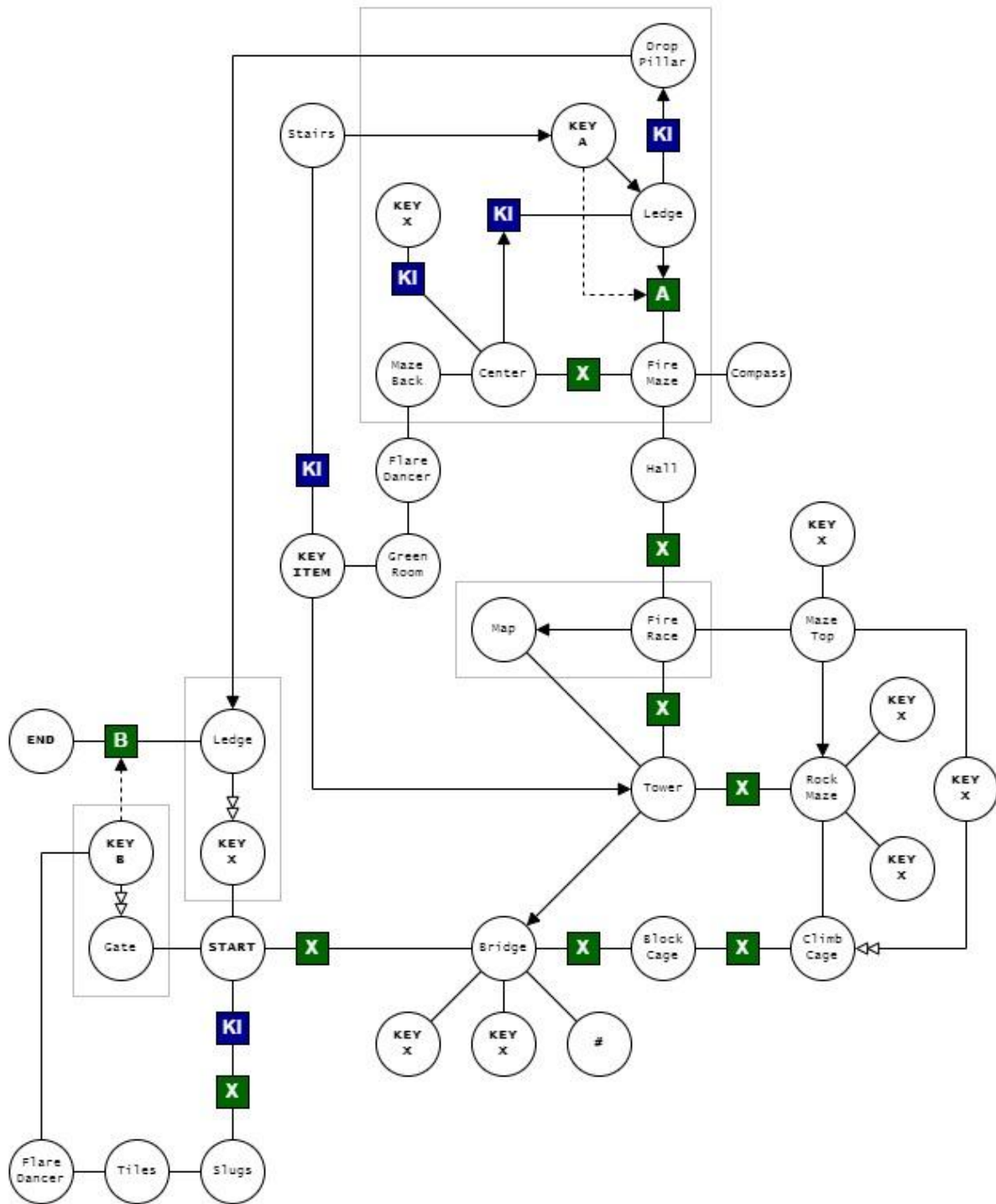
Green = Link
 Blue = Link + Ruto
 Initial: Green



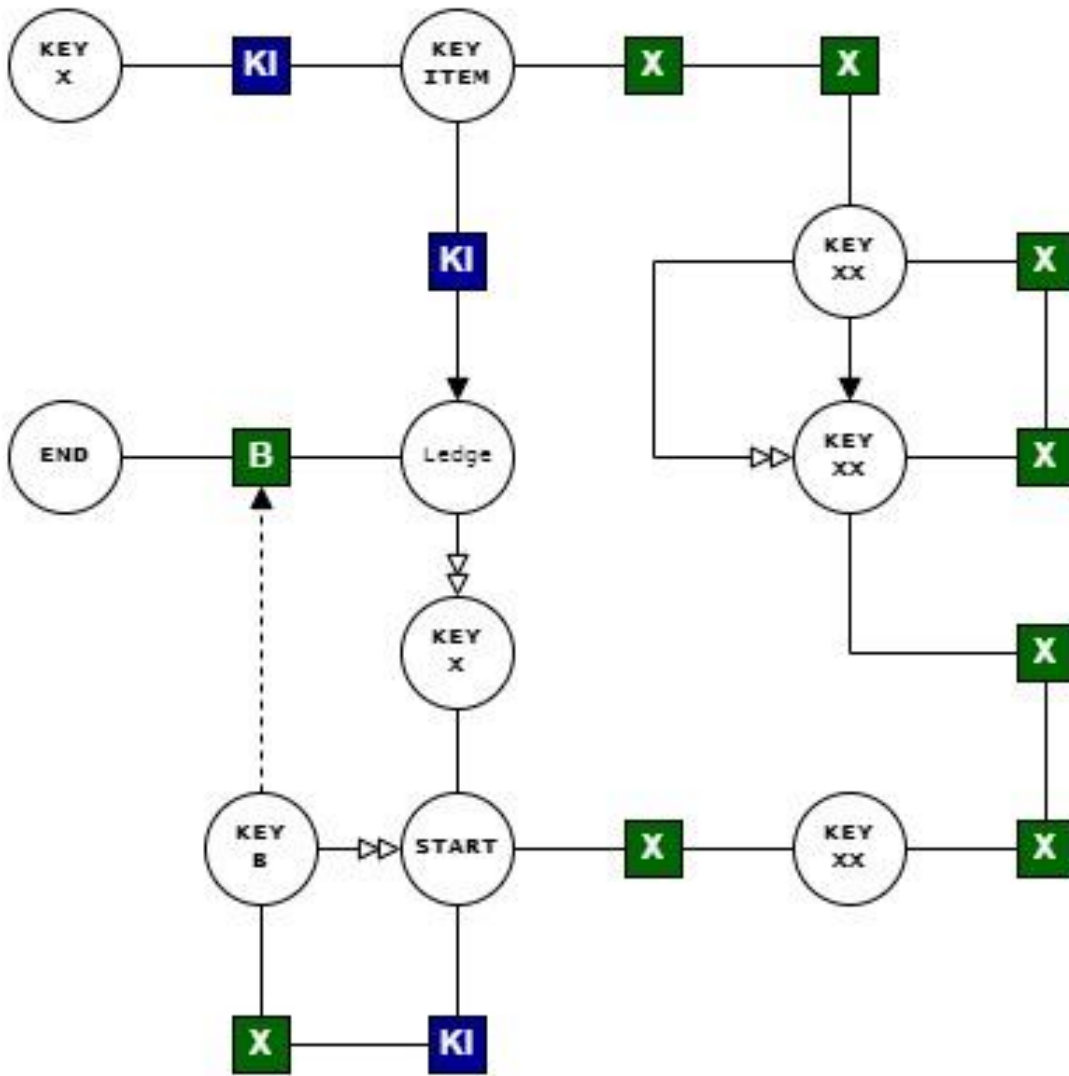
OOT4A - Forest Temple (Full)



OOT5A - Fire Temple (Full)



OOT5B - Fire Temple (Simplified)

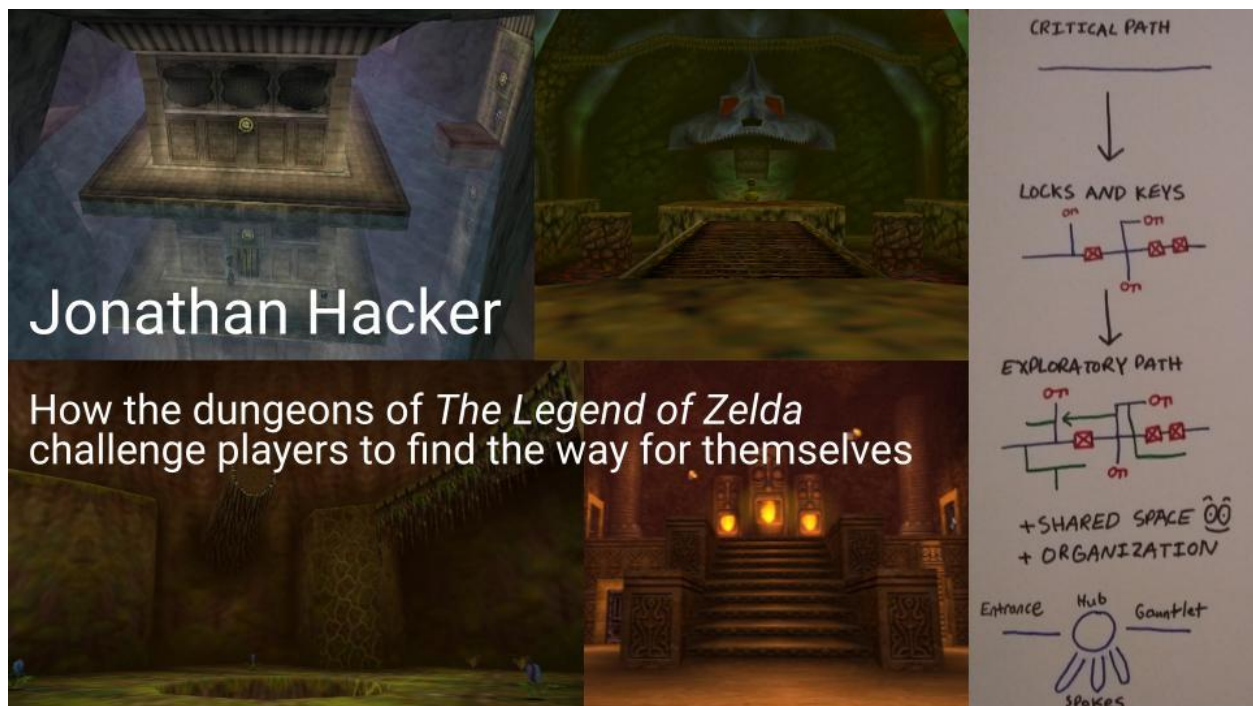


Appendix

Honors Research Symposium Presentation, May 21st, 2022, Seattle Pacific University

This panel examines the ways that rational frameworks can provide a deeper understanding of the subjective human experience, as well as the benefits, limitations, and dangers of this approach. This panel will provide field-specific examples of rational frameworks and how they operate to shape our understanding of the human experience.

My project addresses this topic through the lens of game design and finds that level design frameworks can explain the mechanics of a player experience heuristically.



The work of game design is to craft a set of interactive mechanics, such that when the player engages with those mechanics, the game will evoke a particular set of emotions [6]. The players' engagement with the game, and the emotions they feel as a result, form the player experience. Players choose to play a game for the experience, and so a good game is one that creates an experience that engages the player. This makes game design intrinsically challenging, because human experience is subjective, individual, and unreliable.

It is impossible to prove that a particular design will evoke the intended emotion, until that design can be tested with player feedback. Even with testing, it remains difficult to prove why a player feels a particular emotion. Furthermore, player testing is expensive, especially because it requires the features to be implemented before they can be tested.

Therefore, it is desirable to develop rational frameworks that can guide the design process. A game design framework is a tool for the designer, allowing them to make inferences about how their design will impact the player experience. A framework reduces guesswork, and allows game design to be more reliable, predictable, and communicable.

For example, a simple game design framework is the prevailing wisdom that a game should become more challenging as the player progresses. The reasoning for this is that the player becomes more skilled as they play, so the game should provide them with new challenges to keep them engaged and reward their skill.

It is important to understand that this framework does not describe a process to follow. Instead, it provides justification for a design decision after-the-fact, such as the choice to place a challenging enemy at the end of an area. The designer may say: "This enemy increases the difficulty later in the game, therefore it will reward the player's increased skill."

Yet this framework makes no claim that this is the best design. Perhaps the player experience is better developed by an unexpectedly easy enemy, such as to serve a narrative purpose. A more robust framework might cover this caveat, such as the concept of a "difficulty curve" which conforms to the narrative of the game. However, I assert that any rational framework, no matter how robust, will eventually fall short in encompassing every possible human experience.

This is the limitation of rational frameworks in the context of game design: because we are attempting to describe subjective human experience, game design frameworks are necessarily heuristic. This means that while a design framework can be a useful tool, it is not guaranteed to be rational, optimal, or provable. It operates as an intuitive shortcut to inform design decisions, according to the judgment of a game designer. "Some assembly may be required."

Allow me give a more complex example.

My research worked to develop a design framework for dungeon levels, such as the dungeons that appear in The Legend of Zelda series. A dungeon in a Zelda or Zelda-like adventure game is a tightly interconnected area, where the objective is to reach the end of the dungeon. A dungeon

is uniquely characterized by the way in which the path to reach the end is obscured. Reaching the end of a dungeon requires finding the right path, in addition to following it.

From this mechanical description, we can glean the way in which the player engages with the game. The solution to the dungeon is hidden, therefore the player must explore to find the correct path. Player testing conducted for this project demonstrated that the particular way which the player navigates the dungeon is through spatial reasoning. By this I mean that the player explores with the specific goal of understanding their environment.

The emotions of the player are evoked by their engagement with the game. The player initially feels confused, because they do not know where to go. They will feel ruminative while engaging in spatial reasoning. When they finally discover the correct path (or at least think they have) the player will feel triumphant, because they transformed confusion into clarity. I refer to this as the "aha moment" and this is the primary intrinsic motivation for the player in a dungeon.

The "aha moment" is part of many design frameworks, but in this case, the "aha moment" is earned whenever the player learns something new about the dungeon. The player feels triumphant in particular because they learned something new through their own effort; the dungeon does not tell the player where to go. They discover the way for themselves.

The mechanics, engagement, and emotions of the player experience can be summarized like this: the solution to the dungeon is hidden, therefore the player must engage in spatial reasoning, therefore the player will feel triumphant when they learn something new. The objective of the dungeon design framework is to reliably create this particular player experience.

The next step is to define the framework itself. I accomplished this by analyzing the dungeons in *The Legend of Zelda: Ocarina of Time*, and identifying common elements between them. The goal of this approach is to allow the designer to replicate a similar mechanical structure in their dungeons as to the dungeons in *Ocarina of Time*. If this is done well, the new dungeons should evoke a similar engagement and emotional response from the player.

My framework justifies the inclusion of specific elements by relating those elements to the player experience. Design features that support the player experience are included, while others are deemed nonessential and not covered by the framework. These decisions were themselves made heuristically based on my own experience playing and designing dungeons. I make no claim that these elements are the best or only combination of elements that can describe a

Zelda-like dungeon. I only claim that the elements I chose to include are consistently represented within the sample of dungeons that I analyzed for this research.

With this approach, my framework describes a dungeon as a "navigational puzzle" where the solution is referred to as the "critical path". The critical path is another concept familiar to other design frameworks, referring to the ideal or primary route that a player will take through a game. In the context of dungeons, the critical path contains every action the player must take to reach the end of the dungeon. The critical path is linear by definition, meaning it must be followed in a single, specific order. There are no variations or choices to make.

But a dungeon is not linear, it is complex and interconnected. My framework introduces complexity to the dungeon by applying a series of transformations that obfuscate (or complicate) the critical path. This obfuscation contributes to the player experience by making the solution of the dungeon difficult to find. This is what makes the dungeon a "navigational puzzle" and what encourages the player to engage in spatial reasoning.

My research describes two obfuscation techniques that were demonstrated by the dungeons in Ocarina of Time. The first is locks and keys. A lock is any obstacle in the dungeon that cannot be overcome until the player meets a prerequisite, which is the key. A lock and key may take the form of its namesake: a locked door that requires a certain key to open. Or, it may be something else that works within the context of the dungeon. For example, a bridge that is lowered by a lever, or a gap that cannot be crossed without a grappling hook.

A lock and key serves to obfuscate the critical path by separating the key from its lock. This creates a diversion in the critical path, in which the player is initially obstructed by the lock, and must look elsewhere for the key before they can make progress.

The second obfuscation technique my framework describes is the exploratory path. This consists of additional optional routes that are not part of the critical path. The exploratory path exists as part of the dungeon beyond the solution. This may include alternative routes, dead-ends, or shortcuts that lead the player back to areas they have already explored.

The exploratory path obfuscates the critical path in two ways. First, creates more space for the player to explore, hiding the correct route among others that are incorrect. Second, the exploratory path give the player more choices, introducing nonlinearity and increasing player agency. Agency is another desirable aspect of the player experience in many games, but is not specifically addressed by this framework.

Obfuscation addresses the mechanical aspects of a dungeon that contribute to the player experience. Obfuscation hides the critical path, confusing the player and creating an environment that is challenging to navigate. However, with these techniques alone, the player is not yet able to engage with spatial reasoning, and so cannot attain the "aha moment" that our framework serves to create. Therefore, additional design elements must be introduced to allow the player to solve the navigational puzzle that we have created.

The goal is to give information to the player that allows them to make inferences about the layout of the dungeon, and by doing so, navigate more efficiently. My research describes two techniques for doing this. The first is what I call "shared space." Shared space is the idea that the dungeon is not an arbitrary maze, but rather a cohesive "shared space" where each area can be understood in relation to the rest. In practice, this involves creating sightlines that allow the player to see areas of the critical path that they cannot access, such as ledges or windows that show other parts of the dungeon.

Shared space governs two principals about locks and keys. First, the lock is visible to the player before they find the key. This tells the player that they need a key. Second, the key is visible before it is reachable. This tells the player where the key is. This leaves only how to get to the key, a problem which is possible to tackle because it is now well-defined. The dungeon is hiding nothing from the player besides what they know they need to find.

Another way that a dungeon is a shared space is through the reuse of space. The critical path overlaps with itself whenever the player must backtrack to an area they have been before. When this happens, the player already has an idea of the solution due to their previous knowledge of that area. This prior knowledge helps the player solve the dungeon.

By seeking to understand the dungeon as a shared space, the player is employing spatial reasoning. They are rewarded for doing so by information that allows them to more efficiently navigate the dungeon.

Another way in which a dungeon empowers the player to use spatial reasoning is through an overarching organizational pattern. This organization serves as a mental shortcut, allowing the player to effectively grasp the layout of the dungeon, despite its complexity.

For example, a dungeon might be constructed like a tower where the player must reach the top. From this, the player can make inferences such as that going upward is likely desirable.

Furthermore, if each floor of the tower is isolated, then the player can know that once they reach a new floor they will not need to go back down to a previous one.

There are many possible organizational patterns, especially drawing off of familiar real world locations, such as a school, hotel, or a castle. My research also details another approach that is commonly used in the Legend of Zelda series, where dungeons contain an entrance, central hub, branching spokes, and ending gauntlet. It is often best to use many different organizational patterns, to create variety between dungeons in a game.

In summary, the player explores a complex and confusing environment, looking for the critical path. Spatial reasoning empowers the player to understand the complex space and successfully navigate to the end. This engagement rewards the player with an "aha moment" when they learn something new by their own effort.

What I have presented to you is one possible framework that provides a rational understanding of a microscopic aspect of the human experience: the feeling of a player exploring a dungeon in a Zelda-like video game. A game designer could use this framework to create a new dungeon, by evaluating design decisions according to their purpose in obfuscating or revealing the critical path. This approach is far superior to designing dungeons from scratch, with no guiding design principals or a clear understanding of the player experience.

However, this approach is also greatly limited, in part due to its narrow scope. There is far more complexity to dungeons than what is covered by my research. For example, my framework does not address dungeons with moving parts, such as the Divine Beasts from The Legend of Zelda: Breath of the Wild [2]. Additionally, this framework only operates to replicate existing designs, those in Ocarina of Time. Any innovation must be still be done by intuition alone.

Furthermore, because this framework operates heuristically, it is difficult to prove its efficacy. This framework is not the best way to design dungeons, nor is it the only way. It is difficult to judge the limitations of a framework except in comparison to others, and so a design framework like this is best used as one tool among many. Frameworks operate as a tool to assist game designers, not as a replacement for them.

Finally, we must always recognize what I stated at the beginning. "Any rational framework, no matter how robust, will eventually fall short in encompassing every possible human experience." This may appear obvious, but it is often forgotten, and with dire consequences.

When we attempt to rationalize the human experience, in all of its strange and wondrous subjective messiness, we take on the dangerous responsibility of defining what it means to be human. We declare "this is the human experience", and so, when inevitably some person falls outside of our nice and pretty framework, we implicitly dehumanize them. In game design, this happens when our games are inaccessible for people with disabilities, or when our games perpetuate systems of discrimination against marginalized players.

To fail to consider the entire breadth of human experience, including that which lies beyond our own personal experience, is to fail to employ proper duty of care to our players. Therefore, all game design must be done collaboratively, by including those who have historically excluded. Game design should be done by the designers who are most likely to be voiceless. And game testing should be done by the players who are most likely to be harmed by a discriminatory framework. Then, we can create games that fully capture the human experience.