RESEARCH QUESTIONS

- How can we design puzzles around key story events and give players enough freedom without making it a handheld experience?

- Does a unique gameplay experience in each chapter of the story add to the novelty of the experience?

- How can you alter player experience based on their prior interactions without changing the overarching narrative?

- How to create a fail state for stories central to the gameplay?

* How can we design puzzles around key story events and give players enough freedom without making it a handheld experience?

Games such as “What remains of Edith Finch”, “Disco Elysium”, “Firewatch” and “Return of the Obra Dinn” are the sources of inspiration for the game I’m trying to make. So going through the talks by these developers, game designers and narrative designers working on the game will give me some ideas of what their thought process was when they were working on the game, the issues they’ve faced and ways they’ve solved it either technical or design based. Also going through various reviews by people who’ve played the game and critiques would help get another perspective on these games by seeing what the audience thinks was bad/ good.

To answer this question, we must first understand what is a puzzle? A puzzle is a problem which challenges the player to tests their knowledge about the situation. In a puzzle, the solver is expected to put pieces together (or take them apart) in a logical way, to arrive at the correct solution and complete a task. There are three types of puzzles, internal logic, where the puzzles are based on the game’s rules and setting, to designer logic, where the puzzles are arbitrary and confusing, to lock and key, where the puzzles have one fixed solution that can be solved in multiple ways [1].

Clara Fernández-Vara, an expert in adventure game analysis points out that puzzles in adventure games are frequently integrated into the narrative events, and the game story is advanced through puzzle solving, she further defines these types of puzzles as “narrative puzzles” [2]. According to a paper by Wei Huaxin and Betty Durango [3], narrative puzzles are distinct design elements that play a role in the unfolding and the player’s experience of game plot. They review other previous literature on puzzles and identify four main functions that narrative puzzles can perform for game storytelling: preparation and acquisition, advancement and guidance, creating plot variation, and pacing and structuring.

Preparation and acquisition: This function involves puzzles that help the player acquire narrative information or in-game items that are useful for future puzzles. These puzzles may not have an obvious solution or goal, but they provide short-term aesthetic experiences and introduce the player to the game world and its logic.

Advancement and guidance: This function involves puzzles that move the game plot forward and guide the player to the next plot segment. These puzzles are often integrated into the narrative events and require the player to interact with objects or characters in the game world. They may also unlock clues or objectives that show the player where to go next.

Creating plot variation: This function involves puzzles that have potential to change the plot trajectory and create different outcomes based on the player’s performance. These puzzles are often embedded with crucial plot points or branching points, where the player’s actions and choices can lead to different consequences or endings. These puzzles can enhance the player’s agency and engagement with the game narrative.

Pacing and structuring: This function involves puzzles that help pace the plot and gameplay along the game progression. These puzzles can align the level of difficulty or complexity with the narrative arc to create dramatic tension or rhythm. They can also serve as narrative units that organize the game plot into segments or chapters. These puzzles can improve the player’s comprehension and immersion in the game narrative.

The paper concludes that puzzles in narrative games are not only a gameplay mechanic but also a storytelling device that can enrich the game’s plot and the player’s experience.

Some common mistakes when designing puzzles include making them too difficult or easy, not providing enough feedback to the player, and not considering the player’s perspective when designing the puzzle.

[1] Bycer, J., 2020. A Study Into Puzzle Design in Video Games. Game Wisdom.

[2] Fernández-Vara, C. (2019) Introduction to game analysis. London: Routledge

[3] Wei, H & Durango, B 2019, Exploring the Role of Narrative Puzzles in Game Storytelling. in Proceedings of the 2019 DiGRA International Conference: Game, Play and the Emerging Ludo-Mix. Digital Games Research Association

Designing puzzles around key story events while giving players enough freedom can be a challenging task. One approach is to design puzzles that are interconnected, where solving one provides clues for another. This way, if a player gets stuck on one puzzle, they can try another1. Another approach is to design puzzles around a particular aesthetic choice or combine mechanics that haven’t been used together before2.

[Exploring the Role of Narrative Puzzles in Game Storytelling | DiGRA](http://www.digra.org/digital-library/publications/exploring-the-role-of-narrative-puzzles-in-game-storytelling/)

Wei, H & Durango, B 2019, Exploring the Role of Narrative Puzzles in Game Storytelling. in Proceedings of the 2019 DiGRA International Conference: Game, Play and the Emerging Ludo-Mix. Digital Games Research Association

According to a paper by Wei Huaxin and Betty Durango1, narrative puzzles are distinct design elements that play a role in the unfolding and the player’s experience of game plot. They propose an initial taxonomy of the functions a narrative puzzle can perform for game storytelling, such as:

Revealing information: Puzzles can be used to deliver exposition, backstory, clues, or foreshadowing in an interactive way. For example, in The Witness, solving puzzles reveals audio logs that provide insights into the game’s world and themes.

Creating tension: Puzzles can be used to create suspense, urgency, or conflict in the narrative. For example, in The Last of Us, some puzzles require the player to protect their companion from enemies while finding a way to proceed.

Enhancing immersion: Puzzles can be used to make the player feel more involved in the game world and the story. For example, in Myst, puzzles are integrated into the environment and require the player to explore and manipulate objects that are part of the game’s lore.

Expressing character: Puzzles can be used to convey the personality, motivation, or emotion of a character. For example, in Portal, puzzles are designed by GLaDOS, an AI antagonist who taunts and tests the player throughout the game.

Enabling agency: Puzzles can be used to give the player choices and consequences that affect the narrative outcome. For example, in The Walking Dead, some puzzles involve moral dilemmas that influence how other characters react to the player.

The paper also discusses some potential design patterns that involve narrative puzzles, such as:

Puzzle as obstacle: The puzzle is a challenge that blocks the player’s progress and must be overcome to advance the story. This pattern is common in adventure games and can be used to create tension or reveal information.

Puzzle as reward: The puzzle is a bonus that rewards the player for exploring or completing a task and provides additional information or content. This pattern is often used in open-world games and can be used to enhance immersion or express character.

Puzzle as branching point: The puzzle is a decision point that offers multiple solutions or paths and leads to different narrative outcomes. This pattern is rare in games and can be used to enable agency or create tension.

<https://www.researchgate.net/publication/265206701_A_Model_for_the_Design_of_Puzzle-based_Games_Including_Virtual_and_Physical_Objects>

Melero, Javier & Davinia, Hernández-Leo. (2014). A Model for the Design of Puzzle-based Games Including Virtual and Physical Objects. Educational Technology & Society. 17. 192-207.

There are several techniques for designing puzzles in games. One approach is to design puzzles that are interconnected, where solving one provides clues for another. This way, if a player gets stuck on one puzzle, they can try another. Another approach is to design puzzles around a particular aesthetic choice or combine mechanics that haven’t been used together before.

When integrating puzzles into gameplay, it’s important to consider the role of puzzles in the game and how they fit into the overall narrative and gameplay experience. Puzzles can be used to set intermediate goals for the player or to blend action with detective work.

* Does a unique gameplay experience in each chapter of the story add to the novelty of the experience?

In “What Remains of Edith Finch”, playing a part in the life of each character feels like a new experience and makes the story more engaging. It adds different ways to move or to take the form of another subject to make us go though the story from another perspective. Similarly, in “It Takes Two” which is a co-op game, every location has different ways to solve puzzles by using the level design and alternating between the players helping each other to solve puzzles. This makes for exciting gameplay and the player doesn’t know what to expect next peaking their curiosity.  
  
[(PDF) Fundamental Components of the Gameplay Experience: Analysing Immersion. (researchgate.net)](https://www.researchgate.net/publication/221217389_Fundamental_Components_of_the_Gameplay_Experience_Analysing_Immersion)

Ermi, Laura & Mäyrä, Frans. (2005). Fundamental Components of the Gameplay Experience: Analysing Immersion.. Worlds in Play: Int. Perspectives on Digital Games Research.

[Gameplay, Emotions and Narrative: Independent Games Experienced (cmu.edu)](https://kilthub.cmu.edu/articles/book/Gameplay_Emotions_and_Narrative_Independent_Games_Experienced/10005641)

Marak, K., Markocki, M. and Brzostek, D. (2019) Gameplay, emotions and narrative: Independent Games experienced, figshare. Carnegie Mellon University. Available at: https://kilthub.cmu.edu/articles/book/Gameplay\_Emotions\_and\_Narrative\_Independent\_Games\_Experienced/10005641 (Accessed: April 13, 2023).

[Worlds at our fingertips: reading (in) What Remains of Edith Finch — Abertay University](https://rke.abertay.ac.uk/en/publications/worlds-at-our-fingertips-reading-in-iwhat-remains-of-edith-finchi)

Bozdog, M., & Galloway, D. (2020). Worlds at Our Fingertips: Reading (in) What Remains of Edith Finch. Games and Culture, 15(7), 789–808. <https://doi.org/10.1177/1555412019844631>

The game is structured as a collection of short stories within a larger story. Each story is distinct and belongs to a different genre, using different storytelling techniques. The game’s overall structure borrows from the literary technique of a frame narrative by developing a collection of stories within a story within a story.

* How can you alter player experience based on their prior interactions without changing the overarching narrative?

This is one of the more complicated questions since I’m bound by the story and cannot have branching dialogues like other games do. Nor can I have a stats system which would change the players interaction completely because the story is linear and I’m trying to deliver an experience. Some ways I will explore are dynamic difficulty adjustments which won’t make a drastic impact on the story but make things easier for some players. Few dialogues for actions performed by players by just changing the main dialogue. This could add replayability value to the game. Personalization of the player character will also be explored.

<https://ojs.aaai.org/aimagazine/index.php/aimagazine/article/view/2449>

Riedl, M. O. and Bulitko, V. (2012) “Interactive Narrative: An Intelligent Systems Approach”, *AI Magazine*, 34(1), p. 67. doi: 10.1609/aimag.v34i1.2449.

The article “Interactive Narrative: An Intelligent Systems Approach” by Mark O. Riedl and Vadim Bulitko discusses the use of artificial intelligence in creating interactive narrative systems. These systems are a form of digital interactive experience where users can create or influence a dramatic storyline through their actions, either by assuming the role of a character in a fictional virtual world, issuing commands to computer-controlled characters, or directly manipulating the fictional world state.

One of the key challenges in creating interactive narrative systems is balancing user agency with coherent story progression. To address this challenge, researchers have proposed various approaches, including the use of plot graphs, experience managers, and player modeling.

A plot graph is a representation of a story where nodes represent narrative events and arcs denote precedence constraints. This means that no event can occur unless all events constrained to occur prior to it have already occurred. Some events are experience manager actions that can be performed at any time to increase the probability that certain trajectories occur. A search process generates possible trajectories, including experience manager actions, and evaluates the trajectories according to an author-defined heuristic.

An experience manager is an intelligent agent that monitors the virtual world and intervenes to drive the narrative forward according to some model of quality of experience. The experience manager must look ahead into possible futures of the user’s experience to determine the best intervention, if any, to bring about a structurally coherent experience. The experience manager must also reason about the effects of its interventions in the virtual world to bring about the desired narrative experience.

Player modeling involves learning a model of the user’s individual differences, such as preferences and play style, in order to tailor the narrative experience to the user. This can be done by mapping observed player behavior in the fiction world into abstractions or by eliciting structured feedback from users across many interactive narrative experiences.

The article also discusses the importance of incorporating believable characters into an interactive narrative framework. Believable characters are virtual agents that exhibit personality and emotion as they interact with the environment and the user. There can be a tension between an experience manager, which is trying to bring about a global structure to the user’s interactive experience, and virtual characters, which are attempting to perform local actions that promote believability.

Overall, the article concludes that interactive narrative has great potential for entertainment, education, and training, but there are still many open research questions that need to be addressed in order to fully realize this potential.

There are different ways to alter player experience in a game based on their prior interactions without changing the overarching narrative. One way is to use adaptive difficulty1, which means adjusting the game’s challenge level according to the player’s skill and performance. For example, if the player is doing well, the game can increase the number of enemies, reduce the amount of resources, or introduce new obstacles. If the player is struggling, the game can do the opposite and make the game easier. This way, the player can experience a balanced and engaging game play that matches their abilities and preferences.

Another way is to use branching paths2, which means giving the player meaningful choices that affect the game state or other characters. For example, if the player decides to help a certain NPC, they might unlock a new area, gain a new ally, or receive a reward. If they decide to ignore or harm that NPC, they might face different consequences, such as losing access to a resource, making an enemy, or triggering a trap. This way, the player can experience different outcomes and consequences based on their actions and decisions.

A third way is to use dynamic content3, which means generating or modifying the game’s content based on the player’s behavior or preferences. For example, if the player likes to explore every corner of the game world, the game can create more secrets, collectibles, or easter eggs for them to find. If the player likes to fight every enemy they encounter, the game can spawn more challenging or varied foes for them to battle. If the player likes to customize their character or equipment, the game can offer more options or feedback for them to do so. This way, the player can experience a personalized and tailored game play that suits their interests and style.

* How to create a fail state for stories central to the gameplay?

We’re trying to tell a story and the player doesn’t fail according to the story. And it wouldn’t be a game, or a fun one if it wasn’t challenging enough to kill the player. Some games add abilities to heal oneself whereas other games play around with the difficulty level. Having multiple ending is another way of going about it because even though we have a linear story, we still give the player some control over their character and it should feel like it. Another method would be by having a soft fail state where the player is allowed to continue but with the bare minimum resources needed.

A fail state is a situation where the player cannot progress or achieve the desired outcome in a game, and has to either restart or quit. A fail state can be used to create tension, challenge, feedback, or consequences for the player’s actions. However, a fail state can also be frustrating, boring, or unfair if not designed well.

General principles and examples to create fail states for stories:

Define the core narrative and gameplay goals of your game. What do you want the player to experience, learn, or achieve through the story and the gameplay? How do they relate to each other?

Identify the possible actions and choices that the player can make in your game. How do they affect the story and the gameplay? How do they reflect the player’s agency, personality, or morality?

Decide what kind of fail state you want to use for each action or choice. There are different types of fail states, such as game over, checkpoint, branching, looping, or adaptive. Each type has its own advantages and disadvantages, depending on the context and the genre of your game.

Design the feedback and consequences of each fail state. How do you communicate to the player that they have failed? How do you motivate them to try again or make a different choice? How do you balance challenge and frustration? How do you maintain immersion and coherence in your story and gameplay?

Test and iterate your fail states. How do players react to your fail states? Do they understand why they failed and what they can do differently? Do they feel engaged, challenged, or frustrated? Do they enjoy your story and gameplay?

Some examples of games that use fail states for stories in interesting ways are:

Heavy Rain: A cinematic adventure game where the player controls four characters who are involved in a serial killer case. The game has multiple endings and branches depending on the player’s choices and actions. If a character dies, the game does not end but continues with the other characters.

Undertale: A role-playing game where the player can choose to befriend or fight monsters. The game has different endings and dialogues depending on the player’s actions and morality. If the player dies, they can restart from their last save point, but some characters will remember their previous deaths.

Papers, Please: A simulation game where the player works as an immigration officer in a fictional dystopian country. The game has multiple endings and storylines depending on the player’s decisions and performance. If the player makes too many mistakes or breaks the rules, they can be arrested, fired, or killed.