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MDA Analysis

This paper will analyse the video game *Limbo* (Playdead, 2010), a puzzle platformer game where the player controls a player avatar in the form of an unnamed boy, to solve puzzles in dangerous environments to find the boy's sister. The MDA framework will be used to analyse this game in respect to level design.

The MDA framework defines actions that the player can perform as mechanics (Hunicke, LeBlanc & Zubek, 2004) and in this game the player mechanics are jumping, movement, pull and push objects, and climbing. The player makes use of these mechanics to traverse the level and solve the various puzzles in it, the game in its entirety only has one level with multiple scenes with said puzzles to overcome. At the start of the game the scenes introduced first to the player serve as a structure to teach the player the games mechanics, namely it is the first 3 scenes:

- In the first scene (see fig 1) the challenge is mundane: get to the next part of the level. The player is greeted by a player avatar in the form of a boy on an empty space, standing on a platform that will be referred to as the ground. This scene and its elements are curated to teach the player the movement mechanic, as the only thing for the player to do is either head left or right, and the openness of this scene further reinforces this.
- The scene that follows is there to teach and introduce the player to the mechanic of jumping (see fig 2), and the challenge here is to jump over spikes. In this scene there is now a gap in the ground, creating two separate platforms where the player needs to get from platform A to platform B, to further reinforce that the player needs to jump or can jump there are spikes in the gap between the two platforms.
- The third scene that follows presents a slightly more difficult challenge and is structured to teach the player the pull, push and climbing mechanics (see fig 3). The player is presented with a large crate with a handle on it, this element on its own already communicates to the player the need to pull or push this object because of conventions behind handles and how they work. The crate itself is taller than the player avatar meaning they cannot jump over or on it forcing the player to climb onto it, upon climbing onto the crate the player sees a rope descending into empty space

and this is yet another curation of a game element to teach and force the player to use the climbing mechanic.

The scenes that follow after these focus less on teaching the player game mechanics and more on creating different mechanic interactions, this is through the curation of several game elements that force the player to use these different interactions to overcome puzzles and continue forward. These mechanic interactions include:

- Pulling/Pushing and Moving
- Climbing and Moving
- Climbing and jumping
- Jumping and moving

The next element in the MDA framework is Dynamics, the behaviours that result when the mechanics are applied (Hunicke, et al., 2004). The mechanic of this game give rise to the dynamic of puzzle solving, as they allow player to rearrange, move, and reach objects needed to solve the puzzles. For every scene, the game's various elements (platforms, spikes monster limbs etc) are curated to reinforce this dynamic, these elements are placed in each scene so that the player must interact and change them in some way in order to continue forward.

The final part of the presented framework is Aesthetics and refers to the desired emotional response evoked in the player and they are brought about by a game's dynamics (Hunicke, et al., 2004). *Ludo*'s (Playdead, 2010) dynamic encourages the aesthetic of challenge where the obstacle are the puzzles themselves and the 'fun' is in solving them.

Reference List

Hunicke, R., LeBlanc, M., & Zubek, R. (2004, July). MDA: A formal approach to game design and game research. In *Proceedings of the AAAI Workshop on Challenges in Game AI* (Vol. 4, No. 1, p. 1722).

Playdead. (2010). *Limbo* [Video game]. Copenhagen, Denmark: Playdead.

Appendices

Figure 1:

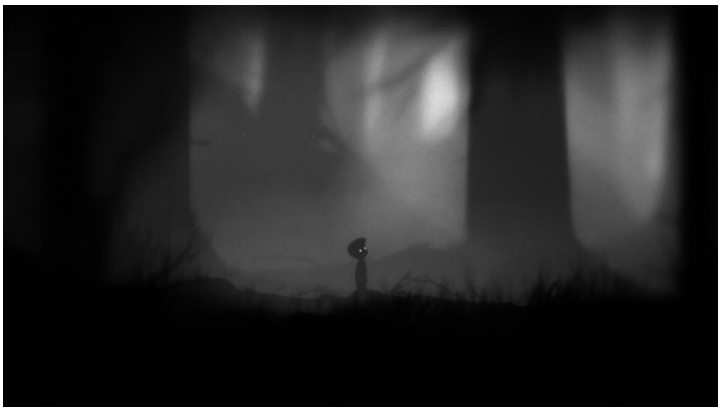

Figure 2:

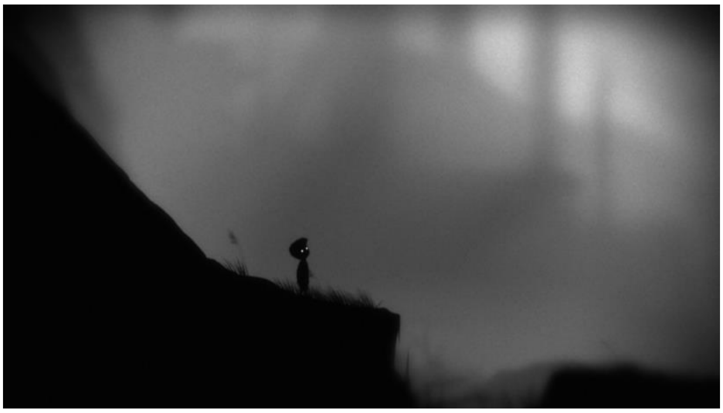

Figure 3: