Directing Players Across a Small Open World Using Good Landmarks

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I. INTRODUCTION

Mastering the design techniques that subconsciously direct players towards their objective in a small open world map can bring value to the game as well as the designer by letting the player explore the environment, discover paths, and make choices without forcing them to go to specific areas evokes immersion and encourages exploration. The common challenge that come with an open world is navigation which can be solved with the use of landmarks to aid in navigation and orientation.

There are three common types of landmarks that support different aspects in an open world map. These include a Global landmark, Weenies and Local Décor landmarks. The global landmark is usually used the give the player a sense of where their goal is. The weenies are used to attract and keep the player moving from one weenie to the other while the local landmarks are used create memorable visual cues for the player in smaller spaces to help with mental mapping and orientation.

Subsequently, there are elements that can enhance a landmark to make it standout or gain the players attention as well as aid with navigational choices. These include elevated sightlines, framed sightlines and funneling which can be incorporated together with the types of landmarks using islands and alleys design.

The goal of this thesis is to create an artifact in the dying light developer tools engine to demonstrate the use of landmarks in a small open world game to direct players to their objective.

II. LANDMARKS

Landmarks are attractions that encourage the player to follow and progress through the map. The area around the landmark is visually distinct to aid in navigation and act as a reference point for the player to help them reorient themselves. Additionally, they give a sense of space in relation to the player and location which helps create a memorable cue for the player to mentally map the area in the game world.

A. Enhancers

To make the landmarks more effective, supporting elements are used to help reinforce landmarks for navigation in a small open world.

An **Island** is a wide space where most of the exploration, gameplay and discovery of landmarks take place. The design usually helps separate and define the visual language of a landmark from other islands. This makes the identification of landmarks that are intended to lead the player from one to the other easier. [5]

An **Alley** consist of a path that connects one island to the other. The alley funnels multiple paths on an island, from one end of an island to the other end of an island. The design intention of an alley is to make sure the player sees the next landmark and reaches it providing a clear funneled path. This also helps mitigate players from deviating from the critical path. [5]

In the figure 3 below, it illustrates how the islands (Red Circles) connect to the next closest island with an alley (Green path). The red point in between the island and alley acts as a funneling point that funnels the multiple paths available on an island into the alley connecting to the next island. The design also references the Walt Disney's theme park design of how landmarks are introduced to the player and how it is structured to keep the player exploring and moving from one landmark to the other. [4]

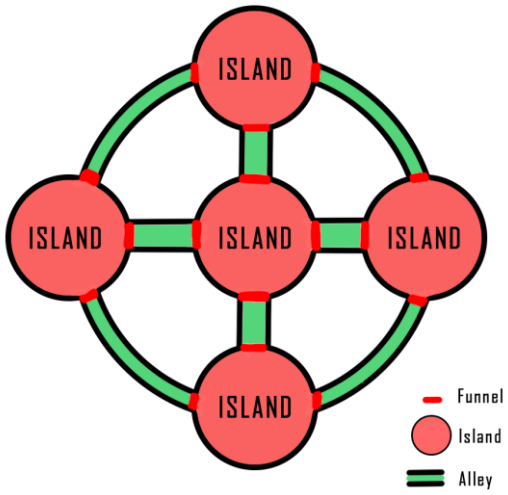

*Figure 1 Island and Alley Design Element **[1][5]***

Sightlines give players information of a space and provide navigational choices. It gives a sense of direction towards a

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landmark and the ability to plan on how the player wants to navigate the space or get to a landmark.

There are two types of sightlines used:

- **Elevated sightlines:** An elevated sightline provides a massive overview of the scene or layout giving information where the different landmark islands are and the navigational choices a player can make to get to them using the alleys. The information of the space ahead provides a goal to the player and evokes anticipation of what will the player expect. [6]

Figure 2 Elevated sightline giving an overview of the space ahead ***[6]***

- **Framed sightlines:** This type of sightline is used to focus the players attention towards a landmark within the frame which enhances its value. Islands usually need framed sightlines to focus the players attention to the next island with a landmark. [2]

Figure 3 Framed sightline example framing a local LM ***[7]***

B. Types of Landmarks

There are different types of landmarks that are used to direct and guide players, these include:

1. **Global Landmarks:** These are usually the biggest landmarks in the game with a huge scope and can be seen from multiple islands and alley spaces of the map. With their large dramatic size, they are usually used to visually define an entire section of a game. [3]
2. **Weenies:** These are smaller landmarks having a limited scope that is visible to the next closest island with alleys connecting to them while also there are mostly several islands visible from one weenie. Due to a weenies limited scope, they are often not visible to other weenies on islands further away on the map that do not have direct alley connections to weenie it is being viewed from. [3] They are visual magnets that attract the player and give them a sense of where they are on the map. The details of the landmark space are hidden where only exploration would allow the player to see everything. This means the player will have to get closer to the landmark and explore it to see the smaller details in that landmark space. [4] Weenies are usually setup in an island design having alleys that connect one island to the other. The alleys funnel players to the next weenie and make sure the player keeps moving from one island to the other with the next weenie always in line of sight. An island with a weenie can have multiple alley if it connects to the next nearest island with a weenie in its line of sight. [4] [5]
3. **Local Décor Landmarks:** These are very limited and the smallest scope landmark that require the player to be very close to identify it. They create a distinct identity of a general area inside the level. It is a themed subset of the general environment, creating a contrasting identity that stands out. This contrasting identity creates a visual memorable cue that helps player to orient themselves and further aiding in metal mapping of the space [3]

III. Guidelines

With the key research ideas done above, I created a set of guidelines that can be used to set up the different types of landmarks effectively in a small open world map that emphasis on the players navigation. The following are the guidelines/best practices in setting up:

- **A Global Landmark** [3][5]
  - It should be the largest landmark seen from any point on an island and alleys, and must only have one global landmark in each section of the game
- **A Weenie** [3] [4] [5]
  - Must be visible to the next closest islands with a weenie.
  - Can have more than one weenie on an island but should have one main weenie that visually defines the island.
- **A Local Décor Landmark** [3]
  - Alleys with a wide path should have at least one Local landmark to help with orientation and navigation and must be placed where the path is wide and in between the two islands. These should be placed in areas of the alleys that have multiple paths near each other or converging towards a common point
  - An island with multiple paths close to each other or converging towards a point should have a local landmark for creating a memorable visual cue of the space to help with orientation and mental mapping of the area.

IV. Methodology

A. Artifact Summary

The artifact is a small open world map created using the *Dying Light* developer tools (Chrome 5) that takes place in a zombie infested quarantine zone called the *Dead Valley*. It

demonstrates how global landmarks, weenies, and local décor landmarks are used along with supporting elements that enhances the effectiveness of the landmarks to the player that aid in navigation and mental mapping of the map. I setups a small quest where, Jade needs *Antizin* to aid the infected runners but needs the player, Crane to fetch her some from the dead valley. The player must make their way into the dead valley, find a way to get to the drop point and secure the *Antizin.* Once the *Antizin* is secured, the player must return to Jade who will be waiting inside the sewers. I then turned off the HUD/UI markers for navigation allowing the player to have more control in making choices and navigating the spaces using the landmarks as their guide.

B. Final Map Design Walkthrough

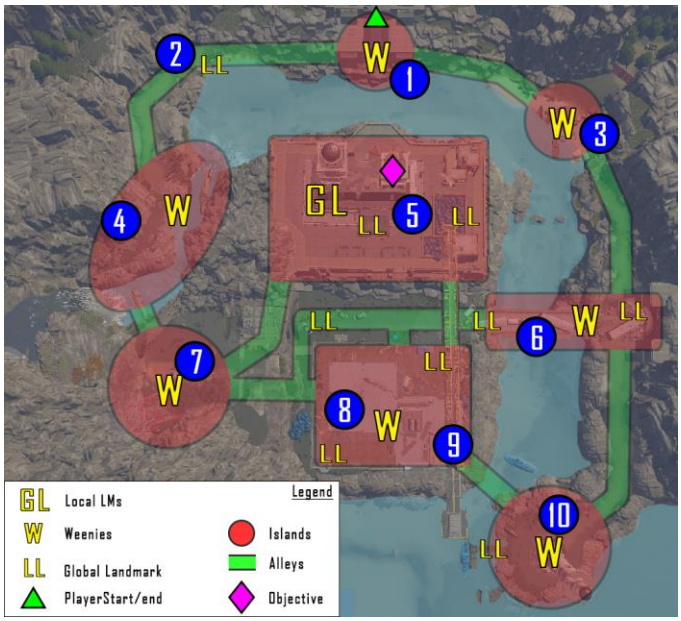

Figure 4 Dead Valley Map Design walkthrough [9]

Using the design guide of the *Islands* and *Alleys* above *(fig. 3)*, I designed the map layout and setup the different landmarks in the valley based my guidelines.

The global landmark is in the center and has seven weenies around it with local décor landmarks in spaces within the alleys and islands. I wanted the player to get a sense of where they need to go by showing them the dramatic memorable visual cue of the global landmark at the beginning. But I designed it that even though the towers appeared large and closer to the player, there would be no path that took them straight to it. So, I had the alleys connect to the other two islands on either side of the global landmark **(#4)** and **(#3)** to get the player to follow the weenie on them.

At **(#1)** the player exits the dead valley sever and finds themselves on an elevated space giving them a wide perspective of the different islands with landmarks in front of them and the alley paths that connect towards them. This gives the player a choice on which alley path will they take that will lead them to the different islands in front of them. Here, the player can see the island **(#5)** that has the huge dramatic two tower global landmark in front of them with the Antizin shipment boxes on the lower tower. To reinforce where the objective of getting to the drop zone is, I used a smoke flare, commonly used in dying light to indicate where the shipments have dropped in game.

Since the overall design is circular, I will go over the design in parts. For the first part, I added a zipline to let the player zip down to the ground on **(#2)** The player could also just use the alley path towards the waterfall by jumping down the rocky terrain. The local landmark **(#2)** is a small lookout tower with a small dock around it. The distance between the island **(#1)** and island **(#2)** was long enough that players needed an in-between point within the alley which would allow player to orient and get on track no matter the type of traversal method they chose to get to the ground. I also used the landmark to have a weapon that could be obtained if the player explored and looked around the landmark. Moving along the alley, the players is able to find a path within the alley leading towards the waterfall island on **(#4)**. While on this island with the waterfall weenie, the player is led to the source of the waterfall which immediately frames the PowerStation **(#7)** weenie on the island up ahead using the trees around the space. The player must take the alley that has only one path using a tree trunk to get the player to the power station on **(#7)** which is on an elevated platform. As the climb up, they are introduced to a framed sightline using the gate and fences to focus the players attention towards the next weenie after the power station that is on **(#8)**. At the station, the space is then given to the player to explore and equip themselves with weapons and ammunition for the area ahead. Once the player opens the gate fence or climbs over it, they then get a wider perspective of the islands and alleys up ahead. As the island **(#8)** up ahead had multiple alleys connecting to it, I wanted to give the player a height advantage to make navigational decisions of how they want to traverse through the islands and alleys ahead. Since the crane was framed earlier it subconsciously attracts the player to follow and motivate them to reach the crane. The alley path would then lead the player into the construction site which is an island having the crane as the weenie **(#8)** To help with orientation and mental mapping of where the player is on the island, I used two local decor landmarks on opposite corners of the island where there was wide empty space that did not have the construction building. I placed them here since the construction site island has a compound wall all around and when the player is in the open space by the walls, their sightline to see the other weenies nearby are blocked. As a result, they are not able to use a second landmark to reference where they are in the island and which side of the construction building plot are they on. The back side of the construction building, which is closer to the island **(#7)** I used a cement refinery that set up a distinct and memorable identity for the player. Players could use the memorable cue and map the area with reference to the construction building. Similarly, on the other side, the local landmark next to the island **(#6)** was a worker cabin area that included a restroom and equipment's used for the building. This again, helps the player with orientation and mental mapping of the space and does not confuse the player when they are on either side of the island. The construction site has three floors and a 4th incomplete floor.

I gave each floor its unique identity where, the first floor had mostly barricades and equipment's the player could use. The second floor identified as a bloodbath floor with a lot of

zombies collected around pools of blood. This floor also had most of the construction equipment's on each corner that allowed player to remember the retails to help them with orientation and know which path they came from and which path they should take to progress. The third floor had lots of flammable cylinders that the player could use to their advantage to clear the floor of zombies. The fourth floor was an incomplete, half build floor that connected to the other attached building leading the player up to the crane where they would first have to encounter a mini boss. The mini boss fight is not a compulsory encounter but does keep the player moving or quick on their toes to get up onto higher ground that is the crane.

Now for part two *(Path from **#1** to **#6**)*, I initially had an alley connecting straight to island **(#6)** but found that the sightline was not clear enough to compel the player to follow. I also had an issue where, if the player jumped into the water that is within the alley in between island **(#1)** and **(#3)** they would find themselves disoriented and loose the sightline to the weenie **(#6)** which led me to setting up an island with a fishing house weenie at **(#3)**. Doing this, player could orient themselves, and follow the weenie which led them to getting back on the critical path on land giving the player the sightline to the next weenie **(#6)** The fishing house weenie would allow for exploration and contained weapons for the player. But since exploration inside the house sometimes led to having the player forget where they need to go next, I created a framed sightline inside the fishing house to keep the crane in focus. The players would then head out towards the next island **(#6)** which is a bridge that has an alley path leading towards the crane **(#8)** and to another island having a lighthouse weenie **(#10)**. The alley leading from the bridge would require the player to climb up the vehicles that block the path on the road. While on the buses, the player gets an elevated sightline which gives them information of the space ahead of all the possible paths the player could take within the alley to get into the construction site island. They also get an idea of how the building is structured and the possible paths the player could take to reach on top to the crane that funnels a path into the global landmark island **(#5)**.

Lastly, for the part if the player chose to take the alley towards the lighthouse **(#10)** from the bridge island **(#6)**. If the player decided to continue to explore and follow the lighthouse weenie they would be going slightly outwards from the circle. Since the lighthouse was symmetrical and looked the same on almost all sides, I set up a local landmark within the lighthouse island to create a distinct identity of a dock by the light house. Players could use this to get a sense of which side of the landmark are they and how to orient themselves into the right direction if they feel confused and lost. Once the player gets on top of the lighthouse, they will be rewarded for their exploration and will be oriented facing a framed sightline of the crane. Here, they are given a wide elevated sightline to gain a perspective of where to go next **(#9)** and how it connects towards their main goal **(#5)**. I added a zipline to zip the player quickly towards the back of the construction site, but players could choose to go down and try swimming across towards the back of the construction site island.

Once the player reaches the top of the crane, *now will be referenced as **(#9)***, The player will then be funneled across into the global landmark island that is also at an elevation. The player then gets a clearer picture of where their objective is and can get an overview of the possible paths they can take to get onto the two-tower landmark from the elevated sightline on top of the crane. There are two local landmarks I have added here on the global landmark **(#5)** island. The first one is the pizza cafeteria the player will see while they are on the crane, viewed from the elevated sightline. This landmarks identity is clearer to the player as they get closer towards the global Landmark. I placed this landmark in front of the towers because the space in front and back of the tower look the same, as such, I wanted to create a unique identity for the players to know which side of the tower they are on when they are on the ground exploring. The other local landmark is the trash site where the player will have to jump into to negate their fall damage. I placed it here so that it could benefit the player in two ways. The first, as stated earlier to reduce their fall damage and second, they moment becomes memorable to the player along with the space dedicated to only trash. When the player is on the side of the tower, they can use this landmark to help mental map where they are on the island and orient themselves accordingly. On the two towers **(#5)**, the player will have to climb scaffolds and attempt to reach the half build tower that has the Antizin shipment dropped.

Once the player obtained the Antizin they would then have to return to Jade, in the sewers. The player could use the zipline to travel straight down to the sewer or they could continue to explore and use the islands to back track to the sewers. As they approach closer towards the sewer exit, they will see Jade waving at them and that is when the level ends.

V. Conclusion

With the artifact created, I was able to layout the landmarks and with biweekly playtest sessions to determine the value and effectiveness of the landmarks. The results kept getting better after every milestones playtest session. During the Aesthetics milestone, I had a positive response from testers knowing where they are on the map and how to get to their objective. They were also able to identify and distinguish between the different island. The testing was based on gameplay video analysis of all play testers, observation and followed by quick questions based on observations to determine why players choose specific paths, where did they feel lost, if they knew where to go and what was their most memorable areas on the map. These were just some of the common questions I would ask to test and analyze my feedback to iterate the design and landmarks.

A. Key Takeaways

I made few notable key lessons that strengthen the design techniques used while creating the artifact. These include:

- The sightline from the sewer exit to the bridge was not effective enough for players to know there is a path to lead them to it. So, I added another weenie before it to lead the player towards the direction of the bridge. This allowed players to easily keep moving from one weenie to the other without stopping to think how they could possibly get to the bridge.
- When traversing through a non-critical path (water) in an alley, a player would find themselves disoriented and lost as they would lose the sightline of where to go next. Since I realized there was quite a distance between the sewer exit

island and the bridge island, I needed a middle point for players to get to. Being in the water also meant the sightlines from the alley towards the bridge would be blocked by the large structure of the global landmark. As a result, I needed a weenie in between the sewer and bridge islands to help players with direction and orientation. This would help players get on track and see the sightline to the bridge island more clearly.

- I learned that having a weenie by itself on an island is not enough. Once players reach the island with the main weenie, they still need another weenie or a local landmark to help with orientation and aid with mental mapping to know where they came from and how far are they between the landmarks on the island to help with mental mapping and progression. Alternatively, having alleys that frame the sightline to other islands with weenies could help players with referencing where they are on the island and from which island they came from.
- I found that the bridge landmark would not pop out as much compared to the waterfall landmark and as such would be less effective in compelling players to follow. I learned that giving the player a choice between two possible alleys, both the connecting islands with the weenies should be balanced in contrast. Here the waterfalls contrast would have moving water that sparkles but the bridge would be stationary. Adding large and brightly colored moving banners to the bridge could help balance the contrast. With an imbalance, the player would choose to follow the landmark that is more in contrast than the other.
- Similarly, to the previous key takeaway, when the waterfall landmark would standout, players would find the path leading to the waterfall would just be a dead end. As a solution, I had to add vehicles and tracks to the path and a small look-out tower by the waterfall that tells the player the path does lead somewhere and not towards a dead end.
- Players tend to treat weenies as a single area and as such would expect another weenie to draw them into another area. This resulted in me changing my local landmark of a plane crash after the waterfall to be a power station weenie

B. Limitations

The bridge landmark is not a strong landmark as it does not pop as much as the waterfall landmark on the opposite side. Furthermore, even though the waterfall pops, the path feels like a dead end. A possible solution to this could be, a section of the cliff rocks by the bridge be reduced to have more light affect the area. But since light is dynamic in an open world game, relying on light by itself won't be effective. Using scripted sequences here could help create a memorable experience as well as attract the player to get closer and follow, However, scripted sequences are often used once, Players would need something that exists always in the world to view it from different areas and getting a sense of where they are in the world and how far they are to their objective by using a landmark as a reference. A scripted sequence can be memorable, but if it does not physically persist in the world, the player can forget easily the location and where they are in the world. An alternate solution here would be to add large banners or banners with motion.

Similarly, the waterfall path blends in with the organic environment, making it feel like the path leads to a dead end. A solution here could be breaking up the organic path with contrasting elements and color can help solve this. Alternatively, adding vehicles and tire tracks could add story to the space, giving context to the player that the path must lead somewhere as there are vehicles that use the path.

C. Future Research

I would like to see how good landmarks can be used with a more confined and constrained spaces using the same guideline to set up good landmarks. I had initially designed a map for both the exterior and interior but due to scope being a concern, the interior section was cut. This potential research could lead to finding newer guidelines if the current guidelines do not work well with context to an open world confined space. Also raising an interesting question of, *can an interior space be an open world, or does it only involve linear design?* And *Can the guidelines here be used to also setup a linear map design?* These are potential research areas I would like to test and find out for future development. Additionally, would also like to see if the landmarks could be used together in a non-island-based map.

This thesis focused on developing a layout using the base island and alley design with different landmarks that could be used together within the design to guide and direct a player towards their objective in a small open world. I learned how to problem solve issues that generally occur in an open world game that relate to navigation and having multiple paths. Using the guidelines, I feel I can build a larger open world using the same rules but also keeping in mind the key takeaways in the making.

VI. References

[1] Figure 3: Illustration created by Author
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[6] Figure 1: http://static.gosunoob.com/img/1/2017/02/HZD-review-screenshot2-1024x576.jpg
[7] Figure 2: Screenshot taken from Rise of the Tomb Raider, Pc
[8] Figure 4: Dead Valley exterior, detailed map by Author with walkthrough