Attention Guiding Principles in 3D Adventure Games

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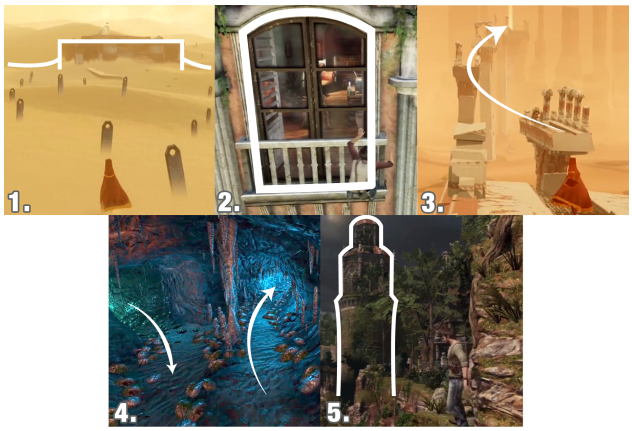

Figure 1: *Images from Dear Esther, Uncharted 3, and Journey.*

Abstract

Computer game design lacks a language for visual narrative principles in ways similar to those in architecture, film, and theme park design. We develop visual narrative methods in which spatial composition principles enhance goal direction attention within the overarching level structure of computer adventure games. Based on our observation of goal-directed attention game design patterns in existing 3D adventure games, we attempt to define a language that game designers can utilize to prototype levels more efficiently and apply them to a testing scenario.

1 Problem

Designers are constructing experiences utilizing visual narrative principles that have not been defined like the standard cues to help formalize the level design process and allow for efficient level construction. Milam and El Nasr introduce game mechanic concepts regarding design patterns that guide a player's movement in 3D games [Milam and Nasr 2010]. Different from our study, their pattern results focus on literal visual guidance. Bjork et al. discuss several hundred of game design patterns but lack focus on specific level design construction terminology [Björk and HOLOPAINEN 2005].

2 Our Solution

For the purpose of this project we focused on structural composition principles. More specifically how does shape, space, and form relate to one another and create attention to certain areas of a level. By utilizing these principles the designer can shift the player's attention by taking into consideration her surroundings.

Contrasting Shape Principle: A silhouette contrasts with the adjacent environments overall shape structure; often the picturesque versus the rigid line. Through the use of such contrast, designers can employ silhouette to emphasize/de-emphasize certain processional goals. This principle focuses attention by the figural quality of the silhouette shape and also by affecting the environmental boundary around the shape. This can be seen in Figure 1.1.

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Framed Structure Principle: A frame may occlude foreground information, focusing attention on a midground or background viewpoint. More simply, a framing device may simply enframe a view without occlusion suggesting an inside and outside to this figure. This principle focuses attention by heightening the legibility of the subset view. This can be seen in Figure 1.2.

Directional Line Principle: A patterning of repetitive lines and/or edges defines a visual, actual and/or metaphoric pathway(s) linking foreground, midground, and background through foreshortening. The principle focuses attention by defining an implied perspective view thought the diminishing size of repetitive patterning. This can be seen in Figure 1.3.

Shifting Elevation Principle: A spatial relationship between ground plane and line of sight. The processional sequence is characterized as below, in line, or above an implied horizontal, often with diagonal or parallel relationships of succeeding ground planes. The principle focuses attention by manipulating the relationship of the ground plane in relation to foreground, mid-ground and background elements. This can be seen in Figure 1.4.

Structural Exaggeration Principle: Exaggerated structures contrast their surroundings to showcase emphasis and direct the player attention towards her next goal. The pattern creates attention on the area by breaking the horizontal plane created when structures are similar in scale in Y coordinates. This can be either used to create the end goal or a subset of goals within the designer's path and can be seen in Figure 1.5.

The study was organized further within two separate levels. Each contained six zones which evaluated if the principle's hypotheses had any influence on the user's decision making process. In a post interview, player's choices were observed via heat mapping technology and asked if there was any reason why they chose one direction over another.

3 Future Development

It would be beneficial to take into consideration more external decision making factors such as cultural influences. As already mentioned, El Nasar and Milam's work proved to be beneficial and we feel that combining their patterns with our results may provide stronger points in defining what visual narrative means to 3D computer adventure games. A more procedural approach would provide a better detailed analysis. Furthermore, these principals can be analyzed in relation to the overall story arcs similar to the effectiveness of *Journey*.

References

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MILAM, D., AND NASR, M. S. E. 2010. Design patterns to guide player movement in 3d games. In *Proceedings of the 5th ACM SIGGRAPH Symposium on Video Games*, ACM, New York, NY, USA, Sandbox '10, 37–42.