Player Guiding in an Active Video Game

Brian M. WINN, Wei PENG, and Karin PFEIFFER
Michigan State University

***Abstract*—The unique challenges in guiding players in an active video game (or exergame) using physical input devices are explored. The solutions discovered through the process of iterative design and multiple rounds of playtesting are discussed.**

I. INTRODUCTION

Most modern video games represent the player in a three-dimensional virtual world. In these games the player is required to navigate this world, through a first person or third person perspective, to accomplish gameplay objectives. Navigating in a three-dimensional virtual world is very similar to navigating in the physical world. The fundamental questions in navigation are *where am I, where have I been,* and *where can I go?* [1]

Since games are all about choices, clearly the later question of *where can I go* is the most important. Game visuals help communicate to the player where he or she can go. Natural barriers such as walls, mountains, and rivers combined with limited game mechanics; such as the lack of ability to swim, help the player realize that going in certain directions is not an option. Unobstructed pathways, unlocked doors, and stairs quickly communicate the realm of possible directions the player can take.

Given the goal-driven nature of games, *where can I go* may not be the best question. A better question for the player to answer is *where SHOULD I go* to achieve my game goals. The game itself should reveal, and in some cases obscure, the answer of this question to the player. The game does this through very careful and deliberate design choices on the part of the game designers.

This article discusses these choices through the unique design challenge of creating an active video game.

II. OVERVIEW OF OLYMPUS

Olympus[1] is a third person, fantasy role-playing game that allows players to immerse themselves in the wondrous time of Ancient Greek history and myth. Olympus enhances the typical role-playing experience by getting the player off the couch. Through the use of a WiiMote (accelerometer-based motion controller) and a dancepad, the players corresponding physical actions in the real world drive the virtual actions of his or her avatar in the game world.

1 Olympus was partially funded by a grant from the Robert Wood Johnson Foundation through the Health Games Research initiative and was created by the Games for Entertainment and Learning Lab at Michigan State University.

The Design, Play, Experience framework [2] was used to guide the design of Olympus. In this framework, the designer designs the game; the player plays the game; which results in the player's experience. The designer only has direct control over the design itself. To design a game effectively, the designer should first come up with goals for the resulting experience. These goals can be used both to guide the design and to gage the effectiveness of the design once tested. This reflects the inherently iterative process of game design [3], including designing, prototyping, playtesting, and iterating back to the design based on the experience of the playtesting.

The high-level design goal in Olympus was to keep the player so engaged in the game that they did not think about the energy they were exerting while playing. To keep the player moving, it was determined an expansive world was needed to explore and move around in. However, exploration alone would not keep players motivated to keep playing. The game's story combined with interesting gameplay challenges became the primary motivators to keep the players playing.

Through design discussions and research, it was quickly realized that non-linear exploration and linear storytelling often ran counter [4]. In open exploration, players often get lost or do not navigate to the proper location and the story stalls. If player exploration is limited too much, players feel like the entire experience is "on rails", meaning the player does not have the ability to deviate from a defined path [5]. Therefore, in the design of the game, we needed to strike a balance between exploration and storytelling. The balance we struck was to provide a world with opportunity to explore while guiding the player so they navigated to where they *should* go to keep the story moving forward. This trivial concept turned out to be a significant design challenge.

Playtesting was conducted on college-age male and female players that had previous gaming experience. Players' facial expression, body language, think-aloud verbalizations, and gameplay choices were observed. After the playtest, a debriefing interview was conducted.

III. ITERATIVE DESIGN DISCOVERY

The first prototype of the game provided minimal player guiding. The player was presented with quests (challenges) to complete and had to find their way through the world to complete these quests. Our misguided thinking was that part of the fun of the game was the process of figuring out where to go to complete the quest. In playtesting, we quickly realized this was not the case. Players became visually frustrated and expressed that they felt lost. One player said it was "difficult

to know where to go" and another was frustrated by "the lack of instruction" related to wayfinding.

The use of the dancepad for lower body input (walking, running, jumping) and Wiimote for upper body input (sword and shield play) compounded the problem of getting lost. At times players would need to look down at their feet to make sure they were oriented properly on the dancepad or look at their hands to make sure the Wiimote controller was positioned properly. During this process, the avatar was often still moving through the game world. When the player looked back to the screen, he or she would often be disoriented. This disorientation seemed to lessen as the player became comfortable with the interface but never went away entirely.

The second prototype of the game attempted to guide the player by strengthening the visual cues in the game world. We used the technique of creating visual weenies [6], that is, we provided interesting visual content to attract the player's eye and direct them. Playtesting demonstrated that this helped but did not solve the problem.

The third prototype was inspired by the squint-test technique [7]. This technique posits that players are subconsciously attracted to the lightest visual path on the screen (what stands out when you squint). The lighting in the game was modified to make the primary path to the quest destination better lit than other paths. Whereas this sounded simple in theory, in practice it was difficult to implement. We did not want to break the realism of the game world by creating blatantly artificial light nor did we want to give the impression that the player had to "follow the lights to the exit" which would implicitly make the player feel like they were on rails. Therefore we employed subtle lighting differences and used objects, like torches, to embed the lighting naturally into the game. Playtesting demonstrated that this technique worked. However, we could not reasonably communicate direction. Therefore players sometimes got turned around and ended up going the wrong way down the path.

In the fourth prototype of the game we added a non-player character (NPC) that assisted the player. If the player spoke with the NPC, he would provide advice on where he thought the player should go. If the player went off the path for too long, the NPC would also offer unsolicited hints on how to get back on path. Playtesting showed that this technique had minimal impact. Most players did not ask for directions.

All previous approaches tried to provide subtle guiding within the game world. In the fifth prototype we got more explicit and added a mini-map in the upper-left corner of the screen. The mini-map displayed the primary landmarks of the level, the current location of the player, and the location of the current quest objective. In playtesting, this clearly solved the problem of player guiding. The player always knew where they were and where they should go. If they ever explored off the path, they could easily navigate back on track. The problem was that players focused their complete attention on the mini-map. They almost never looked at the main game screen. Players were not experiencing the world and often were missing gameplay challenges without realizing it. Clearly the mini-map was too distracting from the gameplay.

In the sixth prototype we took out the mini-map but replaced it with a map tool that the player could bring up at anytime. When they brought up the map, the game would pause so the player did not miss any of the game world or gameplay. In playtesting, we noticed that, just like the guiding NPC, many players did not take advantage of this tool.

The seventh prototype added our final guiding mechanism, the guiding compass. The compass is located in the top-middle of the screen. The compass had two states, either an arrow that pointed to the quest destination when the player was not near the destination or an exclamation point that appeared when the player was near the quest location.

In subsequent testing, we observed that players never got lost. Further, the compass was not intrusive to the experience as was the mini-map. Players seemed to primarily focus on the main view of the game while keeping the compass in their peripheral vision. If the player did need to reorient himself or herself after looking at the physical controls, the compass quickly provided guiding assistance. In the playtest debriefing, players reported universally that the game provided ample exploration and choice. They did not feel like they were on rails, nor did they feel they were lost. As an added benefit, most did not realize the story was (essentially) linear.

IV. Conclusion

Navigation is a challenge players face in three-dimensional games. The greatest challenge for the player is determining where they should go to complete their game objectives. The challenge is amplified in an active video game due to the use of physical input devices such as dancepads and WiiMotes. Providing guiding assistance to the player is one of the important roles of the game designer. However, too much guiding can turn off players and detract from the game's experience goals. Through the process of iterative design, the Olympus team was able to implement, test, and revise several techniques that helped guide the player and maintain the desired experience. Ultimately, a combination of level design techniques in the form of visual weenies and the squint test, guiding assistance from a non-player character, the map tool, and an on-screen guiding compass was employed in Olympus to help effectively guide the player.

References

[1] J. Kallbach and A. Gustafson, Designing Web Navigation: Optimizing the User Experience. Sebastopol, CA: O'Reilly Media, 2007, pp. 10.

[2] B. Winn, "The Design, Play, and Experience Framework," in *Handbook of Research on Effective Electronic Gaming in Education*, vol. 3. Richard Ferdig, Ed. New York: IGI Global, 2009, pp. 1010-1024.

[3] K. Salen, K. and E. Zimmerman, *Rules of Play: Game Design Fundamentals*. Cambridge, Massachusetts: The MIT Press, 2004.

[4] E. Adams, and A. Rollings, *Fundamentals of Game Design*. Berkley, CA: New Riders, 2009.

[5] R. Kremers, Level Design Concept, Theory, and Practice. Natick, MA: AK Peters, Ltd, 2009.

[6] S. Rogers, "Everything I Learned About Game Design I Learned from Disneyland", Game Developers Conference presentation, 2009.

[7] M. Nerurkar, "No More Wrong Turns", Gamasutra, August 2009.