

# Navigation and player progress in 3D games

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## 1. INTRODUCTION

In many high budget games (known as AAA games) players are expected to navigate through aesthetically rich 3D environments. In fact, some game designers and researchers consider navigation one of the most fundamental aspects of 3D video games [10–12, 14] and some researchers suggest that navigation affects the overall player experience [1, 7]. For example, Taylor [14] stated that navigation is the first task that one performs after starting a new game. All other tasks will come after navigation (e.g. picking up objects, shooting, opening doors, defeating enemies, etc.). In this reasoning, it is crucial to offer a good navigational system for players so they can smoothly progress in the game.

Considering that game companies should meet the needs of a diverse market, designers should provide meaningful information of unquestioned quality to guide players through challenging environments. However, there is very little research specifically investigating design techniques for guiding players through 3D game worlds. In addition, research is necessary to find out how players respond to such techniques.

It seems quite evident that navigation is still an issue in games since several game companies, and specialized websites, provide walkthroughs when a game is released. There is also space for the development of better methods for evaluating navigation in games from an industry perspective [Mike Ambinder, personal communication]. It is important to understand how players navigate through games, how they make decisions, how to motivate them to progress, how much they enjoy the experience, and so on. Such research would inform game designers of effective, fun, and yet challenging ways to guide players. Besides, research in navigation can contribute to a better understanding of human behavior and cognition.

## 2. PREVIOUS WORK

Navigation in games has been discussed and investigated both theoretically [2, 4, 5, 9] and empirically [3, 6, 13, 15–17]. While such studies have been essential for understanding the topic and moving the field forward, many questions are still to be answered. Some empirical studies had limited research tools that do not correspond to the complexity of many AAA titles (e.g. games with one single navigation task). Others did not use specific methods for investigating navigation. For example, one study sought to investigate learnability and satisfaction, but reported issues related to navigation in the results. Finally, some studies reported inconclusive results due to the complexity of the object of study.

## 3. OUR WORK

### 3.1 Analysis of navigational systems

To better understand the navigation process in games, we first did an analysis of the design techniques that game designers use to guide players through games. For her Master's thesis, Moura played several 3D action-adventure games and took notes of all elements guiding her through the levels [8]. The elements were then categorized into three groups depending on their function: directional signs, identification signs, and orientation signs. Some elements could fit into two or even three of the categories above. Besides the navigational aids just mentioned, other elements were found to be interfering with navigation such as controls, camera, point of view, environmental layout, and so on.

### 3.2 Work in progress

While our first analysis was important for learning about our object of study, further research is necessary for understanding the efficacy, efficiency, and satisfaction of navigational aids. We want to identify whether players use, understand, and enjoy those design techniques applied into games or not. Through our investigation, we want to find out when players get lost and when they wander through the game. Also, we want to investigate when and why designers fail in their attempt to communicate where players should go.

In this work in progress, we will triangulate quantitative and qualitative data such as eye tracking data, telemetry and self-report. Level completion time will be measured and satisfaction will be assessed. Decisions regarding our research tool (i.e. the games that will be analyzed) are still to be made.

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## DINARA MOURA - BIO

I am a PhD Student and Research Assistant in the School of Interactive Art and Technology at Simon Fraser University. For my thesis, I have been doing exciting work on player progression and navigation in video games. To conduct this interdisciplinary research I have adopted a mixed method approach, which combines quantitative and qualitative methods for better understanding how players behave in games. I have been working with telemetry, eye tracking data and self-report. I have also contributed to the field of game analytics and visualization.

After finishing my Bachelor's degree in Visual Communication, I worked as a graphic designer and as a design team leader for several years. I am a specialist in Information Design and hold a master's degree in Digital Artifacts Design. I have a passion for human-computer interaction and game user research, cognitive psychology and human-centered design. I have worked in several projects that incorporate multidisciplinary teams.