

MUD nexus: The World as Game Board for Computer Games

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INTRODUCTION

In most non-electronic games, features of the physical world can be used to facilitate the gameplay. Locations and objects can be given meaning in the context of a game and hence serve to enrich game play. This is true for most children's games, where items that are otherwise non-descriptive outside the context of their play, are given meaning specific to the game. Live action role playing (LARP) games constitute a genre where multiple players share a fictional world in which they improvise and act out on an agreed-upon theme. Each participant enacts a character, and the interaction between the various characters create a dramatic story. The basic idea, and what makes theLARPs differ from table-top role-playing games is that they effectively make use of physical space, and the relative positions of players and objects in this space. In a sense, the physical world functions as a "game board". A virtual counterpart to the LARP, is the Multi-User Dungeon (MUD). The usual MUD is an online, networked, originally text-based, multi-player game environment, typically set in an imaginary world. Some MUDs can be based on science fiction themes, others in the fantasy genre. These environments allow players to engage in fantastic interactive adventures, where they move between, and explore inter-connected virtual locations, chat, or battle with each other, fight monsters, and search for treasures. In essence, MUDs are transpositions of the *Dungeons & Dragons* type table-top adventure games to an electronic medium.

NEW GAMING EXPERIENCES – A MUD NEXUS

The Pirates! [1, 2] project can be understood as a first attempt at creating a computer game experience that borrows from the concepts of role-playing games. It was also a first attempt to design a computer gaming experience which takes the physical surroundings in which it is being played into account. In Pirates!, we explored how proximity sensing technology can be utilized to extract information on the players' location and co-location in physical space and use that information as input to game mechanics. Pirates! runs on multiple palm-top computers inter-connected in a Wireless Local Area Network (WLAN). Each palm-top computer is equipped with a sensory device that detects the

proximity of the other computers, as well as of other sensors that have been placed in the environment. Moving in the physical environment becomes equivalent with moving between virtual locations in the game environment, and as the sensors detect the proximity of each other, different game events are triggered. Objectives include finding treasures, trading with commodities, and fighting monsters as well as other players. It is important that the Pirates! game is not just a game for a mobile computers, but a game that depends on the player's mobility in physical space in order to be played. Hence, the player's physical location is an intrinsic part of the game mechanics.

With Pirates! we were presented with a powerful vehicle for thought in envisioning novel types of computer games that are played, and situated in the physical world. Although the Pirates! project was an ambitious undertaking and resulted in the implementation of a real playable game, a perhaps more valuable contribution can be found in the additional questions and challenges that it spawned. For example, in Pirates! we mapped location and co-location, but did not consider physical artifacts as points of interaction, and it would be interesting to incorporate objects such a treasure chest, or a letter in bottle, that the players could find and interact with. The general ambition I wish to address is the notion of computer games that use the physical realm as a game board, in which physical objects facilitate electronic gameplay in the same way physical objects facilitate non-electronic gameplay. Specifically, how can a MUD be designed so that it is integrated with, and distributed in a physical space?

Computer games that are aware of the real world

One way to design a computer game that takes place in the real world is simply to make it aware of and let it react to the real world. In this approach, the technology that allows this can be a sensory system, providing input to the game world. By giving the computer game access to a player's context, such as location, current activities, social environment, and so on, functionality appropriate to that context can be triggered. This approach borrows from and relates to research done in *context-aware* computing [6] and was partially exploited in the Pirates! project, when the game used proximity information to trigger specific game events.

Computer games that possess the real world

A second approach is to explore how computer games can

be designed to literally move into the real world as opposed to merely be aware of it. The metaphor is that of *spirits* from an immaterial domain that embody, or *possess*, items in the material world. This metaphor relates to a significant extent to the idea of an Amplified Reality [3], which is the concept of expressive and self-contained computational objects. These spirits can be processes, events, items, users, or user actions in the virtual domain of the game, which are not just mapped onto items, but literally hardwired in the physical domain. In this approach it is beneficial to think of work in tangible [4] and graspable user interfaces [5], which in some ways can be said to accomplish just that; providing physical bodies to computational spirits by turning bits into atoms. Calm technology [7] and ambient media [4], provide additional illustrative examples where virtual information manifests itself through physical media (recall Natalie Jeremijenko's Dangling String for one well-known example [7]). This embodiment can be regarded as a means for a computational spirit to reach into the material world through a physical form.

MUD nexus

MUD nexus is informed by the Pirates! project, and the questions that it spawned, and inspiration has been taken from the game structure of a MUD. The term refers to a kind of ligaments, or bonds between the virtual world of a computer game and physical instantiations in the material world. The MUD nexus idea is to create means for computer game events and mechanisms to reside in physical items. Where the Pirates! project addressed at least a subset of how we can design interactive experiences in general, and computer games in particular, that take place in the physical world, it took into account only a limited set of variables from the physical world. A MUD nexus project is about to expand on that set of variables, as well take steps towards computer games that inhabit the real world in which we live.

QUESTIONS TO RESEARCH

An obvious challenge of creating a MUD with input from and output to the physical world is technical. How will these mappings manifest themselves, and what objects and actions are suitable to exploit in this quest. While this challenge is indeed interesting and a contributions in itself as far as I am concerned, I do have other aims in the MUD nexus project. In this research, I wish to explore how computer games can be freed from the boundaries of computers, distributing them into the physical world, and integrating them with social, and even public environments. What affect on game players, and non-players alike, will emerge when a computer game moves into a social space? What are the social implications? What kinds of stories can emerge?

IN SUMMARY

Obviously, the ideas around MUD nexus and pervasive computer game environments have strong flavours of research in smart environments, ubiquitous computing and context-awareness. Thinking in terms of computer games is not merely a way to justify, or explore the potential of new technologies. The ambition is just as much to create environments in which people play and are entertained, rather than environments that make work-related tasks efficient.

MUD nexus is about taking computer gaming out of the desktop computer, or game consoles, distribute it into the physical world, and integrate it with social, and even public environments.

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