

A Geo-Wiki Game for Urban Exploration and Community Participation

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ABSTRACT

In this brief paper we outline our recent work on a game to facilitate urban exploration and reflection, leading to collaborative stories. Our game begins with team play in the physical world, and then moves to cyberspace where the exploration is documented in story form, and then allowed to evolve and interlink further. We outline the motivation for our work, discuss the design of the game, our play-testing, and the status of our online system.

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H.1.2 User/Machine Systems, Cartography

INTRODUCTION

We have hardly begun to explore the potential of games for education. The potential is not only in games that increase motivation and support learning, but also in games that engage players and involve participation in communities, and through discussion and extension move the game world itself in different directions. Besides traditional games, videogames, and mobile and location-based games, there is a new form of pervasive digital game that involves cyberspace, but extends the gaming experiences out into the physical world — be it on city streets or in the remote wilderness. These games have high educational and cultural potential that we have yet to realise. They allow the exploration of urban spaces to reveal aspects of the culture and history of a given environment that was hitherto unnoticed (iPerG Group 2004).

Our objective is to investigate the potential of location-based pervasive games, combining the two powerful aspects of the game culture that support learning: the engaging play experience and the participatory culture, enabling experiential learning through exploration, collaboration and reflections through urban storytelling and community atlases. In this article we present the design of a geo-wiki game leading to our objective. We first outline examples of pervasive games that are relevant to the design of our game and highlight the educational value of wiki, an

important element of our game that supports reflection. We then present the game design and how the gameplay works.

BACKGROUND

Extending game experiences into the physical world, through mobile technology, has stimulated the search for compelling applications involving recreational and educational activities (Björk, et al., 2002). Players equipped with handheld devices can move through the world, and within the gameplay experience they can receive information, record observations, and so on. Moreover, the experience can also be changed according to where they are, what they are doing and even how they feel (Bedford, et al., 2003). For example, FIASCO is a situationist location-based pervasive game bridging a virtual map and city streets, where players have to perform “stunts” (street plays) concerning an object, an action, and a theme provided through the game (Chang and Goodman, 2004).. LoCoL has been designed to encourage social interaction and exploration through a “card” game, which uses a GPS-enabled mobile phone with a built-in camera to create digital artefacts (the “cards”) from landmarks and places that players are visiting (Patel, 2004). Another interesting direction for these games is geo-graffiti, where geospatially located digital artefacts are used not so much to encourage social interaction and exploration, but rather to facilitate the creation of rich urban stories. In the Geograffiti system (Tuters 2004), users annotate space with their own observations, memories or commentaries. Online maps and real-space markers indicate annotated/annotatable spaces. The Urban Tapestries system (Silverstone and Sujon 2004) allows users to set waypoints and apply textual mark-up of them using PDAs and cell phones. The maps and waypoints thus generated allow for real-time updating, and produce an urban collective memory that is accessible anytime, anywhere. Similarly, the “[murmur]” maps of Toronto, Vancouver and Montreal (Micallef, Roussel and Sawhney 2003) overlay the city with audio narratives accessible by dialling a cell phone code displayed designated locations, as well as online.

We also see relationships between these geographically-oriented ideas, and those involved in “wiki” technology and

application. We are especially inspired by the simple collaborative power shown in wiki technology (Leuf and Cunningham 2001). The wiki idea underlies such large-scale success as Wikipedia (Wikipedia.org), an online encyclopaedia or emergent knowledge repository populated by the public. Wikipedia is now the largest encyclopaedia ever written, and leverages a community approach to development and quality control (Cosley et al. 2005; Tepper 2003). A wiki is basically a website where any user can add and structure content, using only their web browser. Since their inception, wikis have been used to promote learning in communities. Wikis are explicitly used in education, and allow organization to be tailored to and evolve with the topic in a way that most systems cannot. More importantly, the process of collaborative content creation and organization itself has significant constructivist pedagogical value.

DESIGN TOWARD THE GEO-PERVASIVE

Our game unites two elements in geo-games, urban exploration and community and collective information. In this section we outline how the gameplay works to involve both these elements. The gameplay involves teams being formed and sent out to explore different neighbourhoods by moving in unexpected directions, creating surprise and engagement. While doing so, players are asked to collect multi-sensory artefacts, and interact with people in the neighbourhood. This multi-sensory information gathering, inspired by the scavenger hunt model, requires teams to work collaboratively to solve missions, and produce multi-sensory information and personal anecdotes on objects and places. These artefacts, such as sounds, pictures, scent descriptions or interviews are collected using digital recording devices (e.g. cellphones) geo-located using GPS or by referencing street names, and then uploaded to a server. Later reflection on the gameplay can be seen as a post-modern collage of city artefacts, and can be transformed into new forms of story, stimulating community participation.

The current prototype gameplay mechanics involve a very low tech but carefully-crafted team card game. to enhance engagement and motivation of the players. Players are divided into teams (2-3 players), and two teams play the game together with a deck of cards: one team plays, and the other scores them, and then roles reverse. The deck of cards is composed of four sections: direction, theme cards, engagement cards and jokers. The playing team randomly selects one card from each of the main sections, and these three cards constitute a mission. A joker is also selected as an alternative mission, and can be designed for a specific neighbourhood or as easier (though perhaps more embarrassing) quest.

The game enables a creative interpretation of which artefacts to look for, accidental discoveries and unplanned explorations. A mission typically takes around 15 minutes to complete. The judging team follows the playing team and

gives a score of thirty in the form of 10 points for each card played. The results, including artefacts, scores, and reflections, are then uploaded to our system, most easily using a cellphone or PDA: with the artifacts being photos, audio, and video, this can be done very quickly; in a lower-tech approach, everything can be uploaded later. After each mission is finished (or declared abandoned) the scoring team becomes the playing team and vice-versa.

All captured images, audio, and video flow into the wiki. Our wiki allows content to be associated with a time and location, thus recording the events at the time and place they happened, coordinating entries spatially and temporally. The wiki itself uses this information to implicitly link entries together. In this way, for example, one entry can have links to nearby entries, and this information is maintained automatically by the wiki system as entries are loaded and updated. The wiki also features maps, using the Google web service, and entry coordinates can be displayed on maps, where the maps also index back to the wiki entries.

EXPERIENTIAL LEARNING WITH GEO-WIKI GAMING

The motivation for our geo-wiki game is to exploit some of the key characteristics and potential of pervasive games to explore urban space and to achieve the creation of rich urban stories. Games are translators of experience. The design of our game is based on fundamental aspects of experiential learning: discovery and multi-sensory exploration, collaboration and social interaction, enhanced reflection through creation of urban stories or multi-sensory representations. The geo-wiki game involves investigating environments through individual subjectivity and personal construction of meaning providing an intimate, emotional, and critical journey into urban space.

Learning in a geo-pervasive activity occurs through the involvement and enjoyment of participants, and fun and enjoyment are known to deepen learning as well as to facilitate engagement and motivation (Resnick et al., 1999). Pervasive learning games provide an ideal way to create experiential learning as they allow for collaboration and cooperation and offer inbuilt opportunities for reflection and mediation (Siobhán, 2006). Moreover, the process of exploration and discovery is indeed one of the primary pleasures of geo-pervasive games.

Experiential learning theory defines learning as “the process whereby knowledge is created through the transformation of experience”. Knowledge results from the combination of grasping and transforming experience (Kolb, 1984). The basic theory behind experiential learning is that some knowledge is better gained through active participation, as opposed to passive reception. In our game, players take control of and direct their own actions, and thus have power over their own learning processes. Our gameplay supports spontaneous, unscripted learning, based on the environment.

In our game, learner-players are encouraged to explore and experiment, and we hope they will be inspired to discover, reflect and learn. This kind of experience, as produced through a game, requires collaboration between players, and is driven by exploration through interaction. Moreover, it engages imagination and demands reflection (Price et al., 2003). Rossiter and Percy (1997) proposed positive motives that energise all human behaviour: sensory gratification (sensory pleasure opportunity), intellectual stimulation or mastery (exploratory interest) and social approval; which are the essential elements of our game.

To enhance our experience and understanding of a city, particularly with reference to our own city, we need to break with the utilitarian order, habits and protocols which characterise urban existence (Shulman, 2000). A game provides a way to discover a city with new eyes, so players are discovering and experiencing the urban space through the constraints and encouragements of gameplay. Exploration in this context is a pilgrimage where the player's imagination is shaped by the spaces players pass through, by the objects that they act upon, and lastly through the traces they produce (Friedman, 2005). The perspicacious urban player is sent on a mission to decipher and expose the city meanings and its signification.

Through enactment, players are not only immersed in the game and involved in the exploration of new territories, but they are engaged in actively creating -- through the act of playing -- narratives of the city. Through the gameplay, the process of discovery and mastering the city environment, players engage with multi-sensory information and artefacts. Multi-sensory objects which attract players' attention are experienced, examined, described to be later integrated in the multi-sensory wiki. In finding clues, gathering impressions and producing artefacts players are immersed in what Flynn (2005) calls 'the emotion of wonder and discovery'.

Learning is stimulated through social interaction. Players have to co-operate to fulfill missions, and to discuss their understanding of situations, places or problems. Moreover, they share their knowledge of the city and their excitement in new discoveries. In the geo-wiki game, players learn by observation, by emulation and by socially learning from stories given by passers-by and other community members they engage with. Social interaction is an important factor in our game, and shared environments provide a means to connect and interact with people and foster social emotions. The geo-wiki game evolves around a social process that connects learner-players to communities.

Kurt Squire (2003) suggests creating resources around any game to push students to think about their game-playing more deeply. Our game helps to engage players' imaginations and provide experiential and personal perspectives of the urban space. The game's multi-sensory representations, and stories collected during the gameplay are uploaded on the game wiki to foster reflection around

their experience and stimulate their journey through the virtual space. Collaborative reflection should further deepen learner understanding.

Our multimodal wiki allows text, images, audio, and video, as well as the production of maps; it provides a blank canvas to stimulate creativity and enable many forms of virtual and creative novel urban stories including collages, spatial journeys, and so on. Players can view themselves as a new corps of urban reporters who produce and share personal views and intimate stories of the city through their peregrinations. Spatial journeys relate to the geo-location of things seen along the way which are accessed through a map. Imaginary and complex narratives could also shape this journey. More elaborate discussions could chart a landscape of ideas about reappropriation of urban landscape, power and citizenships. The ability of a community to structure a wiki should work well in this context.

By empowering players and by stimulating stories, through individual meaning given to place visited through the interactional processes, players might form for attachment with the game-wiki world, and realize the kind of bond that can form between the urban space and the virtual community (Miligan 1998). Such attachment could stimulate desire for future experiences and sustain new discoveries through the repetition of game play because the game wiki can be used not just for one playing of the game, but for a series of gaming sessions within the same community. Games can also be played using the wiki itself, finding routes and stories that connect existing journeys. Moreover, the availability of the wiki will allow others in the community to also add their reflections. In this way the game wiki forms the basis for the creation and evolution of a community atlas.

The wiki can also form the basis for shared gameplay between different communities. Using the wiki, links can be established between entries in one community with another, for example schools within Canada or schools around the world. This kind of information can form the basis for gameplay itself, and using such wikis and the Internet to coordinate, it would even be possible to have simultaneous gameplay, where play in one location could be influenced by findings in another. Afterward, the wikis would allow reflection and annotation from both the locations on their shared experience.

CURRENT STATUS

We have developed functional prototypes for both the gameplay and the wiki system, using an iterative approach to improving them. We have play-tested the game with our friends and colleagues in nearby neighborhoods, and these studies will inform our next iterations. The play-testing included four teams, with two teams playing in each of two games. We, the game designers, observed and assisted when necessary. Each game took approximately 90 minutes, and involved 6 completed missions, 3 for each

team. We held a debriefing session immediately afterwards, asked the players to complete brief surveys, and then we reflected on the experience together. The current status of the wiki is that we have implemented a prototype that does allow spatially-linked entries, and displays maps. We allow content to be uploaded from web browsers, and we are experimenting with software that interprets email and messages from handheld devices on cell phone networks.

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