Combining Storytelling Tradition and Pervasive Gaming

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Abstract—In recent years storytelling has gone through various attempts of renaissance, thanks to a recreational storytelling revivalist movement, which has not been largely successful. Pervasive gaming is an all-encompassing branch in gaming and has the potential to reach a large amount of people. Moreover, it provides a way to mix modern society with age-old traditions like storytelling. This paper describes the development of a small scale pervasive game embedding at the same time social and improvisational features and the use of this game by amateur storytellers. The game, *Props*, aims to take storytelling from oblivion to modern urban environments.

Keywords— pervasive gaming, storytelling, game development, digital storytelling, improvisation

I. INTRODUCTION

In recent years there has been a revival in storytelling, especially where narrative is used to aid research in social interactions. Revival of storytelling as a pastime has not been so successful [1]. Storytelling is by definition the art of portraying a tale with words, movement, images or other embellishments. Digital aids are widely used to enhance storytelling events: for instance storytelling karaoke relying on digital enhancement are popular during storytelling festivals. The storytelling revivalist movement could benefit from the possibilities brought by the use of digital technology during storytelling events, overcoming the criticism of inability to integrate storytelling into modern context that it has been receiving. Most pervasive games are set in urban locations where there is the inclusion of modern technological infrastructure, social abundance and availability. Storytelling has long history and many social implications [1]–[4]. Combining the two, tradition of storytelling and pervasive gaming, could benefit both phenomena.

Augmented reality and mixed reality games are sub-genres of pervasive gaming [4] and stages are locations that people inherently expect to be setting for displays. Some augmented reality experiences are based on real life stages, but those are primarily meant to be interactive tourism guides or story enhancers. They often require minimal participation from the audience [5]–[7]. Apart from virtual reality dioramas there are storytelling support systems which include the use of technological aids. They are mostly intended for children and also in high demand for purposes that are both recreational and pragmatic [8], [9]. Children could be considered an obvious target group for stories and fairy tales, so systems like these do not expand the audience of a storytelling event.

Most of the times an element of improvisation is present in pervasive and mixed reality games. However even in pervasive live action role playing games (LARP) and games that have heavy reliance on story elements the main plot and characters are already set and even the outcome of the game might be known in advance. There are many available methods and aids for creating characters and plot-lines for games and interactive drama, these are though not focused on the timely occurrence of a storytelling event [10]–[14].

This paper describes the development of a small scale pervasive game. *Props* is a game that can take storytelling from camp-fire sites to modern urban environments. Furthermore it has potential to reach both children and adults. The game was developed as content for 3D representation of Oulu, a city located in Northern Finland.

II. DESCRIPTION OF GAME PROTOTYPE

The development of *Props* (Fig. 1.) spanned through the autumn of 2012 and was a joint effort of four students from Information Processing Science department at Oulu University investing roughly 300 work hours each on the project work.
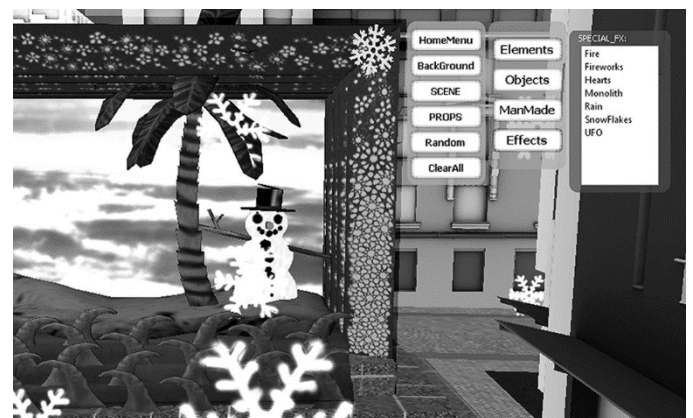

Figure 1. Action-shot of *Props*. On the right side is the main menu of game.

The purpose of the game is to aid and inspire timely improvisational storytelling. The game prototype produced was designed to have two active participants, the prop master, who stages the scene, and the narrator, who tells a story. The story itself and the stage can have audience on both locations, in the real life (RL) stage and at a corresponding location in virtual environment. The virtual reality (VR) environment of the game is set at the reality corresponding place in the 3D model of the city (Fig. 2.). In Props, the RL location is at the center of the city of Oulu, on a promenade that is a popular meeting and event spot, a place where people pass by daily. In close vicinity of the stage and along the promenade are also placed large interactive touch screens, ubiquitous screens (UBI screens) that are ideal for displaying varying visuals for the passing public [15]. The available infrastructure makes this location not just a social but also a technological urban hotspot, an ideal location for a game like *Props*. It was originally envisioned that the narrator would be situated in the RL stage where the game is set. There is no reason why this could not be done although it would require some arranging.

Figure 2. Real life stage and the envisioned setting for storytelling.

At the moment *Props* is a functioning prototype. The prop master can select visuals to complement a story or nudge it to a new direction. In the VR the narrator is represented only by a dummy avatar at the side of the stage, while in the RL there are no restrictions to where to place him or her as long as a voice channel between the two players is provided. The game content is shared projecting it behind or next to the narrator. The audience can enjoy the story and the view by the side of the narrator or the prop master. The overall game setting is quite simple and much of how the players and audience are situated can be determined by the players themselves. The easiest way to play is to situate everyone in the same room. *Props* is a game of performance much like *Sing Star* or *Guitar Hero,* only in this case the game is about storytelling, there is greater freedom in what the outcome will be and anyone can participate in creating a story without competition.

The game has large selection of props, scenes and backgrounds to provide storytelling support. The design elements of the game were intended to have high visual appeal and despite the abundance in selection, this was mainly achieved. The props and scenes can be selected in the game

menu with a click of a mouse, allowing the prop master to place them on the stage. Items can be deleted from the set or moved around and rotated with keyboard commands. The main menu contains different types of props, sub menus and options for clearing the stage or filling it with random selection of items. The prop master, who sets the stage for the story, has plenty of options to choose from and the possibility to come up with surprising combinations.

What makes *Props* a pervasive game is how it takes storytelling out of its usual context and spans between presentations of real life and virtual. It also has an obvious social expansion, especially if an audience is brought into the game situation or if the players are previously unknown to each-other. Much is determined by how the players and organizers of a game event decide to play.

III.   *PROPS* GAME IN IMPROVISATIONAL THEATER AND STORYTELLING

The realized aspects of the game were tested in lab on two occasions by bringing in outsiders to play the game as a narrator and a prop master (Fig. 3.). The main emphasis during the initial testing was on finding bugs, but we also aimed at seeing if people engage with the game situation. During these testing events, the storytelling went surprisingly well after a slow start. Narrators and prop masters found ways of using limited selection of props to represent their story. The prop master on both occasions chose a supportive role and seldom used the possibility to direct the story onto a new path.

Figure 3. Game features went through small scale testing at a lab. Prop master was seated in front of a laptop. Behind a screen the narrator saw a projection of the stage and told a story.

These test situations were still far from a game event where the narrator could be situated at the real life stage and the audience might be distanced from the narrator when following the play through UBI screens or in 3D city by just looking at the VR stage and listening to the story.

The improvisational theater group Uniikki Unikorni (Unique Unicorn) is a small Finnish amateur performance group. *Props* got a small time slot during the children's story hour held at the Oulu Improvisational Theater Festival 2013. Some changes were made to the game to make it more suited for the event. The graphical user interface was localized i.e. translated into Finnish and some additional game content was created. Making the changes was quite simple since during the game development code reusability had been taken into account by making the addition of props simple and the main menu updatable.

During the storytelling event nine people, five of whom were children, were in the audience. Seven members of the performance group were present and four of them took actively part in the storytelling and acting. *Props* was introduced at the end of the story hour (Fig. 4.). Two children got to try the game out as prop masters, while the members of Uniikki Unikorni told a story and acted it. Props and scenes were selected from a laptop by the children themselves with the aid of an adult (Fig. 5.). The scene was projected behind the performers. The story followed the prop selection very closely. Children favored easy options like random button. Narrator swiftly renamed the random button a "space vortex" in his story. It helped to have seasoned performers to narrate. They were used to improvise and the story flowed from the beginning into a smooth and likely end. One could conclude that the main difficulties met during the session were technical and could have been avoided with better preparation.

Figure 4. Narrator (left) was situated at the side of the stage with a view to everything that was going on.

Figure 5. Children played as prop masters and selected items to the scene

The feedback from the performers was gathered via email, after the event. Improvement ideas and other thoughts were also enquired with two open questions at the end of an eleven questions questionnaire (Table I), where the questions were based on a five level Likert scale. Three out of four performers who took part in playing the game answered the questions. Two performers agreed on how the game influenced the story and the event, answering that the influence was positive, to quote one of the performers: "It was great fun to improvise in front of a changing scene, but the best part was the enthusiasm of the children as they got to affect how the story went". One had differing opinions on how the game effected the story hour. This performer did though show enthusiasm in trying the game out again and evaluated audience's reaction to the game positive.

TABLE I.   QUESTIONNAIRE, 1=DISAGREE, 2=SOMEWHAT DISAGREE, 3= CANNOT SAY, 4= AGREE SOMEWHAT, 5= AGREE

Question	Answers		
	1.	*2.*	*3.*
The game content brought a positive addition to the story-hour	4	5	3
I would like to try the game again in similar situation	5	5	4
I preferred the story-hour without the game	2	1	4
The game had a positive effect on the content of the story and how the story flowed	5	5	2
The game idea was easy to grasp	4	4	3
The game affected the story too much	2	2	5
What was on the screen had no significance on how the story went	1	1	2
I do not like that storytelling is mixed with technology or games	2	1	1
The game suits this situation, but I would not like to use it on every story-hour	3	5	5
I think the audience had a positive reaction to the game	4	5	4
Playing was too difficult for the kids, that made the event unpleasant	2	3	4

What was encouraging was that all three performers agreed on not having a problem with mixing technology and games into a storytelling event. On the other hand they either wavered or agreed with not necessarily using the game on every story hour. This might suggest that mixing technology and storytelling tradition is not a problem, but doing so is still considered a peculiarity and has a place and a time only on special occasions. Too few opinions were presented though for this to be in any way conclusive. All in all *Props* works as a visual support system for storytelling and improvisation. It is still difficult to say how well it works and how well it would be received on other occasions.

IV.   LIMITS, USES AND FURTHER DEVELOPMENT

For now *Props* is just a small game with big potential. The game prototype and the game idea are at such an early stage of development that it is still possible to take it to several directions and make it serve different kind of purposes. When compared to many other urban pervasive games *Props* does not span the game action throughout the city scape. In the original game design it was envisioned that the narrator i.e. the storyteller is situated at the real life presentation of the stage and the props are placed in the VR representation, where the audience can enjoy the visual display and the story on both location. Adding more audience to the game is an important part of the game design and expands the social participation into the game event. Apart from making obvious improvements in the playability of the game, the possibility to stage the scene or to be a prop master could be made available for anyone through a UBI display or a portable device. This would be a nice addition to big scale storytelling events.

During storytelling events narrators are often seasoned storytellers who have no trouble telling a story in front of a public audience. They might also have routine reactions to outside inspiration. When we had seasoned storytellers as narrators and actors the resulting story was well structured, but otherwise *Props* tends to produce unstructured stories. These latter incoherent tales are also more personal. In this sense the game could be a good aid in therapy. In addition stories that resonate from personal experiences can have a healing and binding effect between community members [16]–[18].

Both the storytelling revivalist movement and pervasive gaming have the possibility to reach masses, but they seem to have trouble doing so. In this sense both seem to have immense untapped potential [2], [3]. *Props* was tried out during the children's story hour, with experienced storytellers. One might even consider children and storytellers as the obvious target groups for the game. *Props* though has the potential to reach anyone and help city dwellers unleash their imagination, tell their story or be inspired to create a new one. We received some indication of this potential from our preliminary tests where none our narrators were experienced storytellers and where the prop master was not a child.

As a conclusion, we believe that it is possible to take an established custom or tradition and embed it into pervasive gaming scene. The realization does not have to be very large in scale in order for the end result to be functioning and with ramifications.

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