Codename Heroes – Designing for Experience in Public Places in a Long Term Pervasive Game

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ABSTRACT
Codename Heroes is a persistent, multiplayer, crowd-sourced pervasive game that uses Bluetooth, GPS and the phone camera. It plays in the world around you and is always active. Players take the roles of secret superheroes, fighting for their rights and their beliefs. The game also makes use of physical objects and places in the environment.

The game targets teenagers with a specific focus on young women. The purpose of the game is to engage and empower players. The design is informed by ethnographic studies of young women as well as by gender studies. The goal is to create an incitement for young people to appropriate spaces they do not usually move in, and try things they would not otherwise do.

Codename Heroes is part of a project investigating pervasive games, games that are played in the physical world with the aid of mobile technology. The current research is focused at exploring large scale, long term, non-location-specific pervasive games, while still keeping the physical aspect of game-specific objects, to understand how this physicality affects the experience of the game.

Categories and Subject Descriptors
H.5.m. Information interfaces and presentation: Miscellaneous.

General Terms
Documentation, Design.

Keywords
Gender aware design; Pervasive game; Location-based game

1. INTRODUCTION
There is much research on pervasive games (e.g. [7,13,14]), and many games have been demonstrated, some of them research prototypes (e.g. [4,5,6,8,9]), and others more commercial (e.g. [19,20,21]). However, there's still a lack of knowledge about how to design for large games and long time sustained play, while still keeping the physical aspect of game-specific objects. Further, the understanding of how this physicality affects the experience of the game, especially in games over larger areas, is not well studied.

Even though there are both research and commercial games, most of these are either location specific [5,6,9], do not use physical objects [20,21], or only use non-movable, non-game-specific, physical objects (e.g. statues and buildings) [8,19]. The design of game experience in pervasive games have been explored in [3], but does not sufficiently show how the experience relates to physical space.

Codename Heroes aims to explore game-specific objects for large scale, long term, non-location-specific pervasive games. The objective is to identify how players perceive physical objects, and how this can be implemented into a game design in a way that use these identified attributes. This should be done while still being low on game resources (both in time and economically), even in a game that could scale to a larger area and numerous players.

We use a qualitative design research approach [12,18], with observations of game tests and semi-structured interviews with players as our main data collection method, but also regard the iterative design process as data [17].

With a target group of young girls, and the area of games being a considerably gendered area, a gender aware approach, mainly informed by Butler [10,11], was taken. As this is focused on in other papers [1,2], it will only be touch upon here, but it is still important for the context.

2. GAME DESCRIPTION
In the game narrative, the players take on the role of hidden heroes with magical powers, completing quests together with and against other teams of hidden heroes. The magical powers are tied to physical objects, called artefacts. They can be placed in the environment, or carried along depending on what power they hold. The artefacts are connected to the game through QR-codes. Every time they are 'invoked' (through scanning the code with the phone) the phone connects to the game server and the artefact magic starts. That way the artefacts can within the game be magically enhanced, without adding technology to them. The physical objects are designed to mimic the young girl behaviour of gift giving, to support trust and friendship between individuals and within groups. The use of artefacts requires 'mana'. The other part of the game consists of message delivery, the better you are at delivering messages, the more 'mana' you gain to use with your artefacts.

3. IMPLEMENTATION
In the user end, the game runs as an application in Android phones. The phones use GPS to locate and track its position. In the application magical messages related to the quests, can be scanned for, picked up or dropped if in close vicinity. The

Figure 1. Images from the studies. An artefact, in this case designed for the game; two images from the large scale test; and a location from the long-term test.

application also uses a QR-code reader to 'invoke' the magical artefacts. All information is sent to a server running a reworked version of the MUD-engine Lambda MOO, using it as a database and easy way to program a virtual world.

4. STUDIES

The game has been studied in several iterations, from the first tests done with only simple technology and most of the game in 'pen-and-paper' form, through tests with a semi-finished game where most functionalities was already implemented, but some details were still missing. A large-scale test was performed with a one-hour version of the game, and a smaller but more long-term game test (one week) was conducted. Our iterative trials have helped shape the game idea and understand the key drivers for initial engagement, as well as long-term play. See visual examples from the tests in Figure 1.

The remaining step is to run a long-term test, running two – three months, with players free to engage and quit as they wish. The test will be designed to give us an understanding of how the game would work in an everyday setting and avoid the artificial feel when there is a short time span and a given endpoint to the test nearby.

5. PRELIMINARY RESULTS

Analysis of the data from earlier tests is ongoing, and will be used to inform the final game test. Among the early findings are:

1) The players put a higher value on finding or solving physical objects and puzzles than on score and points within the game system.

2) The players connect memories to objects, and use them as souvenirs to remember game experiences.

3) The players make a connection between the physical object and the virtual representation, even though the players are aware of there being no real functionality to tie the object to the virtual space; resulting in both stronger connections, when it worked, and frustration, when it didn't.

4) The players say the creation of physical objects is a fun activity in itself, even though there is also other opinions.

6. ACKNOWLEDGMENTS

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7. REFERENCES

[1] Back, J., Papadogoula, F.A., and Waern, A. The Challenges of Designing a Gender-Aware Pervasive Game. *CHI Workshop on identity, performativity and HCI*, (2012).

[2] Back, J. and Waern, A. "We are two strong women" – Designing Empowerment in a Pervasive Game. *Proceedings of DiGRA 2013*, (2013).

[3] Back, J. Designing Activity and Creating Experience : On People's Play in Public places. (2013).

[4] Ballagas, R.A., Kratz, S.G., Borchers, J., et al. REXplorer. ACM Press (2007), 1929.

[5] Benford, S., Crabtree, A., Flintham, M., et al. Can You See Me Now? *ACM Transactions on Computer-Human Interaction 13*, 1 (2006), 100–133.

[6] Benford, S., Flintham, M., Drozd, A., et al. Uncle Roy All Around You: Implicating the City in a Location-Based Performance. *Proc. ACE 2004*, (2004).

[7] Benford, S., Magerkurth, C., and Ljungstrand, P. Bridging the physical and digital in pervasive gaming. *Commun. ACM 48*, 3 (2005), 54–57.

[8] Bichard, J., Brunnberg, L., Combetto, M., Gustafsson, A., and Juhlin, O. Backseat Playgrounds: Pervasive Storytelling in Vast Location Based Games. In R. Harper, M. Rauterberg and M. Combetto, eds., *Entertainment Computing - ICEC 2006*. Springer Berlin Heidelberg, 2006, 117–122.

[9] Bichard, J.P. and Waern, A. Pervasive play, immersion and story: designing interference. *Proceedings of the 3rd international conference on Digital Interactive Media in Entertainment and Arts*, (2008), 10–17.

[10] Butler, J. *Gender trouble: Feminism and the subversion of identity*. Theatre Arts Books, 1990.

[11] Butler, J. *Undoing gender*. routledge, 2004.

[12] Fallman, D. The Interaction Design Research Triangle of Design Practice, Design Studies, and Design Exploration. *Design Issues 24*, 3 (2008), 4–18.

[13] Gielkens, C. and Wetzel, R. ARe mobile mixed reality games pervasive? (2011).

[14] Montola, M., Stenros, J., and Waern, A. *Pervasive Games: Theory and Design*. Morgan Kaufmann Publishers, Burlington, MA, 2009.

[15] Stenros, J. and Montola, M., eds. *Nordic Larp*. Fëa Livia, 2010.

[16] Stenros, J. and Montola, M. The Making of Nordic Larp: Documenting a Tradition of Ephemeral Co-Creative Play. (2011), 16.

[17] Zimmerman, E. Play as Research: the Iterative Design Process. In *Design Research: Methods and Perspectives*. MIT Press, Cambridge, MA, 2003, 176–184.

[18] Zimmerman, J., Forlizzi, J., and Evenson, S. Research Through Design as a Method for Interaction Design Research in HCI. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, (2007), 493–502.

[19] Ingress. http://www.ingress.com/.

[20] Shadow Cities. http://www.shadowcities.com/.

[21] Zombies, Run! *Zombies, Run!* https://www.zombiesrungame.com.