Play it for Real:

Sustained Seamless Life/Game Merger in *Momentum*

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ABSTRACT

In this paper we describe a high-end pervasive larp *Momentum* that sought to create a seamless merger of life and game for the game duration of five weeks. During the five weeks the players could be able to play an immersive game set in our ordinary reality augmented with game content, both through narrative content and through game artifacts. The central challenges of the long duration was merging the game and life in a functional manner, game mastering the game for extended periods, and pacing and structuring the game in a working way. This paper looks into the lessons of *Momentum*; problems, solutions and other evaluation results.

Author Keywords

ARG, larp, role-play, seamlessness, life/game merger, gamemastering viability, pervasive gaming

INTRODUCTION

Pervasive media expression is a growing trend. Reality television, guerrilla marketing, internet identity play, and alternate reality games (ARG) are blurring the boundary between the fictitious and the real. Pervasive gaming is one facet of this phenomenon.

In this paper we present and discuss *Prosopopeia Bardo 2: Momentum*; which was a pervasive *live action role playing* game (larp). Excluding pure reality games, which do not reveal themselves as games at all [9], pervasive larp is perhaps the most extreme style of merging life and game into an integrated experience. *Momentum* was a larp that ran 24/7 for unusually long, for five weeks. During that time the game world and the real world merged in ways that made it impossible to track the borders of the so-called "magic circle" of game.

Figure 1: Player headquarters were located in a retired nuclear reactor.

The purpose of the experiment was to explore extreme pervasive gaming, creating a proof of concept for the style of gaming where game uses reality as the main substance of the play. The basic idea was to take our everyday life as it is, and add game content to it in order to create an enticing story.

In addition to being a research prototype, *Momentum* was an elaborately designed larp with an artistic and political agenda discussing conformism and revolution in contemporary society. *Momentum* was staged in Stockholm, Sweden in October and November of 2006[1].

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[1] *Prosopopeia Bardo 2: Momentum* was created by Staffan Jonsson, Emil Boss, Martin Ericsson and Daniel Sundström,

In the world of *Momentum* there is an afterlife, a world much like our own inhabited by ghosts of the dead. During *Momentum*, 30 ghosts of dead revolutionaries returned to our world to set things straight.

During the five weeks of gameplay the role-played ghosts ran through techno-occult adventures. They sneaked around run-down areas of the town, cracked puzzles, talked to strangers trying to find game clues, traveled away from the city tracking clues of an occultist, conducted flashy rituals on public spaces, staged a demonstration, engaged in intrigues and so forth. The first weeks of the scenario were about learning to play a game merged with reality, but as the story progressed, the players had to take the game out to the public and engage outsiders with the game.
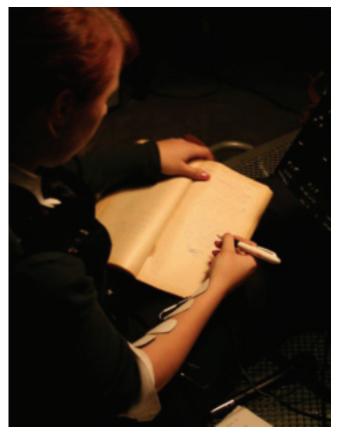

Figure 2: In Momentum magic and technology worked together.

In the core story of the game a stronghold of dead revolutionaries in the afterlife was attacked by forces of conformism, who had gathered strength from current events in our world. The players role-played dead revolutionaries,

Henrik Esbjörnsson and others. See Jonsson et al [6] and Stenros et al [16].

returning back to the lands of the living to fight their war from here.

Many of the ideas of *Momentum* were originally tested in *Prosopopeia Bardo 1: Där vi föll*[2], played by 12 players in Stockholm for 52 hours in 2005 (see Montola & Jonsson [10] and Jonsson & al. [5]). *Momentum* further developed these ideas by scaling up 30 players participating continuously for 36 days.

Expanding the Magic Circle

A salient feature of pervasive games is that they break the boundary between the game and the ordinary world in different ways [9], blurring the ritualistic sphere of the magic circle of playing [3, 15].

Momentum used all three ways in which pervasive games break the boundaries of traditional games [9]. *Spatial expansion* meant that the game was played all around Stockholm in everyday environment – streets, cafés, workplaces and back yards. *Temporal expansion* meant that the game was interlaced with everyday life, that it could draw the player in at any time of the day, in any situation – and that all of the player's life might be part of the game.

Yet the emphasis was on *Social expansion,* meaning that non-players were pulled into the game as spectators and participants [11]. Blurring the line between participant and non-participant ensured that the game bled into the ordinary world. The provocative goal was to use *real people* as an interesting feedback system. The game could have an effect on the world of ordinary life and *change* it for real as influencing the game world also lead to influencing the real world.

Challenges of the long duration

Typical Nordic larps last from a few hours to a week. These games are continuous, consuming all waking hours of the player. Continuous character immersion[3] is common, as are high production values of involved props. The emphasis is more on intrigue and emotion on the expense of quests and physical combat. For a description of the larp tradition that *Momentum* stems from see Koljonen [7].

A week is usually a long time for an adult to take a break from the everyday life. In order to create longer continuous and immersive game experiences, a number of design challenges must be overcome. The central design

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[2] *Prosopopeia Bardo 1: Där vi föll* was created by Martin Ericsson, Staffan Jonsson, Adriana Skarped and others (June 2005, Stockholm).

[3] Immersion is central to Nordic larp both as a design principle and a role-playing philosophy. On character immersion, see Pohjola [14] and on physical immersion Koljonen [7] and Murray [13]. Fine [2] uses engrossment to describe a similar phenomenon.

challenges concern *pacing, life/game merger* and *gamemastering viability*.

Pacing a game is challenging, as the game must be kept moving, but players have to be prevented from consuming the content too fast. In a five-week game, it's also practical to ensure that most or all players are participating in the game during the most important periods of gameplay.

Life/game merger requires that the participant must be able to continue with his ordinary life, work, school and social life. The game must be constructed in such a fashion, that its coherence is not lost even if a participant is not engaged with the game all the time. *Interruptability* is a central part of the merger, as the participants must be able to move easily between ordinary life and game without either one suffering from the switch.

Gamemastering viability is a practical requirement. In larps, anticipating all player action is impossible, and as the effects of unanticipated behavior escalate over time, continuous run-time gamemastering is needed in order to create a working game experience. Continuous run-time game mastering consumes lots of work hours, which is both an issue of resources and knowledge management. A single mistake can compromise the coherence of the game world.

PACING AND SCENARIO STRUCTURE

Problems regarding pacing were solved by structuring the game in high and low intensity periods. The players were given an advance warning on when the game would go to high intensity. These periods were three high intensity weekends during the game (*Across Lethe, Saving 93* and *Radical Saints,* see figure 3), and at these times the players were supplied with lots of prepared game content.

Figure 3: Structure of the scenario.

If one person played only the mandatory weekends and another person played continuously, they could still play the same game. The different levels of activity and information created a tension which the player negotiated by information exchange through meetings and a web community that they initiated and managed on their own.

The theme of the game was revolution. In the beginning the four factions of radicals were united against a common enemy. They had to complete interdependent tasks in order for the rebellion to succeed. The unity was then lost regardless of the outcome. An internal struggle followed over the spoils of the struggle (victory) or over survival against an invincible oppressor (defeat).

Throughout the duration of the game the players role-played their characters, carried out missions (e.g. performing a purification ritual outside the headquarters of the largest advertising space seller in Sweden) and communicated with "the other side". During the last weekend, there were two major public events. One was a public demonstration parading through downtown to honor the dead (see figure 4); the second was a homecoming party where the vessels bid the spirits goodbye and celebrated their victory before going home.

Figure 4: "The Dead Live" proclaimed the banderols at the demonstration.

Possession model

Momentum was on all the time, and the players were supposed to live theirs lives in it. To be viable, the game had to be interruptable. Due to the seamless merger of life and game, the interruptions had to make diegetic sense. The players had to be able to take care of their ordinary lives *while staying in game*.

As a solution, the game was based on a ghost story, using a role-taking model based on the idea of possession as a form of self-hypnosis. The players role-played characters that were treated as possessing spirits in the game.

In the possession model every player is supposed to role-play a copy of oneself that hosts a possessing spirit. Thus, every player had three identities; two within the diegesis and (since the players do not *actually* believe they are possessed) one player identity outside it.

When playing the game a participant would act in the role of the ghost, but as the need arose, she could always move the possessing spirit to the back of her mind and act as the host instead. The host would then be able to take care of the mundane tasks relating to operating in the ordinary world as he was mostly identical with the player.

As a safety measure it was also possible for the participant to step outside the game and be the player. This was done by using the safe word "prosopopeia".

SEAMLESS LIFE/GAME MERGER

The core instruction to the players was to play the game *as if it was real*. In order for the ordinary world to become a game world, all the people, props, places, actions and information the players encountered had to have a believable place, role and history in the game. Through the 'play as if it was real' proposal, this was automatically achieved: everything was just what it is in reality – but this reality could also affect the afterlife world.

In order for the game and life to merge seamlessly, the world however cannot function entirely as usual: it has to always respond to player actions in an in-game manner. This is a huge requirement for the people who create and run the game, as they need to stay up-to-date on what all the players are doing, what has happened before, and then ensure that the correct reaction occurs.

Basically this life/game merger means taking This-Is-Not-A-Game –aesthetic used in ARGs to its logical extreme [17, 8]. From the point of view of the participant, it is only the knowledge that the game is a game that differentiates it from reality. The participant simply needs to pretend that he has forgotten that he is participating in a game.

The seamless merge of ordinary life and game reality enables the participants to avoid treating the game as a game: more specifically, they would never have a meta-discussion about the game as such. Anything in the surroundings can be a part of the game so the players will see and interpret things in the everyday environment that they might not have noticed before. The world is changed by altering the way the players see and experience it.

Fabrication and reality hacking

On top of the solid foundation of reality, a layer of fabricated content was added.

As an illustrative example, if the players went to a hospital during those five weeks, the nurses of the hospital (in physical world) represented themselves within the game world. But when the game masters needed a nurse to deliver a message to the players, reality hacking could be used: The game masters could either ask a nurse to deliver the message (while being oblivious to the game), or they could guide the players to visit a hospital where they had an informed acquaintance working as a nurse. The key trick is to keep the players oblivious to the range and extent of fabrication until they believe that any nurse could potentially play a part in the game.

Reality was a *sourcebook* for *Momentum*. The fiction of the game world was built on real world history, enabling the players to research them as much as they wanted. For example the Enochian magical system used in the game was 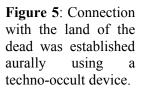lifted from actual occult literature and all the possessing characters were actual historical persons. But in addition to the real world resources about historic events and occultism, the creators of the game fabricated parts of this information by creating fake websites and fictional transcripts of email correspondence between characters.

When a new game element was needed in the game, the game organizers searched history books until something was found that fulfilled the need of the game. As written history is always biased and filled with holes, the game masters were able to use these as places to add their own interpretations. The ludic mythos was woven from threads of reality fit together to create a new, consistent whole (much like real-world conspiracy theories are). The players could actively research it, guided by the many subtle clues entered into the game, and tapping into real-world resources (often found on the web).

Content generation

A traditional problem in the persistent world industry has been creating sufficient story content for prolonged playing. *World of Warcraft* has solved this problem by including a massive number of quests, and the scenario structure served *Momentum* in a similar way. Pre-designed and gamemastered content was mostly added on high intensity weekends, with occasional pieces sent to sustain the interest during the low intensity periods.

Figure 5: Connection with the land of the dead was established aurally using a techno-occult device.

The good thing with *Momentum* was that the surrounding environment produced an infinite amount of building-blocks for player created content: the players' task was to find out which parts of the ordinary world were meaningful for the game.

The experience of the existence of the land of the dead was mostly achieved through aural communication. Creating

124

voices from beyond the grave allowed easy, fast and cheap improvised authoring.

Seamless expression

In addition to testing out interesting game mechanics, the decision to use seamless expression was motivated by the artistic ambitions of the production. *Momentum* was conceived as an attack on consensus reality, that which is seen as the objective everyday world. The message was that 'reality' is a social construct, and that a game played on the streets can question all assumptions on what is real or acceptable.

Politically, the game was supposed to raise awareness regarding a number of (mostly left-leaning) political agendas. The possessing spirits were revolutionaries, freedom fighters, even terrorists. In order for these issues to have gravity, the game designers felt that the game needed to be framed as reality (even if its ludic nature was fairly apparent to the players).

However, the fact that *Momentum* was a game was openly advertised before and after the game. Player signed up for it with full knowledge that they would be playing. It was only during the game that its ludic nature was denied. In order for the seamlessness of the game to work, it started in a way that made it possible for the gameness to be ignored: At the start of the seamless period, the players where called to a meeting where the game-masters explained that everything was real, and that *Momentum* was not a game but a real phenomenon masked as a game to hide it from the rest of the world. This method for switching from seamful to seamless mode has been used previously in ARGs, e.g. in *Majestic* [17].

Denying the ludic nature of a game is a standard practice of ARGs. The difference to most ARGs, however, was that *Momentum* was played mostly in the physical world (as opposed to on the web) and that the participants were expected to role-play. Correspondingly, the major difference to ordinary larps (aside from the long duration) was that there was no "off-game"; the players were expected not to step outside of the magic circle during the game.

RUNTIME GAMEMASTERING

Runtime game mastering is the process of influencing the flow of a game in real time. The game masters of *Momentum* were responsible for creating a believable world. Whatever the players did, the game world had to produce a believable response. As the game and life were merged, most of the time the ordinary world reacted to player activities, but the job of the game masters was to uphold the fabricated parts of the environment.

The most important part in that was making sure that the story unfolded in a proper way: Actors, organizations, internet entities and other game elements had to react in the correct way, at the correct time in the correct manner.

Figure 6: Using surveillance tech helped runtime gamemastering, but without controllers it would have been hard to understand the social interaction.

In *Där vi föll* the game masters had worked full time around the clock, but that couldn't be done in much longer *Momentum*. It was important to create orchestration tools to facilitate the communication of the large game master group, in order to maintain the illusion of continuity among the players.

A web-based orchestration tool was used to gather information on players and characters, notes were kept on the individual plots, sound files that the players had sent and received were stored and the diegetic reports from the spirits were kept in order. This tool made it possible for one game master to initiate a plot on his shift and another to pick it up later.

Där vi föll game mastering had depended on direct game master observations, NPC reports and technical surveillance, which consumed a lot of manpower.

Though theoretically the game masters could follow the players out on the town and observe their actions from a distance, in practice this was often impossible. Use of *controllers* was the most important way in making long-term game mastering more efficient and less taxing in *Momentum*. Four players observed the game while playing, informed game masters and sometimes secretly guided the players. As the players did not know about these plants, they could not do anything overtly suspicious in order to not be spotted by the players. One of the controllers was also the researcher working as a participatory observer.

The main point of controllers is that it's very difficult to understand a role-playing situation through sensory equipment, but an on-site person can analyze it much better. The controllers could easily provide the game masters with

information on player plans, preferences, moods, emotions, intentions et cetera.

As *Momentum* included several puzzles, one potential problem was players being stuck with a puzzle with no way to go. The controllers could subtly tune the difficulty level, by providing players with ideas when absolutely needed.

Figure 7: Puzzles were solved using all available resources.

The controllers were also used as the backup solution in case of technology failures: The designers started with three plans using different amounts of technology. Planning for failures saved the game – some central pieces of equipment were critically delayed and never made it to the game. As a solution, the role of the controllers was increased, and the game content was changed from gamist exploration of magical landscape more towards personal drama.

The last source of information was the players themselves. In the headquarters there were a number of communication channels to the various entities in the story-world (e.g. *The Order of Metatron* could be contacted through Skype chat). In discussions with these game master entities, players would tell what had been happening as part of the dialogue. Finally, the players were tasked to write diegetic reports.

EVALUATION OF *MOMENTUM*

Setting up a game that denies its ludic nature leads automatically to problems in running the game. Data was gathered through surveys before and after the game, and some players also filled them during the game. Half of the players participated in thematic interviews after the game, in addition to the group debrief for all players. All players also filled diegetic diaries during the game, in order to inform their otherworldly allies on their doings. Data was gathered directly through participatory observation and technical surveillance and logfiles. Some of this data was also used in run-time gamemastering.

Problems with seamlessness

Communicating the rules of the game, instruction on how to use the game equipment and relaying missions was perceived as inefficient by a number of players. The diegetic way this information was disseminated did help build a more believable, coherent and complete story-world, but it also raised the risk of misunderstanding. In many ways it was also extremely inefficient. The main points of *Across Lethe* included a diegetic possession ritual and a non-player mentor character introducing the players to the mythos of *Prosopopeia*. Due to the extensively detailed and complex background story, the signal-to-noise ratio was low, even if the "noise" was important for establishing the mood of the game. Communicating some of this information outside the game (and in written form) would have helped the players to internalize the information better, with the expense of some seamlessness.

In the very beginning of the game seamlessness worked well, but the introduction of game mechanics changed this. When possession or game devices are encountered for the first time, many players need a "correct interpretation" to understand the nature of these elements within the diegesis. As the players learned the ropes these problems of ambivalence were forgotten.

When the ludic elements were handled by game masters, and the players didn't need to act as game engines, then the seamlessness worked.

One practical problem was that the gamemasters had to hide from the players as they had written themselves out of the story: They had to avoid places where there was a risk of running into players.

Coherent interactive game world

The game masters managed to create the impression of a logical game world reacting to player actions coherently. Having accurate information on what was happening and when, in particular from the controllers and diegetic diaries, was instrumental. Combined with the fact that the players remained unaware on how they were followed, and were regularly surprised by the accuracy of information game masters had, substantially contributed to the immersive experience.

The rich and detailed story-world helped in runtime game mastering. Though the intricate otherworldly mythos might seem inconsequential, a rich living world enabled the game masters to react quickly to emerging situations.

The successful run-time game mastering of a game this long was one of the biggest achievements of *Momentum*. Aside from a handful of minor peaks behind the magician's curtain (such as accidental spotting of a gamemaster on a street where he shouldn't be) the seamlessness was upheld successfully.

Trapped in the magic circle

Easy interruptability was a design requirement for *Momentum*, which was addressed with the possession model: the players could step out of the game when they needed to attend to their everyday life. However, they were only allowed to switch between the host and the spirit,

stepping completely out of the game in a meaningful way into the player persona was only acceptable as a safety measure. These rules were taken seriously by the players and there was considerable social pressure to stay within the game fiction.

This was supposed to be circumvented by the fact that the host and the player were almost identical However, when the game is framed as reality, the everyday persona becomes just another character. Though in the beginning of the game this character and everyday self are almost identical (with the difference of believing in ghosts), the game will provide a number of life-altering experiences (being possessed, experiencing magical world) that the two selves frame differently, until eventually these two identities are very different. For a long-lasting game directly addressing and challenging players' identities, this distinction is instrumental.

The game-as-reality approach influenced the genre of the game. The realistic aesthetic of the game forced players to down-play their reactions: taking the necessary leaps of faith in regard to magic is much easier in a context of a game. In reality most people are much more skeptical – even if the carbon copy persona is defined as more prone to believing in the supernatural.

Most players adhered to total seamlessness strongly; some of them claimed having almost no off-game experiences during the period. Total seamlessness, however, resulted in a number of problems: Talking and reflecting about the game was impossible, even though many players were longing to do that, and indeed many did. The insistence on the game being reality started to draw increasing attention to the fact that *Momentum* was a game. People thought about it but were unable to properly address it.

When the players broke the rules and discussed the game anyway, they violated the explicit rules of conduct, and thus drawing attention to the gameness of *Momentum*. Though most players did not break the illusion of *Momentum* as reality in public, many later reported that they had stepped outside of the game and discussed it as a game with other participants, game organizers, friends or family.

As is typical to Nordic high-end larping [7] the social rule of not stepping outside the fiction was very strong. In post-game interviews most players denied that they had broken the rule, but more accurate questions revealed that they actually had discussed the game as a game. The social pressure led some players to deny that they had broken rules.

Practically all players played intensely during the high intensity weekend. Half a dozen played daily for hours, and most players did at least some game related activities every second day.

Some players reported that they longed for some space outside the fiction where they could go if necessary, now they felt trapped in the magic circle of play. Others were

adamant that the strong game experience required flawlessly seamless merge of life and game.

The length of the game was a central problem. Firstly, there was no way to address the problems in the game or problematic players while the game was being run. Secondly, many players wanted to distance themselves from the fiction at some point during the game.

Mixed signals

Breaking the player expectations is a powerful tool in strengthening the life/game merger. One example is breaking something physically; a trick that is used for the audio-visual effect gives the players the feeling of freedom regarding their environment. However, these border-breaking approaches are also problematic: If the characters can, with good diegetic reason, break down one door in a game, why can't they do the same to all scenography if diegetically necessary?

This particular problem occurred in a mission where the players needed to destroy a couple of antennas made out of black boxes with red LEDs and stickers of a diegetic security company. While this technique probably increased the perceived seamlessness, allowing the players to exert violence on objects risks breaking these borders too well: If players are allowed to break certain antennas of *The Grey*, why can't they wreck all other game props as well?

Figure 8: Some props could easily be identified as game related, some couldn't.

The issue with mixed signals was aggravated by the fact that the mission contradicted *Momentum* player agreement:

> You are not allowed to change anything permanently (like painting, destroying furniture or props etc.), or open any apparently sealed or closed off area within the game locations, i.e. you will be held liable for every irreversible change to the locations.
>
> Every player will be assigned expensive electronic equipment during the game period and are required to handle the equipment with care. You are liable for the

equipment during the full duration of the game. You will be held responsible for lost or destroyed equipment.

Of course, even the existence of a player agreement form challenges seamlessness.

Similarly, there were locations that in the ordinary life are off-limits to normal people (such as the retired nuclear reactor hall) that were rented for game purposes. Differentiating game locations from non-game locations was challenging and also incompatible with the design philosophy (as everything was supposed to be equally "real").

The gamemasters tried to sidestep this issue by marking locations and props as clearly game related. Places marked with Enochian symbols or stickers of the diegetic security firm *Kerberos* were clearly part of the game. Unfortunately these markings could be moved or the things in their vicinity could change.

In the end the players needed a double consciousness: The game was not ordinary life and ordinary life was not a game world.

Player exhaustion

Somewhat unforeseen problem with the long and intense gameplay was *player exhaustion*. Due to design solutions incorporating reality as the source material and emergent content, there was literally an infinite amount of things to discover during the game. The players could never reach a content state where they could be secure about having completed all the tasks and puzzles available.

Even though this issue was somewhat addressed by the intensity variation in scenario structure, over 90% of players stated that they felt *guilty* about not playing enough.

CONCLUSIONS

The motivation of creating *Momentum* was to create an extremely pervasive in order to inform design of more economically viable games. Falk and Davenport [1] describe the "holy grail" of interactive entertainment as *pervasive, tangible and sensory-intense digital interface design*. *Momentum* went a long way in terms of pervasivity, tangibility and sensory intensity; the remaining goal is adding replayability and portability to *Momentum*, and further automating the game mastering to replace the need of game mastering manpower with better digital game mastering systems.

The extreme seamlessness over long time managed to blur the magic circle in a powerful way. The central design challenges of sustained larping can be overcome. In this paper we have concentrated on solving the problem of life/game merger with seamlessness.

Regardless of the problems discussed above, seamlessness worked very well in many ways. Players regarded it as a fun and intensive thing that heightened the feeling of a complete story-world. The incentives to stay in the game

were strong and this resulted in a deeper immersion into the game. All but one player claimed that they would like to participate in a similar game next year.

One central pleasure in the game arose from ambiguity and emergence. Many memorable moments were created from unpredicted interaction of players and outsiders. Similar finding have been reported by Montola & Jonsson [10], Szulborski [17] and McGonigal [8].

Figure 9: Using the aesthetics of urban exploration helped create ambiguity that was perceived as fun.

When the game is undistinguishable from everyday life, everything becomes related to the game. This alters the way world is perceived, and the players start to see game where there is none.

Runtime game mastering turned out to be an absolute necessity; times when players surprised the game masters are too numerous to list. Clues and methods that seemed obvious to the designers were often missed, players spent a lot more time procrastinating over alternative paths of action – and then might suddenly burst into action. As players would come up with unexpected plans the game masters needed to stay alert all the time.

The advantages of seamlessness are some of the most important attractors of pervasive gaming, but completely hiding the game creates a completely new set of issues.

Even though seamlessness was toned down from *Där vi föll*, *Momentum* was still too seamless, mostly due to the increased duration. As a design principle, seamlessness needs to be seen as an aesthetic and metaphor, not as a rigid rule or a concrete target. As Harvey [4] points out, ethical considerations are essential; we have discussed them in e.g. Montola & al. [12]; but work on that field is still far from finished.

REFERENCES
1.   Falk, J. & Davenport, J. "Live role-playing games: Implications for pervasive gaming" in Rautenberg, M. (ed) *ICEC 2004*, pp. 127-138.

2.   Fine, G. A. *Shared Fantasy. Role-Playing Games as Social Worlds*. Chicago, University of Chicago press, 1983.

3.   Huizinga, J. *Homo Ludens. A Study of Play Element in Culture,* Beacon Press, Boston, 1955 (1938).

4.   Harvey, A. "The Liminal Magic Circle: Boundaries, Frames, and Participation in Pervasive Mobile Games" in *Wi: Journal of the Mobile Digital Commons Network* vol.1 (2006).

5.   Jonsson, S., Montola, M., Waern, A. & Ericsson, M. "Prosopopeia: Experiences from a Pervasive Larp." *Proceedings DVD of ACM SIGCHI ACE 2006* (West Hollywood, June 2006), ACM.

6.   Jonsson, S., Montola, M., Stenros, J. & Boss, E. "Five Weeks of Rebellion. Designing Momentum." in Donnis, J., Thorup, L. & Gade, M. (eds.) *Lifelike*. Copenhagen, Projektgruppen KP07, 2007, 121-128. www.liveforum.dk/kp07book

7.   Koljonen, J. "Eye-Witness to the Illusion. An Essay on the Impossibility of 360° Role-Playing." in Donnis, J., Thorup, L. & Gade, M. (eds.) Lifelike 175-187.

Copenhagen, Projektgruppen KP07, 2007. www.liveforum.dk/kp07book

8.   McGonigal, J. "'This Is Not A Game': Immersive Aesthetics and Collective Play." *DAC 2003 Proceedings* Melbourne.

9.   Montola, M. "Exploring the Edge of the Magic Circle. Defining Pervasive Games." *Proceedings of DAC 2005* (Copenhagen, December 2005), ITU of Copenhagen.

10.   Montola, M. & Jonsson, S. "Prosopopeia. Playing on the Edge of Reality." in Frizon, Thorbiörn & Wrigstad, Tobias (eds.) *Role, Play, Art. Collected Experiences of Role-Playing*, 85-99. Stockholm, Föreningen Knutpunkt, 2006. http://jeepen.org/kpbook.

11.   Montola, M. & Waern, A. (2006): Participant Roles in Socially Expanded Games. In Strang, Thomas, Cahill, V. & Quigley, A. (eds.) (2006): Pervasive 2006 Workshop Proceedings 165-173. PerGames 2006, May 7. University College Dublin. www.ipsi.fraunhofer.de/ambiente/pergames2006/final/PG_Montola_Roles.pdf

12.   Montola, M., Waern, A., Kuittinen, J. & Stenros, J. *Ethics of Pervasive Gaming*. IPerG deliverable D5.5, 2006. In www.pervasive-gaming.se.

13.   Murray, Janet H. Hamlet on the Holodeck. The Future of Narrative in Cyberspace. Cambridge, Massachusetts; MIT Press, 1997.

14.   Pohjola, Mike "Autonomous Identities. Immersion as a Tool for Exploring, Empowering and Emancipating Identities." in Montola, Markus & Stenros, Jaakko (eds.) *Beyond Role and Play. Tools, Toys and Theory for Harnessing the Imagination.* Vantaa, Ropecon, 2004.

15.   Salen, K. & Zimmerman, E. *Rules of Play. Game Design Fundamentals*. MIT Press, Cambridge, 2004.

16.   Stenros, J., Montola, M. & Waern, A. "Post Mortem Interaction. Social Play Modes in Momentum." in Donnis, J., Thorup, L. & Gade, M. (eds.) *Lifelike*. Copenhagen, Projektgruppen KP07, 2007, 131-145. www.liveforum.dk/kp07book

17.   Szulborski, D. *This Is Not A Game. A Guide to Alternate Reality Gaming.* Exe Active Media Group, 2005.