

Designing Public Play
Playful Engagement, Constructed Activity,
and Player Experience

JON BACK



UPPSALA
UNIVERSITET

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Abstract

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This thesis sets out to explore why people engage in, and how to design for, play in a public setting. It does this by separating design for play from design of games, describing play as a socially and mentally understood activity, and a playful approach to engaging in that activity. It emphasises that while play is voluntary, design can help shape the players' mode of engagement.

The thesis uses a qualitative and inductive approach to research, with an understanding of knowledge as being constructed in the individual. The research is grounded in human computer interaction and interaction design, and closely related to game studies and design science.

The research question concerns how design can influence the player activity in order to create a desired player experience in public, by harnessing playful engagement. It's foundation is a theory of play which describes play as a framed, or hedged-off, activity with a fragile border; where knowledge and feelings can leak both in and out of the activity, and affect the play as well as what is around it. The theory of enjoyment of play is discussed, and the problem of treating this as 'fun' is addressed, concluding in a presentation of how playful engagement can be harnessed through design.

The theory is applied in five design cases: *I'm Your Body*, a locative storytelling app; *Codename Heroes*, a pervasive game of personal empowerment; *Passing On*, a slow-paced game about communication; *Busking Studies*, which involves observing street performers and their shows; and *DigiFys*, an architectural design exploration of playgrounds and play paths.

Finally, three concepts, or design tools, are presented, which address: 1) a structure for understanding a design through three layers, constructs designed by the designer, inspiring play activity with the player, leading to experience; 2) an approach to designing invitations to play; and finally 3), a four faceted structure for understanding play engagement when players engage in non intended ways.

Keywords: design, public, play, playful, playfulness, game, activity, experience, second order design, engage, engagement, fun, magic circle, brink games, pervasive games, place, space, co-creativity, empowerment, game jam, busking, street performance, playground

Jon Back, Department of Informatics and Media, Human-Computer Interaction, Kyrkogårdsg. 10, Uppsala University, SE-751 20 Uppsala, Sweden.

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*It's dangerous to go
alone! Take this.*



Acknowledgements

All good things...

There have been some intense years leading up to this thesis, and it has been an awesome experience! A large part of it has been all the things I learned, but another equally important reason is all the people I learned from! Some of them I now regard not only as colleagues, but also as close friends.

First, I want to thank all the people involved in the five cases, and the funding they have provided (which has made paying the rent so much easier). In some form of chronological order: It started with *I'm Your Body*, a cooperation between Mobile Life, Stockholm Municipality, Kista Teater, Stockholm City Museum, Stockholm City planning office, and Speaking Youth. Many were involved, and a few took part in the whole project: Johanna Gustafsson Fürst, Rebecca Medici, and Rebecka Forsberg from Kista Teater, and Simon Strömberg from Speaking Youth, who also got us involved in further digital storytelling projects after this one, but that is another saga. *Codename Heroes* was mainly built at Mobile Life, but the final one-week adventure was created in cooperation with the non-profit larp organisation Ursula, as we piggybacked on their larp 'Stockholm Below', letting our players take on the role of tourists in a mystic city they no longer recognised. *Passing On* was created in conjunction with the TOTEM project, and the game jam where it was created was organised by Richard Wetzel and Lisa Blum. For the *Busking Studies* I would like to thank my own spare time, that so graciously stood aside for the street performers' working hours, and of course all my wonderful new and old friends in the business, among them Mr Pink, Zack, Charlie Caper, and Torsten. As well as the mysticists of Magikergränd and Karneval, who have gone from study objects to become friends and colleagues, and some who also made it the other way: Arkadia, Gaston, "Dr" Cagliostro, Caligari, Geiron, and Conny the Conman. I'm looking forward to even more awesome co-operations in the future! And I have not forgotten all the friends behind the stage: Christian, Jenny and Evelina! Thank you all for the many and varied discussions, a lot of nonsense, some of which made it in to my academic thoughts. And finally *Digi-Fys*, a cooperation between many partners: KTH Royal Institute of Technology, Uppsala University, Swedish University of Agricultural Science, HiQ Stockholm, URBIO, Huddinge Municipality, HAGS Aneby, NCC, and funded by Vinnova.

That's the projects. Now let's get personal! First and foremost, of course, is my wonderful supervisor, Annika Waern, who has given so graciously of her time, and shared both academic experience and life knowledge. Then my co-supervisors, Oskar Juhlin on the licentiate, and Barry Brown on the continuation into the PhD. I learned a lot in the meetings we had, but maybe even more in all the informal settings. A big thank you also goes to my sometime boss (and always full of good advice) Kia Höök. I would also like to thank every single person at the Mobile Life VINN Excellence Centre, and the centre itself, which has been a central part of my life, and very close to my heart for a large portion of this work.

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The non-academic and non-profit-communities have been important to me throughout this work; they have given me so many chances to test out some wild ideas related to this thesis, in a safe zone outside of academia. Among them are my friends in my non-university game studies, Brisse, Flink, Erik, Johan, Yanella, Sabina, and my teacher, Ola Janson, through whom I got back into academia, with a new focus. The communities of Prolog (Martin, Miriam and Petter) and Knutpunkt. The larpers and gamer friends, too many to mention all by name, but among them Sara, Christina, William, Sofie, and Simon. The Game Jams and the gaming groups. My old Falun crew, where it all started, and where I created my first larp designs: We had a great time in Valhall!

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List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals:

- I Back, J., Marquez, E., Waern, A. (submitted). Playing with Structure: An Analytic Model of Transformative Play.
- II Back, J. (submitted). Designing an Audience in the Streets.
- III Back, J., Heeffler, C.J.H., Paget, S., Rau, A., Sallnäs, E.L., Waern, A. (submitted). Designing for Children's Outdoor Play.
- IV Back, J. (2014). "Knock Once for Yes' – Knocking as Feedback in the Location-Based Game Passing On". *Proceedings of Foundations of Digital Games*.
- V Back, J. and Waern, A. (2013). "We are two strong women", Designing Empowerment in a Pervasive Game. *Proceedings of DiGRA, 2013*.
- VI Korn, M., Back, J. (2012). Talking it Further: From Feelings and Memories to Civic Discussions In and About Places. *Proceedings of NordiCHI, 2012*.
- VII Waern, A., Back, J. (2015). Experimental Game Design. In Lankowski, P., Björk, S. (eds.) *Game Research Methods: An Overview*. ETC Press.

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Supporting Publications, Not Included in Thesis

- VIII Back, J., (2015) The Embarrassing Act of Becoming a Street Performance Audience. In CHI '15 Embarrassing Interactions Workshop. (Back, 2015)
- IX* Back, J., Waern, A. (2014) Codename Heroes – Designing for Experience in Public Places in a Long Term Pervasive Game. FDG Poster Presentation, 2014. (Back and Waern, 2014)
- X* Back, J. (2013) *Designing Activity and Creating Experience: On People's Play in Public Places*. Licentiate Thesis. Department of Computer and Systems Science, Stockholm University. (Back, 2013)
- XI* Back, J., Naseh, S., Waern, A. (2013) Pervasive Games for Empowerment. *CHI Gamifications Workshop, 2013*. (Back et al., 2013)
- XII* Back, J., Papadogoula, F.A., and Waern, A. (2012) *The challenges of designing a gender-aware pervasive game*. *CHI Workshop on identity, performativity and HCI, 2012*. (Back et al., 2012)
- XIII* Back, J., Gustafsson Fürst, J. (2012). I'm Your Body. in Fernaeus, Y., Holopainen, J., Höök, K., Ivarsson, K., Karlsson, A., Lindley, S., Norlin, C. (Eds.), *Plei-Plei!* (pp. 158–159). Hong Kong: PPP Co. Ltd. (Back and Gustafsson Fürst, 2012)

If not available through the conference websites, the publications can be found at: <http://www.jonback.se/publications/>

Contributions to Papers

Paper I: Back, J., Marquez, E., Waern, A. (submitted). Playing with Structure: An Analytic Model of Transformative Play.

This paper is a reflection over how players engage with structures, written after the design projects in this thesis. It is a reflection based on knowledge gained throughout all these projects, and other projects by the co-authors.

The paper has been written in equal collaboration between the authors, using design cases and situations from both myself and the others as examples. My main contribution is the two-dimensional play structuring model, a large contribution to the collaboratively written discussion around the four engagement types, and observations around ‘my’ design examples.

Paper II: Back, J. (submitted). Designing an Audience in the Streets.

The *Busking Studies* article is a write-up of an ethnographic study of buskers around the Stockholm area. The studies, as well as the writing, were conducted by myself as a single author.

Paper III: Back, J., Heeffner, C.J.H., Paget, S., Rau, A., Sallnäs, E.L., Waern, A. (submitted). Designing for Children’s Outdoor Play.

The article reports on a recent project, *DigiFys*, which works with digitally enhanced playgrounds. The project involves several different observations and design workshops, of which only some are represented in the article.

My main contribution is from walking tour observations, and playground observations of children, so as to arrive at an understanding of their everyday environment. It is relevant in this thesis, as my design contributions mainly consist of applying design knowledge gained in previous design projects, reported on in Papers I and supporting paper X.

Paper IV: Back, J. (2014). “‘Knock Once for Yes’ – Knocking as Feedback in the Location-Based Game Passing On”. *Proceedings of Foundations of Digital Games*.

‘Knock once for Yes’ is a study of *Passing On*, a small location based game developed over a one-week ‘game jam’-style event. The study is treated as ‘research-after-design’, which involves doing studies and reflecting over the process after the design work, while keeping the actual design completely designer-led. The game has been developed in a design team with myself in a designer role, but with all the members having an important

voice in the design decisions. The paper was written by myself as a single author. I myself made observations, conducted interviews, analysed the material and wrote the article.

Paper V: Back, J. and Waern, A. (2013). “We are two strong women”, Designing Empowerment in a Pervasive Game. *Proceedings of DiGRA, 2013*. “We are two strong women” is based around observations of players in the pervasive game *Codename Heroes*. It focuses on designing empowerment for the target group of young girls. The game has been developed in a larger project with myself as design lead, with input from several others both in the role of designer and in the role of researcher. I supervised bachelor’s and master’s theses in the project, one resulting in the supporting paper XII and directly relevant for this paper. The paper was written together with Waern, with myself as lead author.

Paper VI: Korn, M., Back, J. (2012). Talking it Further: From Feelings and Memories to Civic Discussions In and About Places. *Proceedings of NordiCHI, 2012*.

Talking it Further is a study of the *I’m Your Body* project, with a focus on the creation of civic discussion within the application. The project was a cooperation with myself as game design lead, and with theatre and art lead from the cooperation partner. The article focuses on an analysis of ‘written word’-data from the game, rather than on the game design itself. The analysis with a civic discussion focus was led by Korn, with myself focusing on the artistic and political context of the game in relation to that data analysis.

Paper VII: Waern, A., Back, J. (2015). Experimental Game Design. In Lankoski, P., Björk, S. (eds.) *Game Research Methods: An Overview*. ETC Press.

Experimental Game Design is a book chapter in *Games Research Methods: An Overview*. The paper is the result of knowledge gained throughout the design cases, and presents the practical approach to game design research used within the game design group at The Mobile Life VINN Excellence Centre, and later at the Department of Informatics and Media at Uppsala University. Waern led the writing of the overview of the field, with her and myself sharing the writing for the approach in our research group.

Contents

Introduction	17
Method & Methodology	19
Design Research, Interaction Design and Human Computer Interaction	20
Knowledge Creation in Design Research	20
Inductive Reasoning and Constructed Knowledge	22
Creating Intermediate Level Knowledge to Understand Design	24
Game Design Research	26
Players, Gamers, Audience, Participants and Users	27
Data Gathering and Data Analysis in Game Design Research	28
Theory: Games as Playfully Engaged Voluntary Activities	31
Defining Games... or Not	31
Play and Playing	32
The Magic Circle	32
Framed Activities and Activity Membranes	33
Design for a Broken Circle	34
Pervasive Games	35
Brink Play	35
Playing in Public	36
Enjoying Games	37
The Problem With Fun	38
Different Forms of Experience	39
Learning to Have an Experience	39
The Concept of Playful Engagement	40
Cases	42
<i>I'm Your Body</i>	44
Description	44
The System	45
Role in Thesis	45
Background	45
Design Ideal	46
Methods and Implementation	47
Findings	48

<i>Codename Heroes</i>	50
Description.....	50
Role in Thesis	51
Background.....	51
Goal.....	52
Methods.....	53
Findings.....	53
<i>Passing On</i>	55
Description.....	55
Role in Thesis	56
Background.....	56
Design Ideal/Goal	56
Methods and Implementation	57
Findings.....	58
<i>Busking Studies</i>	59
Description.....	59
Role in Thesis	60
Background.....	60
Methods.....	60
Findings.....	61
Design Implications	62
<i>DigiFys</i>	64
Description.....	64
Role in Thesis	64
Background.....	65
Design Ideal	65
Methods.....	66
Findings.....	66
Discussion: Constructing Playfully Engaged Activities for Player Experience, Three Design Tools	68
Design for Playful Engagement.....	69
Second Order Design	69
Design Principle for Playful Engagement: FAtE.....	70
Gameplay Design Patterns.....	72
Connections to the Cases	73
Enticing Playful Engagement.....	75
Design Principle: Invite Play through Constructs that Encourage Playful Engagement.....	75
Connections to the Cases	77
Designing for Unexpected Engagement.....	80
Design Principle: Four Playful Approaches to the Construct.....	80
Connections to the Cases: Enjoying and Getting the Experience.....	83

Conclusion.....86
 Significance, Relevance and Limitations86
 A Political/Activist Approach to Design Research87
Bibliography.....89

Introduction

Play design is not quite the same as game design. Recently, games studies have seen an increasing number of scholars focusing on understanding play as an activity, rather than games as artefacts or media. By now, we have a good understanding of how we play. We have an understanding of the social and cultural role of play, as well as its importance in children's development. But, how to design for play has not yet been thoroughly studied.

This thesis is concerned with how deliberate design can influence how people play, as well as what they experience through that play. The work is specifically focused on, and delimited to, play in public settings. It emphasises that, while play is voluntary, design is important in shaping both the players' attitude and mode of engagement.

The research question for this thesis is: Can we, in public settings, identify and model a way to construct a player activity to create a desired player experience, through harnessing playful engagement. The goal is to provide concepts and tools that function to scaffold both the design process and the analysis of existing designs.

The scope of this thesis is limited to playful voluntary engagement, and the intrinsic value of play. It is about play for play's sake, as opposed to using extrinsic values such as rewards. However, the thesis is not just about games – several of the design examples are playful activities that cannot be classified as games. Common to the design examples is their cooperative nature, where the designs give players freedom to create their own experience. The thesis is further framed by looking at computer-enhanced play in public. This is not intended to imply that the design approach is neither valid, nor invalid, in other domains, but merely that exploration in other areas must be done before conclusions can be drawn.

The overall approach of the thesis is grounded in a phenomenological perspective on design science, originating in Schön's (1983) concept of 'the reflective practitioner'. This means that it looks upon design knowledge as tacitly created in the individual designer, gained and produced iteratively throughout the design process, both in observation and in design work. Further, it views this knowledge as being possible to express in writing, in a way that can make it useful for other designers. In the studies included in this thesis, data is gathered and analysed through a broad approach of qualitative and experimental design approaches. The work has been carried out

throughout several design projects, all with similar but somewhat different approaches.

Being design science, this work will change things. It is not neutral and it is not meant to be. Throughout the process personal values will influence the choices, and thereby the design. In this thesis that is seen as a good thing. Design science, unlike the natural sciences, does not look at how the world is, but rather at how it ought to be (Simon, 1996). This political/activist approach will be further discussed in the conclusion.

Following the introduction, the thesis will be presented in the light of human computer interaction, interaction design, game studies and design research. An epistemological foundation will be built and design knowledge will be presented, compared, and separated from knowledge of the natural, and this thesis be positioned as game design research.

Then, in the theory chapter, a foundation for understanding play will be built, and related to understanding game. Play will be presented as a framed off activity, and it will be discussed how design should relate to the framing when it works, and when it doesn't work. A discussion on how play is enjoyed follows, showing that any feeling can be enjoyed. Finally, the chapter concludes in presenting the concept of playful engagement.

In the next chapter, five design cases conducted throughout the doctoral studies are presented, showing their relation to the thesis and to the articles.

In the discussion, three design tools will be presented: 1) FAtE, a framework for separating play into levels, to structure analysis and design, 2) an approach to invitations, and 3) four playful approaches players can take, and that can be designed for.

Finally, there are concluding remarks on a general approach to designing play, a discussion of the significance, relevance and limitations of the thesis, and a comment on the importance of understanding the thesis in the light of the engagement of an active and involved researcher.

Method & Methodology

This thesis is devoted mainly to design research. It resides within human computer interaction (HCI)¹ and interaction design (IxD), and is strongly informed by game studies. It takes a qualitative, inductive approach to research and knowledge production. This can be seen in the methods used but even more clearly in the kind of outcomes, results and knowledge created.

Being interdisciplinary, this thesis will never be able to dive as deep into one single form of understanding as a single discipline thesis could. A problem with this approach is that it can always be accused of missing something important from one of the approaches used, something that would be obvious, and addressed, if only a single approach were used, but that there simply isn't room for, because of the focus, or because the approach is through another type of understanding.

However, I strongly believe that the strengths of an interdisciplinary approach compensate for that, as it will reduce the risk of oversights due to application of a limited set of tools. Even if not all approaches are used to their full capacity, if there is an issue it should be possible to spot it through at least one of the multiple angles. In its extreme form, rejecting a single discipline approach could be viewed as a form of epistemological science anarchism, and although Feyerabend's (1975) view that a too rigid approach to scientific methods hurts knowledge in the long run is an inspirational source for the author's view on knowledge creation, in this case it should rather be read as a comparison to how combinatory qualitative-quantitative approaches use what they refer to as 'triangulation' to anchor a result in multiple sources of data (Creswell, 2008).

¹ Treating HCI as "a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them" (Hewett et al., 2009). Several points should be noted: *Interactivity* separates the object of study from everyday items that don't give feedback, such as a hammer. *Computing systems* acknowledge it as broader than computers, involving all types of systems that compute an outcome, such as a board game. *Human use and surrounding phenomena* show the discipline not only to be about the actual interaction, but about mental, social, and cultural contexts surrounding the interaction. See e.g. <http://old.sigchi.org/cdg/cdg2.html> for more about defining the field.

Design Research, Interaction Design and Human Computer Interaction

In ‘The Reflective Practitioner’, Schön (1983) deals with knowledge as it is used in what he calls professional settings, as opposed to academic settings. In his examples he uses e.g. engineers, psychologists and managers. He shows how these professional practitioners use reflection, based on different kinds of previous knowledge, to understand new situations.

Even though this book deals with what Schön calls professionals, it can be read from a design research perspective, acknowledging how knowledge is created within a practitioner community, adapting, formalising, and documenting the process to create academic knowledge. Building upon Schön, Simon (1996) describes similarities and differences between design knowledge, and natural science knowledge, treating them as two different ways of knowing. He says “The natural sciences are concerned with how things are [...] design on the other hand is concerned with how things ought to be” (Simon, 1996). This approach suggests that there is knowledge in the design practice, and the work of design science is to transform and explicate this tacit practitioner knowledge in a way that will be accepted as academic knowledge.

Knowledge Creation in Design Research

Many scholars have discussed how to transform the practitioner or tacit knowledge that is design into explicit and academic knowledge. Cross (2001) suggests there are three different types of research which together are design research: ‘Scientific Design’ “refers to modern, industrialized design [...] based on scientific knowledge but utilizing a mix of both intuitive and non intuitive design methods”. This is the everyday design approach in professional design settings, basing their knowledge in academic knowledge and teaching. This could be compared to what Schön describes as reflection-in-action (Schön, 1983), the practitioner reflecting upon a current situation, basing a decision on all the previous knowledge applicable for that situation.

A ‘Science of Design’ means to approach design in itself as a subject of scientific investigation. The science of design is the study of design. It is an outsider perspective, looking in on the activity of design in order to understand it.

‘Design Science’ “refers to an explicitly organized, rational, and wholly systematic approach to design; not just the utilization of scientific knowledge of artefacts, but design in some sense as a scientific activity itself”. The actual design in this case being a form of study. The result might not always be the best possible design, but the knowledge gained from the

process is the actual outcome, and explicating that, usually in written form, is the result.

Similarly, Frayling (1993), looks at design and art and its connection to research. He states that many people see a separation of art and research. Where research is seen as going back, looking at the old or rigid, distancing oneself from the subject and understanding what it is, art is about the creation of something new. However, this view, he tells us, does not reflect how things really are, and he shows how art and design have always been doing research, just not using the word.

In his work he separates art research into three forms: Research *for* art, the preparations done before an artwork or design is started; research *into* art, looking at and understanding other works of art; and research *through* art, e.g. through practical use, exploring a certain tool or medium to see how it can be used to create an artistic expression.

Fallman (2008) separates design research into three main approaches, describing them as a triangle: ‘design practice’, the everyday activity of designers, using the knowledge they have to make good design; ‘design exploration’, testing what it is possible to do, or commenting on current design, using design not necessarily to create the right thing but to get to new understandings; and ‘design studies’, looking at and learning from previous design and design knowledge. In design research, he argues that you need to move across all three domains to create your understanding. Researchers do not, or even should not, stick to one approach, as the movement between approaches is part of what creates knowledge, and what makes it design research. Going through the different approaches, Fallman explains the design research approach of ‘design practice’ as being close to design outside of research, with the main difference being the existence of a research question. He says that when design researchers work in this area, even though they are solving a problem, “they must do so with an explicit design research question in mind, or with the clear intent of forming such a question from their activities”. The question can be reflective or proactive, and does not have to be a one-to-one match with the project as a whole. In ‘design exploration’, on the other hand, the researcher sets out instead to explore what is possible, rather than to find the usual solution. It is a way of commenting, provoking and testing limits. Even though a question might be needed, the form of both question and work takes on a more open approach, exploring what can be done. The third approach is ‘design studies’, which has most similarities with classic research, seeking to describe and understand.

In all the views on design research described above, there are combinations of approaches, leading to knowledge. The three authors’ views on what these approaches are, are similar but not the same. However, the main way these approaches are used within this thesis is in order to differentiate, to gain knowledge from studies of designs and other areas that could inspire the design, or practical design task, and more explorative work with the material.

In this way this thesis is the result of research questions in the beginning of design phases, observations of current situations, design practice, or explorative design, for gathering knowledge and building prototypes, and for testing and studying of prototypes and test subjects, with all of the process treated as creating new knowledge, and used in the analysis.

Inductive Reasoning and Constructed Knowledge

To gather knowledge, we first need to know what we mean (or decide what we mean) by knowledge.

According to Zimmerman et al. (2007), design holds what they call ‘wicked problems’: under-defined problems with many solutions and no one single best solution. There will always be multiple solutions to a design problem, and there is not one right solution, as they will all have both positive and negative effects. This means there can never be a complete and perfect guide for every single situation, but there can still be an increase in knowledge built upon previous knowledge so as to increase the detail of our understanding. This inductive reasoning ties in well with a constructivist view of knowledge. According to Guba & Lincoln (1994), constructivist reality is:

apprehendable in the form of multiple, intangible mental constructions, socially and experientially based, local and specific in nature (although elements are often shared among many individuals and even across cultures), and dependent for their form and content on the individual persons or groups holding the constructions. Constructions are not more or less “true,” in any absolute sense, but simply more or less informed and/or sophisticated. Constructions are alterable, as are their associated “realities.” (Guba and Lincoln, 1994, pp. 110–111)

To create these constructions, Piaget (1999, 1962) describes two concepts, assimilation and accommodation. All people have constructs, mental models of how things work. These constructs are always changing and being updated; when something happens that is understood as fitting the constructions, the new something is assimilated into that construction. When something happens that does not fit, the construct has to accommodate itself to the new situation. In this way new knowledge is gained and understood.

Myers (2009) discusses access to reality through social constructions such as language, consciousness and instruments. According to both Myers and Guba & Lincoln (1994), the researcher and the subject are inseparable, and it is hard, or impossible, to do social science without affecting and being a part of the research. Myers states that:

Many social scientists claim that the social scientist does not stand, as it were, outside of the subject matter looking in; rather the only way he or she

can understand a particular social or cultural phenomenon is to look at it from the 'inside'. In other words, a social researcher must already speak the same language as the people being studied (or, at the very least, be able to understand an interpretation or translation of what has been said) if he or she is to understand any data at all. (Myers, 2009, p. 38)

In this Myers seems to be primarily talking about language, but in this thesis the concept will be broadened and applied to an understanding of the subject being studied. To really understand a subject you have to, to some degree, become part of it. In this case it would mean that you would not be able to understand players of games without playing games yourself and experiencing what it is to be a player. In the same way, you cannot understand the design of games without yourself designing games.

This leads into an epistemology where "The investigator and the object of investigation are assumed to be interactively linked so that the 'findings' are *literary created* as the investigation proceeds" (Guba and Lincoln, 1994, p. 111). With a constructivist view and applying it to a social context, there is no absolute truth. The same activity can be experienced and understood in different ways by different people. An activity such as playing must be observed as a whole. The surrounding culture, player preconceptions and the emergent mood within the group will affect the experience, and how that is experienced is personal and unique for each individual. Even with the same physical game, the play activity and the play experience will be unique each time.

However, despite the concerns expressed, there seems to be some kind of generalisation possible. From experience we know that while a game of chess is at the same time a different activity and experience each time it is played, this activity and experience also holds many similar traits from one occasion to another. We can usually tell that it was a game of chess that was played. There seems to be something in the rules of the game that encourages the players to act in a special manner, some emergent properties that create a predictable engagement (Salen and Zimmerman, 2004, pp. 158–165). From a purely constructivist view of play, it is hard to understand the predictability in the activity of playing.

In his doctoral thesis, Stenros (2015a) approaches this through social constructionism, and especially constructionist ludology, building upon Montola (2012). He describes the world as intersubjectively created, as people (socially) agree on meanings, thereby creating a joint understanding. However, this should not be taken to mean there is no objective 'truth', but it might mean that we will never be able to fully understand it. Searle (1995) describes two types of facts: brute facts, that exist independently of humans (the moon orbits the earth); and social facts, facts that exist because of humans (the moon is called 'the moon'). With this 'weak' (as in acknowledging a reality outside of the constructed) social constructionism, social reality

can be seen as an overlay over a physical reality, creating our understanding of a situation that is to some extent formed by the physical understanding, and to some extent by our construction of that physical reality.

Within this thesis a physical reality is acknowledged, but our understanding of it is interpreted through a social, and personal, construction. ‘Brute facts’ exist, but are understood through a ‘social fact’ filter, a filter that changes over time through assimilation and accommodation of new knowledge.

Creating Intermediate Level Knowledge to Understand Design

When Zimmerman et al. (2007) discuss design research in relation to design practice, they differentiate between the *right* thing and the *commercially successful* thing.

[D]esign researchers continually reframe the problem as they attempt to make the *right* thing. The final output of this activity is a concrete problem framing and articulation of the preferred state, and a series of artefacts—models, prototypes, products, and documentation of the design process [...] [T]he intent going into the research is to produce knowledge for the research and practice communities, not to make a commercially viable product.

As design holds wicked problems, “[t]here can be no expectation that two designers given the same problem, or even the same problem framing, will produce identical or even similar artefacts” (Zimmerman et al., 2007). This means that a presented solution to a design problem is never the only one and that it will be difficult to claim that it is the best. There will never be a complete handbook on how to solve a sufficiently complex domain of design problems. For the same reason, there will also always be room to break the guidelines and still end up with a working design.

Zimmerman et al. propose four criteria for evaluating design research. Design research should have a *documented process* that others can follow. This is important since the result of the process is not reproducible. Design research should be a *significant invention*. “The contributions should be novel integrations of theory, technology, user need, and context”. It should be judged by *relevance* rather than by validity. “This constitutes a shift from what is true—the focus of behavioural scientists, to what is real—the focus of anthropologists”; and finally it should be *extensible*. It should be possible for others to build on the outcomes of the design (Zimmerman et al., 2007).

In a recent workshop at CHI, reported on by Höök et al. (2015), knowledge creation and knowledge expression in interaction design was discussed. Lately, interaction design has focused on the creation of ‘intermediate level knowledge’, a form of knowledge that plays a direct role in creating new design; it is a kind of knowledge lying somewhere between theories

and individual designs, not aspiring to be one always-applicable theory, but of wider use than for one or a few instances and examples (Höök and Löwgren, 2012). It acknowledges design knowledge to be personal and subjective, and that an expression of it needs to be interpreted by the reader.

The above mentioned workshop report argues that, as in all research, to be able to comprehend the information you need an informed reader. An artefact does not contain knowledge in itself, but it can be a way to express knowledge, and a way for an informed reader to comprehend knowledge,² just as the artefact ‘academic paper’ does not contain knowledge, but is a medium to express, and gain, knowledge.

To be able to make knowledge go beyond personal and anecdotal individual cases, we need ways to express the knowledge in a way that makes it possible to compare, and learn from previous examples. Höök & Löwgren (2012) argue that both design work and fieldwork can generate knowledge. They give three academic criteria for evaluating this knowledge, based on what they call “general academic criteria”. They say the work should be:

- **Contestable.** It should be inventive and novel, giving new information.
- **Defensible.** It should be empirically, analytically and theoretically grounded.
- **Substantive.** It should be relevant to the community.

These criteria can be compared to the criteria presented by Zimmerman et al. (2007), with ‘significant invention’ and ‘documented process’ matching ‘contestable’ and ‘defensible’, and with ‘substantive’ described by ‘relevance’ and ‘extensibility’. However, the actual design described by Zimmerman would apply to an individual design rather than present a more generic strong concept.

To address academic demands, Höök & Löwgren describe kinds of research needs. First, an actual design instance is needed as a source for the concept. Then the design needs to be grounded *horizontally* (related to similar concepts) and *vertically* (finding the concept present in other instances). Finally, the knowledge needs to be triangulated empirically, analytically and theoretically through reflection, articulation and abstraction, that way validating that the concept is contestable, defensible and substantive.

From previous chapters it should be clear that this approach to research is inductive, qualitative and subjective. It should also be quite clear that the outcome of the research in this thesis is influenced and formed by the presence of an active and involved researcher. Still, the ambition is that the

² Interpreted in this thesis as through assimilation and accommodation, as discussed on page 22.

knowledge should have a wider relevance than for individual projects only, with that researcher as designer.

Being design research, as described earlier, the results will not be the ‘one good solution’, and to what extent it can be generalisable is debatable. Design research can have many different takeaways, both in the design itself and in the methods used. In this research, the main takeaway is through documentation of concepts and design ideals, together with thick descriptions of the cases. One approach to this is to treat the results as intermediate level knowledge.

In this thesis, the knowledge created will be seen as intermediate; not always true, but understandable and useful for a reader with the right background, while striving towards a broader generalisability. The presented cases are treated as individual design examples, giving rise to knowledge through interpretation by the researcher, being communicated through presentations and papers, as well as through the design examples in themselves. The knowledge is grounded horizontally by relating it to other academically published concepts, and vertically by applying the concept to other instances, both academic and industrial design, as well as to the other design cases in this thesis. The knowledge gained is evaluated by criteria drawn from both Höök and Löwgren (2012), and Zimmerman et al. (2007).

Game Design Research

Through its focus on game design, this thesis is informed by, and closely related to, ludology and game studies,³ and the kind of research created in the communities studying games and play, especially the DiGRA⁴ and FDG⁵ conferences.

Game studies is a young and multi-faceted field with researchers from many different disciplines. The field is united through an interest in games rather than a uniform approach to research. All researchers are interested in ‘what makes games tick’, but their methods differ. Within game studies there are researchers from fields as diverse as engineering, computer science, social sciences, and the humanities. Where the social scientists focus on social interaction, researchers from the humanities have, to a large extent, a background in literature and media studies, studying games as media messages; finally engineering and computer science focus on games as artefacts and

³ Two terms often used more or less interchangeably, even if ludology often implies a greater focus on studying games as games, while game studies implies a somewhat broader interdisciplinary field using your home discipline to understand games. For a more in depth analysis, see e.g. Stenros (2015a).

⁴ Digital Games Research Association. <http://www.digra.org/>

⁵ Foundations of Digital Games. <http://www.foundationsofdigitalgames.org/>

interaction devices, looking at technical solutions and effective implementations.

For this thesis, the field of game studies has helped in creating an understanding of game and game-like activities. However, game studies tend to be just that, *studies* of games. Researchers investigate them, from different perspectives, to see how they work. In this there is a separation from game related design research, as the latter includes realisation of new games, using the design process as a knowledge creation process, and creating design related takeaways.

As a design researcher, researching games, the main activity should be to design in a way that informs other designers and design researchers (Zimmerman et al., 2007). To be able to do so requires a firm understanding of game design.

The approach taken in this thesis is research-by-design, creating concrete design examples, and using them to test with players, treating the whole process as one of knowledge creation. In supporting paper VII we call these methods *experimental game design*. In this thesis, the approach, using experimental game design as its method, is called *Game Design Research*, to clearly show its legacy in both *Game Studies* and *Design Research*, situating it somewhere in between, and building upon, both fields. A similar approach, and name, was used in supporting paper X, upon which a large portion of the arguments in this thesis builds.

Being informed by game studies, the game situation is regarded in this thesis as somewhat different from most other designs in interaction design. This difference has been described by Salen & Zimmerman (2004) as games being *second order design*. As a designer you don't design directly, but instead design the prerequisites that will become the game when the user plays it. The game is both the designed artefact, and the performed activity (e.g. Abt, 1987; Costikyan, 2002; Suits, 2005); an activity created by the user, and in this way the player designs their own game each time they play (Stenros and Waern, 2010). Therefore, to be able to understand a game, it becomes necessary to study more than the artefact, as participation is necessary for the experience. This is also true to some extent of all design, but in games it becomes more obvious as a result of the focus being on playing rather than on the artefact.

Players, Gamers, Audience, Participants and Users

In HCI, when testing, it is common to refer to 'users' or 'participants', while in game studies 'players' is a more common concept. 'Players' is of course a term useful only when talking about games, while users and participants might be broader. There needs to be an awareness that the use of these words, as well as all others, will affect how subjects will be treated and un-

derstood, as all these words have a somewhat different meaning. A ‘player’ may be almost anyone playing a game, while a ‘gamer’ might connote a dedicated individual self-defining as a person playing games. An ‘audience’ is more passive, while ‘users’ and ‘participants’ might not necessarily engage voluntarily.

Within this thesis and in the example cases given, several different words have been used, depending on the situation. As some words fit better with a certain situation, the most fitting naming has been done, mostly to simplify communication. However, there has been an awareness of the different meanings of the words, as well as that they might bring in terms of different preconceptions. Care has been taken to use the right word, as well as to attempt to study the situation while avoiding letting the chosen word involuntarily colour the understanding of the situation.

Data Gathering and Data Analysis in Game Design Research

With this understanding of the underlying epistemology and methodology, an understanding of the practical approach to the research can be gained. The research in this thesis is described as game design research, with close ties to design research (Cross, 2001; Fallman, 2008; Schön, 1983; Simon, 1996; Zimmerman et al., 2007). Knowledge is viewed as created in the design process, and the knowledge created is phenomenological, inductive, and understood through connection to other design research.

Most cases begun in a design or research question, are seeking to solve a problem or explore something. An understanding of situation and background was created through studies of practical cases as well as the literature. After this a design phase was started. Through iterative loops of development and testing a prototype was conceived. Finally, tests were carried out on the final prototype. All through the process notes were taken, tests were documented and analysed, and data was fed into the next iteration. In this way, the prototypes gained a final form informed by all tests, even if all changes are not documented in detail in the final publications.

Even if epistemologically different, in its practical approach the work is closely related to the field of action research (Adelman, 1993; Baskerville and Wood-Harper, 1996; Kemmis and McTaggart, 2005).

Baskerville & Wood-Harper (1996) describe action research as useful for “enhanced understanding of a complex problem”, useful in a “particular situation and particular environment” and that it “expects [...] to generate knowledge which will further enhance the development of models and theories”.

In action research changes are made to a real world situation, and comparisons between before and after are made. This is done in several iterations, moving towards a solution informed by all previous design decisions. Action research is also explained as political, in that you strive towards a real change in the practical implementation of your research.

In Lewin's original model of action research, the research is divided into six phases: 1) Analysis, 2) Fact-finding, 3) Conceptualisation, 4) Planning, 5) Implementation of action, and 6) Evaluation (Adelman, 1993). According to Susman & Evered (1978), and Baskerville and Wood-Harper (1996), modern action research is not always strict in separating research into phases, but still most action research consists of, more or less, five steps:

1. **Diagnosis:** Identify or define a problem.
2. **Action planning:** Specify the courses of action to be taken.
3. **Action taking:** Implement the planned action(s).
4. **Evaluating:** Analyse the effects of the action(s).
5. **Specify learning:** Identify what was learned.

This approach fits well with the game design research approach of this thesis. Most of the projects included are focused on designing, implementing and trialling games and playful designs in locations with real users, and the work has been goal-oriented, with different cases aiming for different forms of change. The researchers have taken an active part in the community so as to be able to understand, and design for it; even though the involved researchers do not subscribe to one single explicit political agenda, they are still part of the change, and have the goal of change in that specific situation.

The work was also done in a cyclical iterative process, of planning, acting, observing, and reflecting – a method also well understood in both design research (Zimmerman et al., 2007) and game design (Zimmerman, 2003).

Even though the practical methods of design creation, data gathering and data analysis are similar, there is a difference in that action research solves a problem, and is focused on documenting a single case. In design research there is an effort to create wider relevance and generalisability, even if there are other goals as well (Fallman, 2008; Zimmerman et al., 2007).

In this the thesis takes a stance closer to design research than action research. It considers it important to achieve a level of general knowledge, and it believes it to be possible to design in a way that can inform a wider audience and create, if not theories, at least intermediate level knowledge.

In action research, the knowledge is viewed as emerging from the iterative process, and the systematic iterative testing of the design; but how this best should be observed, documented and analysed is not always obvious.

To arrive at an understanding of what people actually learn and experience, this thesis aims to understand the individual test subject's personal experiences. To reach this personal and ephemeral understanding, the thesis

uses qualitative and subjective data. It is inspired by an ethnographical approach to data collection and interpretation. In ethnography, knowledge is learned directly from people, rather than from studying them, providing the opportunity to go deep into a culture.

[I]t is the only method that enables a researcher to spend long enough in the field such that he or she can start to discern the unwritten rules of how things work or how they are supposed to work. These unwritten rules are seldom verbalized, but can be discovered by patient ethnographic fieldwork. (Myers, 2009)

To use ethnographically-inspired data collection methods means to describe and interpret behaviour. It means direct engagement with participants, and it means that the context is important. With this approach all data sources are good data sources, as long as they are treated for what they are. Interviews, observations, notes from participants and other things that might show up are all considered as input. The user (as well as the researcher) is acknowledged as part of the process, and the study is allowed to be influenced by the user (O'Reilly, 2005).

This also means that an answer is not always obvious, but can be vague and shrouded in feelings and other thoughts. Sometimes it can be interpreted only through data, at other times it needs the researcher or designer's empathic understanding of the group, as in the case of 'cultural probes' (Gaver et al., 2004). In these cases the iterative process of designing is useful to test whether the interpretation and following implementation actually lead to a better design in the following step, thereby testing whether the interpretation was relevant.

Theory:

Games as Playfully Engaged Voluntary Activities

The aim of this thesis has been described as to “in *public* settings, identify and model a way to *construct* [or *design*] a *player activity*, to create a desired *player experience*, through harnessing *playful engagement*”. To get to this, the thesis sets out to explore what is meant by *games*, and by *playing*. It explores what these *activities* are, what people do when they play, and further, how they *experience* and *enjoy* play. It also explores how this is affected and influenced by setting the play in a *public* setting. This all leads up to an understanding of how people engage, through an attitude towards an activity that in this thesis is termed *playful engagement*.

Defining Games... or Not

Many scholars have tried to define both games and play (e.g. Abt, 1987; Caillois, 1961; Costikyan, 2002; Huizinga, 1949; Salen and Zimmerman, 2004; Suits, 2005). There are those who approach this from a system perspective, from a rules and goals perspective, as representation and as a way of engaging. Stenros and Waern (2010) argue that game studies tend to treat games as artefacts that players use, and don't treat the actual performed activity as the game. They argue that this is largely due to the focus on digital games in current game studies. They propose a view where games are treated as an activity first, rather than a system first, thus seeing digital games as a special case of games rather than the other way around. When building the game artefact, they argue, the designer designs the prerequisites of play, not play in itself. The players later create the game when playing it, interpreting the rules of the designer, and the social situation required to play the game they want to play.

As this thesis has deliberately chosen a similarly broad understanding of games, it is close to the arguments of Stenros and Waern. It does not delimit along the line of 'what is a game', but rather looks at how people play, no matter whether it is in a game or not. This delimitation will thereby include more traditional activities with unwritten rules and a social understanding of

how to play, such as *Tag* (Traditional, 100ADa) and *Hide-and-peek* (Traditional, 100ADb), in its understanding, as well as those more typically understood as games such as the board game *Monopoly* (Darrow and Parker, 1933) and computer game *Space Invaders* (Nishikado, 1978). Similarly, the thesis does not focus on play-like behaviour in non-play situations, such as professionally played *football* (Traditional, 1863) or *Counter-Strike* (Le and Cliffe, 1999)⁶. Within the thesis the phrase ‘playful activity’ is sometimes used instead of the word ‘game’ to point out the difference and the broader meaning.

Play and Playing

When game studies tracks its history, a commonly cited book is Johan Huizinga’s *Homo Ludens* (1949), originally published in Dutch in 1938; a book which studies play as a fundamental component for understanding human culture. In this book, Huizinga provides an early attempt at defining play. The following excerpts frame his perspective:

1. All play is a voluntary activity. – “Play to order is no longer play: it could at best be but a forcible imitation of it.”
2. Play is not ‘ordinary’ or ‘real’ life. – “It is rather a stepping out of ‘real’ life into a temporary sphere of activity with a disposition all of its own.”
3. Play is distinct from ‘ordinary life’ both to locality and duration. – “It contains its own course and meaning. Play begins, and then at a certain moment it is ‘over’. It plays itself to an end.”
(Huizinga, 1949, pp. 7–9)

The Magic Circle

This play as distinct from ordinary life is what Huizinga famously compared to ‘the magic circle’, comparing play to the circle of salt in shamanistic rituals, separating the ordinary from the magically understood, and in doing this, comparing the ritual of play to other rituals, arguing that all rituals are created to appear as states outside of ordinary life:

Just as there is no formal difference between play and ritual, so the “consecrated spot” cannot be formally distinguished from the playground. The arena, the card-table, the magic circle, the temple, the stage, the screen, the tennis court, the court of justice etc., are all in form and function playgrounds, i.e., forbidden spots, isolated, hedged round, hallowed, within which special

⁶ Even though it could be argued those could also be playfully engaged in.

rules obtain. All are temporary worlds within the ordinary world, dedicated to the performance of an act apart (Huizinga, 1949, p. 10).

The phrase ‘magic circle’ has since been used by Salen and Zimmerman (2004) as a short form to describe the idea of a ‘special place’ separated in time and space that playing a game creates, and from there the concept has gained widespread attention within the field of game studies. This more general use can be misleading, as it can lead to a conceptualisation of play as magically different from other hedged off activities. In Huizinga, the distinction of play from ordinary life is very similar to other hedged-off activities, such as going to the opera or listening to a lecture, or for that matter more spiritual hedged-off activities such as a wedding ceremony, or the previously mentioned shamanistic ritual. This criticism against the modern ‘magic circle’, and view of play as something distinct from ordinary life has been addressed by e.g. Stenros (2012), who shows that most game studies authors do not treat the border as absolute, and that imposing this view on Salen and Zimmerman might be to misunderstand their intention. In his defence of the magic circle, Stenros finds several similar concepts, separating them into three main forms: 1) psychological borders or mental frames, the mental state of being in a playful mindset, a phenomenological and personal state; 2) a social border, implicitly or explicitly negotiated; and 3) a physical border, a spatial or temporal separation between play and not play.

Framed Activities and Activity Membranes

Even before modern game studies emerged, researchers viewed games as outside of ‘the ordinary’ in different ways, without using the term ‘magic circle’. In his article ‘Fun in Games’, Goffman (1961) describes social activities as being separated by ‘membranes’, making the specific activity something separate, but still letting some values in and out from the surrounding situation; this is later expanded on in ‘Frame analysis’ (Goffman, 1974), where Goffman renames membranes into social frames, and describes them as a unit answering the question ‘what is going on here?’

This framed activity is described as socially constructed by cultural knowledge and interaction. The frame is constantly negotiated and re-negotiated, something that can become visible in interaction and conversation where meta-discussion arises, as well as in frame-saving activities such as laughing about mistakes.

Frames are deconstructed as having a primary frame, the things that actually occur, e.g. a fight. This frame can then be keyed in different ways, re-interpreting the activity as something else, such as boxing being a sports interpretation of fighting. A situation is not only understood from one frame, but several interpretations can be made, and in this way several frames can be ‘laminated’ on top of each other, giving them value and understanding in

several contexts at once. These values may later ‘leak’ and in this way values within frames may also be experienced outside the frame, as in the case of winning and losing a board game, which can also be experienced as joy or bitterness outside the game, even though the loss was entirely contained within the frame of the game.

In his work on table-top role-playing, Fine (2002) shows how players are able to quickly change their frame of reference, understanding a situation from different frames. Players may in rapid succession switch between playing a role, talking about that role, and about how the rules affect what is going on, and wondering whether somebody should go out to get pizza. Furthermore, players understand and cope with these shifts easily, and may even use them in jokes.

Interpreting play as this fluctuating social frame, where players jump back and forth, meanwhile negotiating and helping themselves and others to maintain the playful framing, is a useful understanding of playing in general, and even more so when studying playing in public, where the everyday outside of the game is ever present. In this thesis the term ‘magic circle’ will be used as a description of a *playfully* framed activity, taking on a broader meaning than the original from Huizinga or Salen & Zimmerman. In this thesis, the ‘magic circle’ explicitly refers not only to the physical, but also social borders, and in full awareness of the fact that these borders are constantly renegotiated, with experiences leaking in and out of the activity, and that the understanding of the situation also is dependent on a psychological, phenomenological, and personal border.

Design for a Broken Circle

As stated, ‘the magic circle’ is a debated term and most see it as an oversimplification. It is still a good metaphor by which to understand the play context, and by adding Goffman’s concept of framed social activities, together with an understanding of knowledge as being personal and subjective, it readily extends to being not only a physical, but also a cultural, social, and psychological border. Further, in a public setting, where other framings of ‘what is going on’ are ever present, with a ‘Goffmanian’ understanding of ‘the magic circle’, it becomes a useful design tool.

While people engage playfully in an activity, there might well be a magic circle around play, but it’s not as distinct as Huizinga once described it. The experience within the game is ‘not real’, it can be disregarded as ‘just play’, but it still creates a reflection that can affect everyday life. The game context seems to both reflect and transform its surrounding culture; as an example, consider how football supporters are still fans of the game, and of their team, also outside of the actual game being played.

This reflection and effect on everyday life can be designed for, either directly by building systems to change behaviour, or feelings, during the game; or it can be designed to be long-term changes, by providing new ways of thinking about something from within the game, and letting the player bring that reflection back out of the magic circle afterwards. By deliberately influencing the feelings and experiences that arise from the game, these can be interpreted through the playful activity, and assimilated or accommodated into the players' understanding of 'the ordinary world', and even more so when playing in a public setting, where 'the ordinary' is always nearby. This leakage from the magic circle should be possible in traditional games as well as games and playful activities that deliberately design for a 'broken circle'.

For this thesis, two concepts have been influential for the design of public playfulness while balancing on the border of the magic circle: pervasive games (Montola et al., 2009) that deliberately blur the border to expand the game, and brink play (Poremba, 2007), in which designers deliberately aim for a boundary transgression. In both cases, designers can deliberately use the border for its design purposes.

Pervasive Games

Montola et al. (2009) use the magic circle concept to describe pervasive games as being *expanded*, meaning they deliberately blur and break the boundary to expand outside that magic circle. Play is not limited to a normal set of borders. They mainly discuss three types of expansions: spatial, temporal and social, but also state that there may be other borders (such as economic). Where a game is normally limited to a certain place, time and social group (e.g. on the computer, while the programme is running, with whomever might also be online in the game), a pervasive game deliberately challenges the idea of where the game is played, when it starts and ends and/or who is playing. As an example, in *Killer* (Jackson, 1981) the player takes on the parts of assassins seeking to eliminate other players (usually with some innocent 'weapons', such as bananas acting as guns), and avoiding being eliminated themselves. The game is played over a long timeframe, without knowledge of who else is playing, and usually without limitations as to the physical area of the game, meaning that every person you meet on the street could be a potential assassin. The players play these games in full awareness of their vague boundaries, but still treating the activity as a game. In this way the everyday is given the opportunity to slip into, and enhance, the game environment.

Brink Play

Poremba (2007) coined the term 'brink play' to describe games where the recognition of the boundary between game activity and non-game activity is

foregrounded. These are games that may be uncomfortable to play because the game activity feels ‘too real’ – the kind of game which you may be persuaded to play with the phrase ‘come on, it’s just a game’. Brink games often play on social taboos. Some common examples include games such as Twister (Foley et al., 1966) and Spin the Bottle (Traditional, 1925), where the activity within the game is never completely unreal, even if the game says it is. Touching and kissing may be allowed, because ‘it is just a game’, while this activity might not be appropriate outside of the game context; afterwards this is treated as part of the activity framed as play, rather than ‘reality’. This is similar to other situations when magic circles are entered into, allowing different social behaviour during everyday and carnival settings (Amanatidis, 2005 ch 2), as well as reasons to interact with other members of society than usual when drunk (Jayne et al., 2006), and more game related: allowing yourself to have strong feelings for a computer game character, because it is safe, and ‘not real’ (Waern, 2010).

Playing in Public

Based on concepts from architecture (e.g. Alexander et al., 1977; Tuan, 1977), Harrison and Dourish (1996), and Dourish (2006), introduced the terms ‘place’ to HCI and interaction design. Earlier, and to some extent still, the focus for location design was on the Euclidean three-dimensional structure, ‘space’. Harrison and Dourish instead pointed to the social and cultural location: “Space is the opportunity; place is the understood reality”.

Space is a structure something can be located in. It is useful for orientation and proximity, and through an understanding of those, understanding what actions are possible. As an example, standing close to someone makes a conversation possible, since the voice can be heard, while distance naturally removes that possibility, or transforms it into shouting. Similarly, you need to be within a room to be able to see what’s there.

Place on the other hand is invested with understanding. It is where you act, and where an action has meaning. It is (usually) located in space, and one space can be several different places for different people, or for the same people at different times; place is cultural. As an example, students do not sit in a classroom listening to a teacher because they are in that room, but rather because they are in a certain situation in that room, a lecture. If the classroom was borrowed for some other purpose, say a game session, sitting and listening to that game while taking notes would seem unnatural. This can be tied back to our previous understanding of ‘the magic circle’; while space is physical, place is our mentally and socially constructed understanding of that space, and they are both entwined and dependent upon each other.

This thesis argues that this social understanding of place contributes to our understanding of public and physically located play. As all games are in some way physically located, this could help also in understanding tradition-

al games as happening not only on the board or screen, but also in the physical activity among the players; when players play *Super Mario Bros* (Miyamoto and Tezuka, 1985) they don't jump on blocks to reach the finish line, rather they sit in front of a screen pushing on a game controller, located in a certain place, with a certain social context.

As the players 'enter into the magic circle', or join play, they enter into a different social framing, and this changes their understanding of the situation as well as changing the place where they are playing. In this way they reform the place into *another* place, using the game frame to transform it. This understanding of how a game transforms the place can be used in design: it is possible to design specifically for transforming place in a decided direction. It is especially applicable to games in public settings, as place is often an integral part of these types of games.

Enjoying Games

In the literature, there are many different views of 'what is going on' when we play. There seem to be mix-ups and uncertainties about what this actually is. Emotions, engagement, experiences and activities are often entangled in both models of understanding, and design models. This is most obvious in the use of the unspecific word 'fun'. Game designer Ralph Koster (2005) frames his thinking around the question 'what is fun in games'? He sees games as learning machines, where the player learns to complete a task better and better. As long as the task is not impossibly hard, or too simple, it is 'fun' to become better. Koster's view is compatible with the non game-specific concept of flow (Csikszentmihályi, 2008), the experience of diving completely into a task, focusing on nothing else, and being dependent on a balance between skill and challenge. It is also comparable to frame engrossment (Goffman, 1974), where the current social framing creates the main values. Koster's view is thus a well-founded perspective on play, but it is a simplification of the meaning of 'fun' as learning is not necessarily the *only* kind of fun that games can offer.

In the MDA-model (Hunicke et al., 2004), commonly quoted in game design practice, 'eight kinds of fun' is used to understand the feelings of and from playing. These eight kinds of fun are the invention of game designer Marc LeBlanc (Costikyan, 2002; Hunicke et al., 2004). The kinds of fun are: *Sensation*, Game as sense-pleasure; *Fantasy*, Game as make-believe; *Narrative*, Game as unfolding story; *Challenge*, Game as obstacle course; *Fellowship*, Game as social framework; *Discovery*, Game as uncharted territory; *Expression*, Game as soap box; *Submission*, Game as mindless pastime. This is a much broader definition of the 'fun' in games, but these kinds of 'fun' range between feelings, creative outlets, knowledge, experience, social interaction, learning and activities, a quite broad scope that needs to be specified

further to be useful as a tool for studying ‘what is going on’. Further, it looks at *the game* and what creates fun, rather than at how the player experiences it.

Others have also focused on the types of fun found in games, with similar problems. Lazzaro (2004) identifies four types of fun in games: The *hard fun* of emotions developing from meaningful challenges, including the joy of overcoming obstacles and beating the game; The *easy fun* of exploring, adventure, and feeling like the character of the game; The experience of *altered states*, generating emotion through perception, thought, behaviour, and other people; And *The people factor*, competition, cooperation, performance, and spectacle of playing with others rather than finding fun from the game itself. Similarly, when Bartle (2004, 1996) identified four, overlapping types of players in MUD (multi user dungeon), sorting them by playing style, he says they all play because they find it fun, but noting that they find fun in different styles of play. Although the latter two are more structured, even here ‘fun’ is being understood as a combination of something you do, an *activity*, and what you feel or learn, an *experience*.

The Problem With Fun

This thesis argues that the very idea of looking at play as something that promotes ‘fun’ is a fallacy, especially since the word ‘fun’ although not well defined, promotes a very specific view of how games and playful activities should be enjoyed. Instead, many different things can come out of play, not all of them easily understood as a ‘fun’ experience. A mundane example of a situation not easily understood as ‘fun’ would be that films, or more obviously within the domain of play, a rollercoaster, can be frightening but at the same time enjoyed (Benford et al., 2012). In this way the same situation can both be experienced as playful (paratelic) and serious (telic), and reversals can even be triggered between states in the middle of a situation, such as the rollercoaster feeling ‘paratelically’ exciting on the way up, and ‘telically’ scary once it goes over the top and you realise you don’t like it (Apter, 1989a, 1989b).

There are more extreme examples of games not being ‘fun’; Montola (2010) has studied the role playing games *Fat Man Down*, about bullying and being bullied (Berg Østergaard, 2009), and *Gang Rape* about peer pressure in a rape situation (Wrigstad, 2008), both larps from the Nordic Larp genre (Saitta et al., 2014; Stenros and Montola, 2010). Montola argues that while these scenarios are deeply upsetting to play, they can still be played in a safe and consensual way and as such be motivating to play, even if the emotions they invoke are very difficult to conceive as ‘fun’. It seems possible that any feeling can be targeted by a game design. This can clearly be seen in the PLEX-model. Although not explicitly calling it ‘fun’, the PLEX model (Lucero and Arrasvuori, 2010), tries to map playfulness to experience,

naming it ‘playful experiences’. In the model they map the playful experience in such a broad way that even the authors, in conversation, ask themselves if they are mapping playful experience, or rather all of life’s experiences.

Different Forms of Experience

Experience, too, is a problematic term, as it can take on many meanings. It can on the one hand mean something created or built, such as in Benford et al.’s (2009) ‘designed experience’. In this thesis it is rather meant as the internal feeling within an individual. Even then, we need to separate between at least two types of experience. On the one hand experience can be seen as the in-the-moment sensory input that happens all the time, and in this case, during playing; and on the other hand experience can be seen as processed knowledge or (in-the-moment) experience added to previous knowledge within the player. Dewey (2005) separates these into the two concepts of ‘an experience’ and ‘experience’. Because of the internal, personal, and subjective character experience is hard to measure. Stenros et al. (2012) build upon studies of their own previous systems (e.g. Waern et al., 2009) and discuss the subjective and ephemeral phenomenon of experiences also being hard for users themselves to report during the experience, since the very act of reporting changes them. This also applies when reporting post-play, since the experience has been processed into ‘an experience’, and even then it might change further depending on *when* the user reports, as memories of experiences also change over time, as new information is processed.

In this thesis we make a similar separation to Dewey, although the two may feed into each other and it is not always relevant to explicitly state which one is meant.

Learning to Have an Experience

Before we can get a positive experience from playing, we need to know how to engage in it properly. Stenros & Waern (2010) discuss games as *enacted experiences*, an experience created by the player during the activity of playing: “what we experience is not ‘the game’ but a play session, and that session does not exist unless we actively create it”. In this, they are making a very strong distinction between the artefact (the game) and the activity that creates experience (the play session).

Similar experiences can be found in many situations also outside of games, a common example being how one learns to appreciate the physical as well as social experience of bathing in a sauna. From the beginning it may be perceived as hot, awkward and almost painful, but as through bathing you learn how the experience works, you also learn how to enjoy it, how to become a ‘sauna bather’. A more controversial example can be found in Beck-

er's (1953) article 'Becoming a marihuana user', which explores how someone becomes a user and learns to appreciate the drug. As in learning a game, or learning to bathe in a sauna, and many other previously unknown activities, it first needs to be understood, the effects need to be recognised, and the user needs to learn to enjoy it. A similar approach in game design can be found in de Valk et al. (2015), separating the engagement with a new play artefact into different levels: *invitation*, and starting to try; *exploration* of the artefact and what it can do; and *immersion* into play with the artefact.

The Concept of Playful Engagement

As argued above, play and playfulness cannot be understood from the perspective of the desire to experience a particular feeling or strive towards a particular goal. Neither is it sufficient to observe the activity, as the same activity can be done in a playful or serious manner. Instead this thesis focuses on how people *engage*.

When Suits (2005) seeks to explain the *activity* of playing, and the willingness to play, he call it the lusory attitude:

To play a game is to attempt to achieve a specific state of affairs [prelusory goal], using only means permitted by rules [lusory means], where the rules prohibit use of more efficient in favour of less efficient means [constitutive rules], and where the rules are accepted just because they make possible such activity [lusory attitude]. (Suits, 2005, pp. 54–55)

In this he points to the willingness to accept these rules, and how this is an attitude one takes towards the game. However, in this definition Suits is focused on games, with rules, and adherence to those rules. This thesis argues that play, and especially playfulness, can be broader than that.

Already Caillois (1961) differentiates between *paida*, 'child's play', happening in an unstructured manner, and *ludus*, or structured play striving towards a goal. But these can also be seen as a separation between *paida* as a *mindset*, and *ludus*, as a *set of objectives*. There seems to be no one specific thing that is a playful experience or activity, instead it's about attitude, or mindset, towards a situation; it is about the user's intent to engage playfully, and the way in which the user engages.

This thesis argues that there are many different types of activities that can all be understood as play, and that it would be a fallacy to try to separate them into playful activities and non-playful activities. Rather *all* activities can be understood as play if engaged in in a playful way. This is similar to how Stenros (2015b) separate 'playfulness' as a phenomenological, personal and mental mindset; and 'playing' as a social fact, a performed activity. If

people understand and accept a situation, and the ‘rules’ of that situation as playful, they can make it playful, even if it is a ‘bad situation’, or ‘not fun’. It seems possible to experience any activity or feeling in a playful mindset. Within this thesis this mindset is referred to as *playful engagement*.

Cases

The core concepts presented in this thesis have been formed throughout several design projects, all with somewhat different views, goals, people, and research approaches.

Figure 1 presents a graphical representation of projects' location in time. Each horizontal bar represents one project, with lines (thicker and thinner) marking minor and major publication. In the bottom line is publications not directly related to a single project.

Similarly to the way in which design research iteratively, and by relating it to other designs, generates knowledge *within* a project, the design processes over several projects around a similar theme iteratively generate more well-grounded and generic knowledge. The figure shows that some projects overlap, and in some cases they grow out of each other.

The case studies help explore the overall question of the thesis, by experimentally exploring particular approaches to designing play. They build on each other and collectively contribute to the concepts presented in the Discussion (page 68 and forward):

- *I'm Your Body* explores whether the deliberate design of an extremely open-ended solution can function as a way to empower participants. The design solution had some major flaws, but was successful in knowledge creation. In particular it put a focus on design for player activity, rather than game content.
- *Codename Heroes* explored how to design games in public to elicit the feeling of empowerment. It helped in formulating the framework for understanding the design for player activity that began in the previous case. It also gave rise to own questions regarding eliciting first engagement.
- *Passing On* was mainly used as a 'proof of concept' for the activity design framework, and it also continued to form the questions of how to design for invitations to engage in public play.
- The *Busking Studies* case observes design, rather than designing itself. It is a study in what design can do to actively invite engagement, and promote a particular mode of engagement.
- *DigiFys* explores how the invitation to play works in different places in the landscape, connecting the invitation to location.

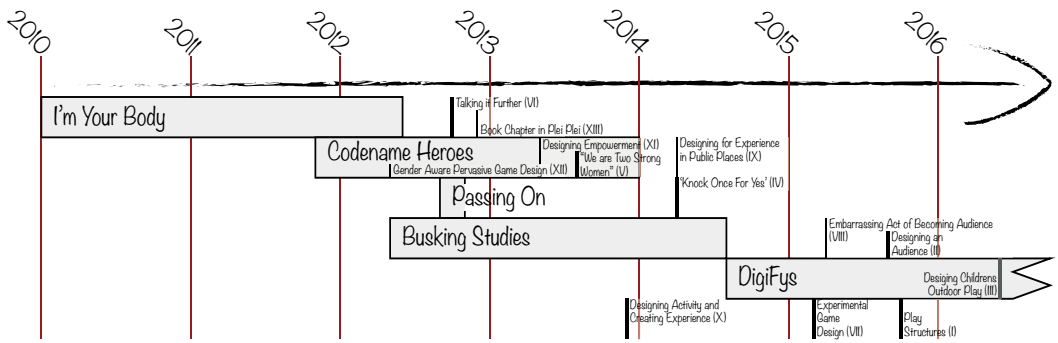
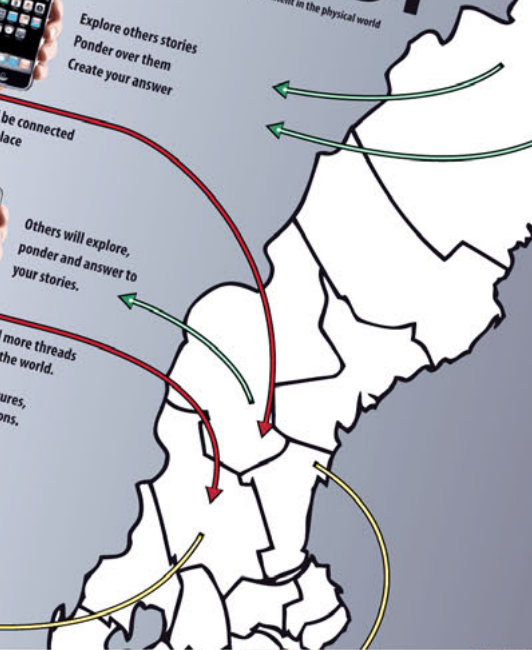


Figure 1: Timeline of projects and publications.

It should be noted that, as described in Method & Methodology (on page 19 and onward), those cases that were design interventions were design research, and not meant to be design practice: they were not designed to be optimal solutions towards a particular problem but as a way to explore how a particular design approach would influence players in what they did and experienced. In the terminology from publication VII, they were designed as evocative experiments, staged and studied in full-fledged field studies.

Apart from their focus on playful engagement, the projects are also similar in other ways. All of the projects had as their overarching goal to create a positive change in an identified situation. The meaning of what was considered a ‘positive change’ was specific for the project, and defined either by us or by our cooperation partners. The methods of data gathering have largely remained the same, gathering qualitative data through observations, informal and semi-structured interviews, data logs from the games, and to some extent questionnaires, both before, during, and after play testing. When other data has been available it has been used, inspired by modern ethnography’s idea of all kinds of data containing information that could be of interest to interpret (O’Reilly, 2005).

The biggest differences between the projects concern the goals of the cooperation partners, the amount of time available for testing within the project contexts, and how these factors have influenced the iterations of design solutions. Sometimes there have been multiple small iterations; sometimes the project has been more of a one-shot.



I'm Your Body

Presented in paper VI. Discussed in paper I.
Related to supporting papers X and XIII

The project was produced in Mobile Life VINN Excellence Centre⁷ together with Kista Teater⁸ (main stakeholder), and in cooperation with Stockholm Stad and Stockholm City Museum.

Description

I'm Your Body was a tool for cooperative, locative storytelling and story experiencing. Technically it was a location-aware web application for modern smart-phones. The technical tool was designed for and used in a wider context, as part of an interactive artwork. In particular, a local performance and sculpture artist was listening in on the conversation, using the app and, in cooperation with local youths, responded to the discussion by placing physical sculptures in the landscape. In this way the activity turns into an iterative loop of thought and physical manifestation.

I'm Your Body explored the research question of how to build a system for collaborative exploration and creation. It was intentionally built as open as possible, allowing for participants to find their own reasons and ways of using it, and that way filling it with content.

Figure 2: From top to bottom: 1) Illustration of stories and physical objects flowing in and out of the artwork. 2-4) Artists placing objects inspired by virtual content. 5-10) Involved youths building, placing, and using objects in cooperation with the artists.



⁷ <http://mobilelifecentre.org/>

⁸ Later renamed as RATS teater. <http://ratsteater.se/>

In this thesis the project is described mainly from the angle of design of digital and game systems, as this was the author's main contributions to the project.

The System

The artistic goal underlying *I'm Your Body* is to let participants write and collect their stories about the place they visit, and to read stories from others about that same place. Although the tool is generic and focuses on story generation and sharing, the project as a whole was defined by its connection to one particular area, Järva, a suburban area north of Stockholm.

More specifically, *I'm Your Body* used the GPS locations from the phone of its users to locate them, placing stories they wrote in the landscape. The stories were available in a web-app interface to all users and could be explored, organised, and read in multiple ways, among them temporally in order of publication, as a threaded discussion in reply order, or according to physical location and closeness to reader. The users could read, and comment freely, creating discussions and cooperation on developing stories. The sculpture artist connected to the project listened in on the conversation (using the same system), looking for common themes related to places, or types of places, and then built and placed physical sculptures inspired by those themes in the locations.

Role in Thesis

I'm Your Body was the first case study performed within the context of the thesis. The project helped to frame the research question more closely. In particular it put a focus on design for player activity, rather than game content. The experiences from *I'm Your Body* helped in formulating the FaTE model, later applied to the design of *Codename Heroes*.

Background

The fundamental inspiration for the design of *I'm Your Body* (the phone app, as well as the art project as a whole) is people's willingness to share. When it was produced, it seemed people were willing to share location (e.g. Foursquare and Gowalla),⁹ and even though the services have lost their former glory sharing location is still an ongoing process e.g. in Facebook. As well as location, reflections and experiences are also shared (e.g. Facebook, Twit-

⁹ While Foursquare is still available (at <http://foursquare.com/>), Gowalla was acquired by Facebook in December 2011, and ceased operation shortly after, leaving behind only the blog (still available at <http://blog.gowalla.com/>). Both of the services are well documented on Wikipedia (Wikipedia, 2015a, 2015b).

ter, and personal blogs). The artist collective, including the author, wished to build on this sharing to create webs of narratives over a physical area. This could form a base for collaborative storytelling, connecting routes through the landscape to experiences that are simultaneously created and experienced by the participants. Through physical connection to a politically challenging place, Järva, we explored the use of collaborative storytelling as a political and artistic instrument. As an art project, *I'm Your Body* was about empowering the inhabitants of a fragmented and partly low status area by giving them a voice.

The practical work and collaboration originated in earlier projects by Kista Teater, who were already working in close cooperation with a school, the library, and a theatre organisation for youths living in the area of Järva, on the outskirts of Stockholm. Järva was built in the 1960s and 1970s to counter the housing shortage as part of the 'million homes programme'; the rebuilding of the Stockholm suburbs. The programme had many problems related to social development and stability in the areas,¹⁰ as well as suffering from segregation between ethnic Swedes and people from other backgrounds, including immigrants and first generation Swedes. As a response to these issues, there are many development projects in these areas, such as the "Vision Järva" initiative (Vidén, 2013). Kista Teater entertained the opinion that Vision Järva was merely focusing on a physical redevelopment of the area, where they believed that the issues were much better addressed on a social level.

Artistically, a major inspiration is Debord and the Situationist International movement (Debord, 2002, 1955; Kitchens, 2009; Wollen, 2001), where free walks (*dérives*) and personal subjective maps (psychogeographical maps) create a collective experience, mapping the city from feelings and opinions rather than direct street lines. In this way the city is experienced rather than just used. The stories and maps are also used as data gathering, creating a subjective and rich tapestry of stories in the landscape, treated as feelings, acknowledging that own values must be added to arrive at an understanding.

Design Ideal

The design ideal for *I'm Your Body* was to inspire open playful exploration without offering a clear game goal. Instead of focusing on game rules and how to play, the focus was on story creation. The system was there as a basis to help. From a game design perspective, the question we were asking was

¹⁰ Something that has been ongoing since. Around the time of the original work and publication, this was for example visible in news of the 'Husby riots', reported on by both local organisations and national media (Megafonen, 2013; Wikipedia, 2013).

what kind of game mechanics we could use to support collaborative storytelling.

Methods and Implementation

I'm Your Body was developed in an iterative design process with designers, the artists and some selected users involved throughout the process. The iterations were at the beginning clearly separated, but became more and more vague as the users became more and more involved, and the design started to take on its final form. Towards the later part of the project, design iteration went hand in hand with content generation, and a similar process was progressing in the physical sphere by continuous installation and movement of physical sculptures. In this way, we could get close to the use as we had designed it, and, step-by-step, evolve both the design and our understanding of the use and the users.

Data gathering was mainly done through workshops, where the design was tested in its current form, and all involved giving feedback afterwards. Workshops involved end users and content creators as well as the artists from Kista Teater and the system designers. Workshops were recorded and participants were observed while using the system to further inform the decisions.

Kista Teater and the game design research group at Mobile Life developed the system in design iterations from a basic idea. Early iterations were done within the group, whereas later iterations involved testing with external users. As the prototype reached maturity, the design workshops moved from system design and development towards content creation, but there was no clear separation between the two tasks. Several different groups were recruited, to give a broad input to the understanding of the system and the activity. The conceptual phase included one workshop with experienced larpers¹¹ as a way to explore how the system would support storytelling in particular. The later trials were done with the target community, inviting several school classes from the area who gave input on how they experienced their home environment of Järva. During the final phase a small group of three teenagers, local to the area but not previously acquainted with one another, were involved over several weeks working with the Mobile Life group on development in parallel with creating content together with Kista Teater. Content later continued to be created in workshops, mainly with artists from Kista Teater. The three local teenagers also continued using the system to create content and engage in dialogue with new users, in their spare time between and after workshops.

¹¹ Live action role-players. Used because of their expertise in improvised real time storytelling.

During this process, a sculpture artist, Johanna Gustafsson Fürst from Kista Teater, created physical sculptures that she placed at locations that became focal in the discussion in the phone app. The sculptures were inspired by the discussions and entered into a parallel physical dialogue with passers-by. They were moved and vandalised, and Gustafsson Fürst would go into physical maintenance of these in much the same way as the three local participants would monitor and respond to the virtual content. Finally, the collected material was used in an in-location theatre performance produced by Rebecca Forsberg from Kista Teater.

Findings

Some of the major findings from this project are reported in paper VI. The article focuses on the material generated within the digital system, and on creating citizen dialogue for democratic expression of opinion. What we saw was that users not only talked about one place in a single conversation, but also directed the conversation to other places as well, and thereby expanded their emotions and opinions geographically. Having each individual comment geotagged with its own place of creation, instead of only at the first location as similar systems do, at least in citizen dialogue, allowed users to explore, comment and connect places together, mimicking ‘normal’ conversations where we also divert and make reference to other places. In this way the place is enhanced by the conversation, making the system and the space bleed through and inform each other, changing not only one place, but also other related places.

In the discussions with Kista Teater it became obvious that they wanted *I'm Your Body* to be a political comment, showing change in civic discussions. In the article there is a focus on the citizen dialogue perspective. The analysis indicates that memories, feelings, and attitudes are the prime means of expression for young contributors to the system, and that those expressions sometimes lead to civic discussions, and these discussions in time expanded over geographic areas in the neighbourhood. In the article we argue for civic engagement systems with a vantage point in emotions for better understanding what lies behind people's opinions and arguments. In the context of this thesis the actual civic discussion is not central. Instead the focus is on how this shows how the design of the system enticed these specific types of expression, and how this then could be utilised for understanding the local situation.

From the perspective of the thesis, the experiences from *I'm Your Body* provided us with an understanding of how an open design can at the same time help and hinder engagement. Even though the system promotes comments on personal thoughts that turn into quite concrete discussions on change, we also saw how the openness and flexibility created tension and uncertainty about how to use the system. In the beginning, it was hard for the

users to know how to engage in this previously unknown activity. Only after someone's initial use did others build upon it to do their own thing. This points towards a need for bootstrapping the activity from the start. In *I'm Your Body*, this was achieved through the continuous engagement by the artist collective, in particular in the form of workshops. It is possible that the engagement through online responses and physical engagement (Gustafsson Fürst's sculptures) also helped, but this is more difficult to ascertain from the collected data.

I'm Your Body succeed in creating playful engagement, as well as in eliciting participant experiences, and to some extent also in creating discussion for change. It was however not entirely successful in promoting engagement in the first place, and was intentionally not designed to force any particular use of the system. It became clear that these two were related, and that this reluctance to explicitly form the activity of the users made it hard to engage, and to consistently promote civic discussion. If the users would not have stayed with the system for long due to the test phase, it might not have happened at all. Only once the participants had themselves decided what to use it for did they fully and playfully engage with it, showing how playfulness does not arise until it has a frame to arise within.

Codename Heroes

Presented in paper V. Discussed in paper VII.
Related to supporting papers IX, X,XI XII

The project was produced in the Mobile Life VINN Excellence Centre.¹² In part the project cooperated with the non-profit larp design organisation Ursula.

Description

Of the design examples in this thesis, *Code-name Heroes* is the most typical pervasive game example in that it deliberately expands the boundaries of the game, physically and temporally, as well as socially (Montola et al., 2009). It is a persistent, multiplayer, crowd-sourced pervasive game that uses a phone's GPS, Bluetooth, and camera to enhance the world around someone.

Figure 3. From top to bottom: 1 & 3) Game test during Ung'08. 2) Artefact created for the final game test, 4) QR-Code. 5) Locations from the final game test. 6) Image from promotional material.

¹² <http://mobilelifecentre.org/>. Prototypes and presentation can be viewed at: <http://www.codenameheroes.org/>



In the game, people play a secret agent with magic superpowers. They complete missions sent through a secret messaging system on their mobile phone, and they deliver messages to other agents on their team. They have superpowers, tied to physical artefacts, and can share these powers with others by creating artefacts and hiding them for other teammates to find, or keep them for themselves if they want to use the power. By delivering the messages to their final locations, or moving them closer in the right direction, the players gain ‘mana’, a force needed to use the superpowers.

The artefacts can be created by the players themselves, and are enhanced by the use of QR-codes.¹³ By scanning the codes with a phone’s camera, while running the game app it ‘invokes’ the artefact’s magical power, and in this way the artefacts can contain powers, without being technologically enhanced themselves, meaning anyone can build them, as long as they have the QR-code. Different powers affect the world in different ways, for example by scanning the nearby area for other players, searching for players and stealing their mana, and searching for hidden messages.

Codename Heroes is a pure ‘play for fun’ kind of game, but with a deliberate design for empowerment, in that it is especially aimed at young girls. It is designed to address known issues for the target group and create gameplay intended to help overcome those issues. The design is informed by ethnographic studies of young women as well as by gender studies. It is the largest project among the examples in this thesis.

Role in Thesis

Codename Heroes explored the research question of how to design games in public to elicit specific experiences, and more specifically the feeling of empowerment.

In the thesis it is the case where the FAtE model was evolved, and took its form. It is also the case where the questions regarding how to elicit first engagement started to form, later continued in the *Busking Studies* case, and in the DigiFys case.

Background

As stated in paper V, games today are to a large extent designed in an environment where men dominate, and this tends to reflect and reinforce values that are normative for a male-dominated society. When designing *Codename Heroes*, the designer team aimed to maintain their awareness of this in designing a game targeted at young girls. We call this approach ‘gender aware design’, as it takes into account the wider situation and aims to design in a

¹³ A barcode holding data (in this case the id of the power), can be scanned by a camera connected to a computer, as on a smartphone (Wikipedia, 2015c).

positive and empowering way. Still, the game is not aimed at critical play (Flanagan, 2009): the goal is not to explicitly challenge current norms. This is different from other approaches, such as what has been called ‘pink design’, which forms games as cute, and for girls only, in a conforming discourse of femininity (Ambjörnsson, 2011; Butler, 1993; Cassell and Jenkins, 2000), and ‘gender agnostic design’, where the player can choose whatever gender they wish without any major changes in gameplay, changing only surface appearance. These games still often value typically male-coded attributes, forcing girls into a tomboy role (Bergstrom et al., 2012), rather than showing that female attributes also are positive.

The reason this approach was considered particularly important for *Code-name Heroes* was that it was intended to be a pervasive game, in which players were expected to play, physically, in their ordinary environment. Hence, players would meet with everyday expectations during play and designing with this in mind was perceived central to its success. In the case of *Codename Heroes* the awareness was created mainly through literature studies, mainly in ethnography and gender studies, reported on in paper V, and in the supporting papers IX and XII. In these studies, three areas related to young women, empowerment, and space were pinpointed: 1) Among many young women, building of personal identity and self-worth seems often to be related to the attraction of others, rather than the improvement of self. This can be seen partly in e.g. dress choices, but also in situations such as being afraid of getting embarrassed. 2) A major cause of anxiety seems to involve trust-issues (especially with boys), and a fear of danger of the outside world. This leads to problematic isolation, with home and school seen as the only two safe spaces, despite the statistics telling us that this view does not fit with reality. On the positive side, these two areas seems also to create strong social groups, where young girls seek out each other for safety as well as comfort in comparing and realising one’s self. 3) Many young women seem to be hesitant in daring to try to use technology, which seems to be related to the fear that problems may occur, and feelings of self-blame if they do occur. On the other hand, in female dominated situations, such as horse stables, social status seems mainly to be based on a meritocracy, where the girl who is best has the highest status.

This situation, and these values, were brought into the design process from the very beginning, forming the research questions and design goals.

Goal

In designing *Codename Heroes*, in order to be relevant to the target group, the goal was to make a game that would speak to young girls’ interests, while still being relevant for their everyday situation. The game should not force female players into superficially feminised male roles of ‘being strong’, while at the same time it should not drive away male players by

being overtly ‘designed for girls’. The solution would be to do this by building the right game mechanics, rather than to design surface.

The design of the game strived for solutions that could be expanded to a large user base, and could be played over a long time without a given start or end. In particular, this affected how game mastering functionalities were designed and implemented.

Methods

The game was iteratively designed, first in internal design cycles and later, with more elaborate and stable versions of the game, with external players. Many different kinds of data were gathered. The game went from pen-and-paper prototypes to a fully working prototype with players, artefacts and mobile phones. The game tests are described in paper V. In this way design development could be done through small changes in each stage, leading up to a final fully tested prototype. However, the close-loop iterations made it difficult to document every single small decision during the process. The article thus primarily describes the major changes and considerations.

Findings

Compared to *I’m Your Body*, *Codename Heroes* was much more clearly designed to offer a certain experience to players. In the papers we describe our approach to this design as one that could not have happened through design of the look, or ‘on the surface’, but had instead to be designed at the rules level. By avoiding designing the surface of the game in a female coded way, and instead focusing on making the rules comply with what is perceived as female values, we could make the activity within the game attractive to that audience, and by extension give the players a positive experience of the value of those female coded activities. From interviews and observations during player workshops we gradually grew more confident that the approach could indeed invite players to the kind of experiences we were aiming for.

The primary design goals were as follows. The design promoted collective play, through playing in teams. All teams strived towards a common goal, and had a common external enemy. This was intended to encourage social play and tight player groups, and was motivated by how the ethnographic studies had highlighted the way in which young women rely on peers for identity building. A second design goal concerned how the game would be perceived in public. The game was played semi-secretly, with it being possible to play the main part of the game, even though dependent on location and who else as nearby, while looking like you were sending a text message from your phone (what Reeves et al. (2005) described as secretive play). This design goal was selected to avoid embarrassing situations in pub-

lic settings, while also keeping the player in control over whom they meet and, more importantly, whom they do not meet, strengthening the feeling of safety.

Finally, an explicit design goal was that of fostering gift-giving. This was implemented in a more implicit way, as there is nothing in the actual rules that enforces this activity. Instead, it was made possible through the way powers were bestowed on artefacts rather than on players or their personal phones. This design allowed for players to share artefacts between them. The inspiration was again the gift-giving that appears in many young women's communities as a way to strengthen social bonds. Finally, the game has a flat player structure, where power is based on merits within the game, making the game elicit a meritocratic social structure within the game.

The effects of these design considerations are reported in the articles. For the purposes of the overall goals of the thesis, the observations provided us with a couple of additional insights. One important observation was that while the game activities were perceived as fun and inspiring, many of our practical trials were a bit too vague in explaining the *goals* of the activity. Inspired by, inter alia, work on inquisitive design and design for playful engagement (Bekker et al., 2010), we often strived to install a curiosity-driven form of engagement with players (you will see what happens). The trials showed us that some kind of goal for the game seemed to be needed to make players understand and engage playfully in the activity. This goal could however be tactical rather than strategic.

The most illuminating example occurred during a large, but short-term, play test during the Ung'08 youth festival. The game involved finding artefacts while dodging enemy agents, until all artefacts were found and a secret weapon was revealed. In the game, the final goal was revealed during play, and an explanation along the lines of 'come and play with us' spurred the counter-question 'what am I to do?' to which the answer 'you will see' was not good enough. As the facilitators became more and more familiar with how people understood the game, they developed a more engaging explanation. Adding the instruction 'avoid the guards' seemed to satisfy players and enabled them to understand how to engage with the game.

It is interesting to note that the question 'what am I to do?' seems to be aimed at understanding the strategic goal of the game ('how do I win?'), while the answer 'avoid the guards' is actually just a tactical goal on the way to the real one ('what do I do in the meantime?'). While the strategic goal of finding out how to win was still hidden, the presentation of the tactical goal seemed to be enough for the players to be sufficiently satisfied to engage in the game and start playing. In this way the encouragement to engage could be created without requiring a full understanding of the activity.

This relates to how to get people involved in a playful activity, and inspired the questions for the following work on *Busking Studies*, and the case of *DigiFys*.

Passing On

Presented in paper IV.

The design and development of *Passing On* was done in conjunction with the TOTEM projects¹⁴ ‘Summer School Mobile Mixed Reality Game Jam Hackathon’. The analysis and writing were performed at Uppsala University, Department of Informatics and Media.

Description

The game *Passing On* was designed as an exploration of physical and location-based play. It is a ghost story where players take on two different roles: as a ghost trapped in a castle, or as an investigator trying to find clues to why the ghost is trapped.

In the final version the player takes on one of two roles. The first player plays a ghost, stuck in the Birlinghoven castle (where the game was developed, and played). That player has a stationary role, trying to lead the other player to the right locations. This player has access to a map on the device, pointing to the current location of the other player, as well as the location of the clue. The player also has access to images of the location where the clue is hidden. The other player plays an investigator, trying to find out what happened to the ghost, by finding the hidden locations. That player (or players, as it was sometimes played in groups) can move around the

Figure 4. Bottle with a hidden clue.

¹⁴ Theories and Tools for Distributed Authoring of Mobile Mixed Reality Games. <http://www.totem-games.org/>



garden of the castle, looking for the hidden clues. As the player interface for that player is completely black, the focus is on the environment rather than on the phone itself.

The investigator player can talk to the ghost, but the ghost can't talk back. Instead the ghost can knock on the device, and the knocks are transferred to the other device and presented haptically (using the vibration motor) to the investigator. This way learning to communicate became the play activity.

The ghost was aware of the location of one clue that could lead the investigator to it. Once there the investigator would find a (physical) bottle with a message in it. In the message was a short poem with a clue to what had happened to the ghost, and an answer to a question that gave the ghost information about the location of the next clue.

Role in Thesis

The case was used as a 'proof of concept' case for the FAtE-framework, being the first case where the model was used as a framework throughout the design process. As such it was successful. The work also formed new questions around how to design for invitations to engage in public play. In this case the game was treated as an ordinary game, rather than something public, resulting in the players treating it as such. However, if the invitation was offered while in a public setting, this might not be possible. This was further explored in the *Busking Studies* case, and to some extent the *DigiFys* case, where the invitations were placed in the public setting.

Background

The TOTEM project was a research project to develop tools to simplify the creation of mobile mixed reality games. During its final phase it invited master and PhD-students to a summer school built around a one week game jam.¹⁵ *Passing On* was developed in this setting. The game jam had the double objective of generating creative design solutions and also testing the tools from TOTEM.

Design Ideal/Goal

Many commercial, as well as research, examples of location based and mobile mixed reality games today focus on a simplistic play model with a map as the main screen interface. In different ways, you as a player gain some form of points by visiting those map coordinates. This can lead to a screen

¹⁵ An intense period of time devoted to the single task of creating, just for the fun of it, a single game, and doing nothing else, usually together with others also creating games. In form inspired by e.g. Global Game Jam. <http://globalgamejam.org/>

focused play style, even if the game is mobile. Further, it can often lead to intense, fast paced games of ‘running to a place to win a point’. These games can be very entertaining, but in this case we were aiming to find another form of experience.

The aim of the design of *Passing On* was, first, to explore other types of engagement than running and following maps while in the landscape. Further, the game had a technological demand for the participation of at least two players, as the communication tools from the project were also to be tested.

This led to the design group exploring ways to create a slow paced location-based game with the focus on communication and awareness of the surroundings. The goal was to create a mode of communication that would be perceived as closely connected to the location.

Methods and Implementation

The project was designer-led and created over a one-week ‘game jam’. The development and programming was done in an intensive build-and-test cycle, solving problems as they arose. The focus was on finding fast and functioning solutions, rather than robust and perfect solutions. The game was iterated in fast cycles of about one day, first with non-working technology to get a feeling for the game, and later with a more and more finalised game. The game prototype was tested during development, and at the end of the week. Semi-structured group-interviews were conducted with the participants. As with the other projects, the final game test allowed for interviews and observations, but also the design and development process was considered as valuable data.

The design-oriented game-jam style led to a focus on development and exploration rather than on research and a clear research question. This approach, with a vague research question and a strong focus on the designer’s intuition, and only in the concluding phase taking a more research-oriented approach, gave a good understanding of the tacit designer knowledge. The approach can be compared to Fallman’s (2008) view on design research as creating knowledge in the movement between practice, exploration and studies. As a practice exercise, the approach can be compared to the designer/researcher Wilson (2012), when he compares his work to Frayling’s (1993) research *for*, *into*, and *through* design, describing his work as ‘research *after* design’, separating the activities and showing how he first takes a pure design approach, and then in a separate step looks back, reviews and analyses his work with a researcher approach.

Findings

The ‘outer world’ played an important role in making the game interesting. The study of *Passing On* showed that the two players had very different experiences. The investigators, moving through and using the environment, perceived it as reasonably paced. There was observed a slow paced gaming style, where the players were walking, and looking around, rather than running to the right spot. This happened even when several players were playing at the same time, competing to finish the game first. By contrast, the stationary players perceived the game as slow, and sometimes even boring. Even though more or less all decisions were in their hands, the pacing was not. As the possibilities for communication between players was limited, it turned that communication into a main activity within the game, and as that communication had to be understood before it could be acted upon, the design seemed to have created this slow paced game style. In this the FAtE-model was successful in creating the desired game experience.

As the game was built in a setting where other players were readily available, and where many had at least some understanding of games in public settings, the invitation to the game could be treated similarly to other types of games. However, this would not be possible unless the players already had an awareness of the type of game, and could probably not be done in other settings. In the *Busking Studies* this was explored further.

Busking Studies

Presented in paper II. Related to supporting paper VIII.

Participatory observations carried out mainly while at Mobile Life VINN Excellence Centre. Analysis and writing performed while at Uppsala University, Department of Informatics and Media.

Description

Unlike the other projects in this thesis, *Busking Studies* was not a design project, in that no physical artefact was created.¹⁶ It was instead a study based on observations of performers and performances in the streets.

The work focuses on how the street performers, or buskers, engage with their audience and make them overcome the out-of-the-ordinary situation of watching a show, while being in the street. It treats street performance as a form of design, mainly designing public space into a scene, shaping by-passers into an audience, and forming the audience response to the situation.

¹⁶ Although design was not the direct intention of the project, as a side effect the work did inspire changes to a street show previously developed by the author, as well as the creation of a new show after the field work finished. And even though not documented and reported on in this paper, all of this of course also added to the knowledge gained through the project.

Figure 5. Arkadia during a performance.



Role in Thesis

The *Busking Studies* are included in the thesis as it zooms in on several critical issues for answering the overarching research goal of this thesis. Specifically it is a study in what design can do to actively invite people to engage, and to promote a particular mode of engagement. Even though the previous cases focused on the player activity, they were still centred on play artefacts, in the form of programmes in mobile phones, and ‘magical’ items. In this case the design is more purely one of activity, as neither performer nor audience need special equipment to form the audience, even though the performer does use equipment for their tricks.

Background

The urban street landscape is malleable, used for multiple purposes and shared between people that use it differently. As information technology is increasingly brought into focus in our everyday environment, we can expect it to play a role also in the various practices in the urban landscape. Observing people who are used to this environment may be an inspiration for how to design for similar environments.

There are written accounts of street performances from at least the 12th century, and street music from at least the 2nd century (Harrison-Pepper, 1990), and as the performances have developed in symbiosis with the streets and public places, they today hold a large amount of tacit knowledge, inherited through the ages and passed down from mentor to apprentice. The paper, and this thesis, argues that large amounts of this knowledge could be transferred to our understanding of interaction in these public places, and by extension, as technology moves out into public areas, the knowledge could be utilised to successfully design for those places. By focusing on street performers we can get a view of some of the disruptive and playful practices used in streets around the world every day.

The work builds on previous studies of street performers (Gardair, 2013; Gardair et al., 2011; Harrison-Pepper, 1990), and studies of crowds and spectators (Reeves et al., 2010, 2005), as well as practitioner knowledge from within the field of street performance (Cellini, 2004; Hustle et al., 2006; Talksot, 2007).

Methods

This study is based on observations of current practices, and does not include an element of new design. However, these practices are treated in the light of design studies, focusing on how the studied practitioners do design. In this way it can be seen as a form of research *into* design (Frayling, 1993).

The work takes an ethnographic approach, observing, interviewing, and working with street performers in real life situations. This is combined with video recordings of performances and detailed studies of short strips of video from key moments in those recordings. The study uses a snowball sampling method, using the researchers' personal contacts to get in to the performance group, and from those contacts reaching more of the active performers. The studies are centred on a small group of performers in Stockholm, and most observations have been done on performances in the city. However, both observations and participation were conducted in several cities around Sweden, as well as some abroad. While the study gathered data on a wide range of design strategies and considerations, the material covered in the thesis focuses on the way in which the street performers gather and handle their audience.

The video material was transcribed and analysed through conversation analysis (Liddicoat, 2007; Schegloff and Sacks, 1969; Silverman, 1998). To give the reader an overview, this is presented in comic strip format, using the medium's capacity to present movement in both time and space in a printed media (McCloud, 1993). In analysing the video recordings, the focus was on the detailed interactions with the audience, and their reactions and modes of engagement. From this data, conclusions are drawn concerning how a performance is designed, and how it is dependent on, uses and communicates with the public area and the audience.

Findings

Usually, the (pedestrian) street is used for certain purposes, like walking, window-shopping and talking to friends. Performers, on the other hand, use the street for something out of the ordinary, creating a stage to perform a show. If someone decides to stop and watch that show they are, together with the performer and the rest of the audience, creating a new use of that street. They socially construct a stage for the performer to perform on. This can be seen as a form of magic circle that the audience is playfully engaging in, as described in previous chapters.

In the article this is described as there being a performative aspect to being an audience in a public setting. Someone just walking by a street performance, in the very act of joining an audience, and thereby helping to treat the street as a stage rather than a street, is performing an out-of-the-ordinary action, which draws attention to and makes the staging possible. Hence, the act of watching, especially if one is among the first to stop, may become uncomfortable. It is unclear how this watching should be done, as the street is not what it *ought* to be (Goffman, 1956). Once the audience starts to build up, the act of joining becomes something normal. It seems people are drawn in by the presence of others, and when they see the formed audience, they know what to do.

In the observations, the audience seemed to have several ways of coping with this. One of the most observed behaviours in the situation was to only watch the show indirectly. By standing some distance away from the performance, while doing something else, like window-shopping, the audience avoided performing the role of the audience, while still watching the show.

We can further see how there is continuous communication between performer and audience, influencing the behaviour of both. As the performer is aware of what is going on, direct reaction is possible. The performance becomes an interactive communication between audience and performer, an interaction with unequal roles. While the performer, as a single individual in the centre, has most of the power, the audience members may still react to the performer's actions, and even end the performance, by leaving, if they do not agree with what form the performance is taking.

Some spots seem to work better than others for being transformed into a stage, and the difference between a 'good' spot and a 'bad' spot may be subtle. In walking interviews several good spots were pointed out, and several places to avoid were also pointed out. And further, the form the performance would take differed depending on the chosen spot. In this way the street influenced the performance. At the same time, there are spots in many major cities that are perceived as being a place to go to see street performance, such as Covent Garden in London. In this way the performance also influences the city, and they exist in some kind of symbiosis.

Design Implications

The main design takeaways applicable to this thesis concern the uneasy role of the first audience members, and how this is dealt with; and how the street and show influence each other, showing the importance of choice of location.

The performative aspects of the show in the street, and assumedly other public interventions, may make it hard for people to initially engage. This means design thought needs to go into the engagement process. The way the street performers address this is to give individual attention to the first audience members. Once the show is ongoing the focus need not be on an individual level, but rather on the show at large.

Giving individual attention does not mean to directly engage, though, but rather to ease them into the situation. This is often done in several steps, first drawing attention through sound and/or odd but non-threatening behaviour. This is meant to make the potential audience stop, and this is usually where the behaviour of avoiding being seen as an audience happens. At this moment the performer avoids further interaction, except for possibly acknowledging their presence. Not until after some further interest is created through talk, showing tricks, etc. is the first direct contact made. When that contact is made it is usually through questions or some other means that elicit re-

sponse, and in that way a connection is created. After all this, there is finally an invitation to step up to the stage and watch the show, reacting to the audience's response, usually through jokes about them joining or not. In street performance this is called 'catching an anchor'.

This direct interaction with the audience is a form of interactivity that might be hard (but not impossible) to design for when building systems and technology, as the performer will not be as aware of their surrounding as a person can be, and, importantly, they will not be able to improvise. But street performance is also to a large extent rehearsed to give the feeling of improvisation rather than actual improvisation, and many of the 'improvisational' answers are answers to situations the performer experienced before in previous performances. In this way the performers iteratively improve their toolbox for handling the audience, and in a similar way it should be possible to improve a system into recognising situations that resemble previous situations.

Another finding is the importance of place. It became obvious that some spots are more adapted to performance than others. This is partly the obvious difference between setting up a performance on one street or another, but also the more subtle difference in where in a spot one sets up. Even a small difference of setting up at a wall, or one meter in front of the wall, or of a small rotation of the angle the show is performed in, seems to make a huge difference. Some details of these aspects are studied in the paper, but there is still a lot of work to be done. Some of these questions are addressed in *Digi-Fys*.



Figure 6. Children exploring during the playground workshop.

DigiFys

Presented in paper III.

DigiFys is, at the time of writing, an on-going Vinnova funded project, jointly owned by KTH Royal Institute of Technology, Uppsala University, Swedish University of Agricultural Science, HiQ Stockholm, URBIO, Huddinge Municipality, HAGS Aneby, and NCC.

Description

DigiFys is a project that targets kids and youths in a suburban area. It explores the borderline between physical and digital play. It looks at how the participants play and where they play, compares the digital playground to the physical, and searches for commonalities and ways to combine the two play landscapes. The project is a cooperation between research and industry in human computer interaction and landscape architecture. For the researchers from Uppsala University it has offered the possibility to get to understand the design process of landscape architects, and how to put that knowledge to account in human computer interaction design in playful public settings. In this thesis the case explores the research question of how invitations to play are related to the landscape.

Role in Thesis

The *DigiFys* case explores how the invitation to play works in relation to place in the landscape, connecting the knowledge from earlier in this thesis

to a landscape understanding, focusing on the area at large, rather than the individual artefact.

Background

By integrating digital technology into playgrounds and playful landscape areas, *DigiFys* aims to erase the divide and create an understanding of play for both settings. In this way it aims to encourage outdoor play, without becoming an opposite to playing with computers.

The project is made up of a variety of researchers and industry partners, creating a melting pot of several subjects, where the main knowledge of interest for this thesis has happened between human computer interaction and landscape architecture. In this meeting between subjects, landscape architecture's understanding of physical space has been integrated into the HCI-based understanding of play and interaction, creating new knowledge around technology enhanced outdoor play.

In recent years there has been a decrease in outdoor play, while screen time has increased. At the same time, access to outdoor play areas is decreasing, with many places featuring a few big playgrounds, rather than many small, making them harder to reach, turning a visit into a trip rather than a daily spare time activity. *DigiFys* looks at 'play paths' in the local environment, rather than these specialised play grounds.

In other projects around interactive playgrounds, the focus has been on individual artefacts and feedback systems borrowed from computer games. While *DigiFys* also works with these types of feedback, the focus has not been on the individual artefact, but instead on its role in the environment, building integrated systems, and on play not only with the individual artefact but with the surroundings; exploring also the play *between* installations.

Design Ideal

Playing with computers is not bad, but *only* playing with computers could be a problem. Not being interested in computers is not a problem, but not learning *at all* might be a personal as well as a societal and democratic problem when growing up. By combining outdoor play and computer play a wider audience can be reached, and play can be diversified. Furthermore, it can help to create knowledge among a wider audience.

The project wished to enhance outdoor play, using the interactivity and feedback possible in digital play, while keeping to similar interactions and activities as is usual in today's outdoor play.

The main focus area is playgrounds and 'play paths' in suburban areas near housing, with one specific area as the main example. In tests both these areas and other play areas such as playgrounds outside of schools have been used.

Methods

In the project design, prototypes for outdoor play have been developed over several iterations. In early phases walking interviews were conducted and physical sketching done together with youths from the area. This information was used to inform digital sketching and implementation of prototypes. The prototypes were tested in a lab environment, and brought to the outdoor location to see how they integrated with the environment. After these two tests, they were again polished to make them function better and then brought to a playground environment where they were tested for a week. This process is documented in paper III.

Findings

DigiFys is, at the time of writing, an on-going project and final results are forthcoming. However, in its current stage there are findings of interest for this thesis, which are reported on in paper III.

Part of the observations in the project focused on invitations to play. It became apparent that specific things attracted the children to start playing. The most important aspects observed were sound and other people. When an object made a sound it immediately attracted attention, and encouraged exploration of the artefact, or location if the sound could not be placed. In the case of the communication devices, this often happened through the exploring children shouting into the speaker to see whether someone had heard them back. Also the presence of other children playing attracted even more children. When an artefact was unused, it could continue going unused for a long time, but as soon as someone started using it, others joined in the activity. This could be compared to the idea of the honeypot effect of digital screens, with people participating with different levels of interest, but all focusing on the on-going activity (Brignull and Rogers, 2003).

In this thesis, the *DigiFys* case is not mainly about the design of games, or even play, but rather about the children's role as co-creators and designers of their own games and playful activities in their environment, with new interactive and open designs. The method for studying and designing is inspired by this open play, and development is based on observations and interpretations of the children's own games.

In article III, there are three main findings about the children's play: 1) Adaptability: by incorporating feedback, but without adding any type of scoring, the play equipment enticed open ended play of different types, and adapted to different situations, 2) Versatility: by adding the interactive play equipment, new types of play emerged in that location, and 3) Initiation and exploration, but little immersion: unlike what is often sought in game design, there were few observations of immersion and long-term play. However,

both initiation of play, and explorations of possibilities were seen throughout.

The third finding is especially interesting for this thesis, as in game design it could be seen as unsuccessful. However, even without immersion, there was plenty of play going on. This seems to be typical of how the schoolyard environment shapes play. The children were roaming the schoolyard, moving from one activity to another, moving in and out of play, both due to distractions from other activities, and due to scheduled breaks and classroom activities.

In this setting, immersive play may not be the preferred form, and instead there could be seen 'recurring play,' with children playing for a short while, moving on to something else, or back indoors to a lecture, and then returning back to previous locations and previous activities at a later time. These findings are directly dependent on this view of designing for playful activities rather than the classic game design approach, and is a clear example of differences between game design and designing for play.

Discussion :

Constructing Playfully Engaged Activities for Player Experience, Three Design Tools

The experiences from the case studies brings forth the importance of understanding playful engagement, but also the recognition that playful engagement can to a great extent be designed.

In this chapter, three concepts for the design of constructed activities for playful engagement to elicit player experiences will be presented. The first concerns the overall structure, the second concerns the invitation to play, and finally, the third concerns an approach to handle the fact that you do not know how your user will engage.

Design for Playful Engagement

(Supporting paper X)

When designing games, or playful activities, the designer usually assumes the player will use the design in its intended way. The players need to engage in these activities, accepting and following along with the designers' hints to get the intended experience. As discussed in 'The Concept of Playful Engagement' (page 40), the reason they do this is because of playful engagement, where players are accepting of the situation because they *want* the experience, and therefore they actively try to achieve it.¹⁷ In Suits' (2005) concept of 'lusory attitude', the player is within this magic circle of play, meaning they follow the rules and strive towards the goals set up by the game, although while this is dependent on an acceptance of game rules, it is a similar concept to playful engagement. This playful engagement with the structures of the game is key to the possibility of designing the artefact of a game to create an activity, and why that activity gives rise to an experience comparable to other times when the same game is being played.

This idea of players having this playful attitude towards, and playful engagement with, the playful activity and accepting its rules is what in these cases is used to be able to design play. This indirect design approach has been addressed in the concept of second order design.

Second Order Design

Second order design is a concept used to explain the indirect design situation of games, where not only the artefact or system, but rather the behaviour of the user who is using that artefact or system, is what is being created. The phrase seems to originate with Salen and Zimmerman (2004), and Zimmerman (2003), but these texts mention the concept only briefly and largely leave it with only a casual understanding. While the concept is used by researchers within the field (Björk and Holopainen, 2006; Fullerton et al., 2006; Kultima, 2009), it has not received critical attention and is rather treated as common, informal knowledge.

When Salen & Zimmerman in their book *Rules of Play* describe games as second order design (2004, p. 168), they argue that the designer designs the *prerequisites* of play, and not play in itself. The players then create the game when playing it, interpreting the rules of the designer, and the social situation required to play the game they want to play.

This idea of game design as designing the prerequisites, rather than the game in itself, can be found in several other authors focusing on the play

¹⁷ At least if they *do* want that experience, a player may play also for other reasons, as will be seen in 'Designing for Unexpected Engagement' (page 80).

activity, and is especially pertinent when discussing non-digital games, as seen in e.g. Stenros and Waern (2010).

Design Principle for Playful Engagement: FAtE

In supporting paper X, the FAtE model, or From Activity to Experience, is discussed and developed. The design principle has evolved tacitly throughout all the reported cases, and explicitly in the actual design considerations.

The model is mainly focused on game design, and meant for all types of games, not only screen-based digital games. The FAtE-model proposes when games are designed to focus on the player activity rather than on the artefact. Inspired by, among others, the MDA-framework's separation of viewing game design from three perspectives: mechanics, dynamics and aesthetics; as well as the idea of choices trickling from one level to another with design happening on all levels (Hunicke et al., 2004) – but unlike the MDA-model, with a focus on the player rather than on how the artefact affects the player – the FAtE-model separates the design into the thing the player does, *activities*; and what is felt, thought and learned, an *experience*.¹⁸ The FAtE model also makes it clear that neither the activity nor the experience can be directly designed. Rather the actual design implementation: building rules, system and artefacts, is to build the prerequisites of the activity. Design can *only* happen at another level than the experience and the activity, in the model called the *construct* level. The word construct is here used to point out that this is a broader concept than only physical artefacts, as such things as rules and systems can also be designed.

Or, in short, when designing a game you design a:

1. *Construct*, that in use encourages an...
2. ...*Activity*, that creates...
3. ...an Experience

It seems that even a small change to a game system can have a big effect on the experience of the game. As an example, this phenomenon has been discussed already by Costikyan (2002), in a comparison of the online multiplayer games *Ultima Online* (Garriott et al., 1997) and *EverQuest* (McQuaid et al., 1999), two similar games, but with one big difference: in *Ultima Online* you are allowed to kill other player characters. Costikyan discusses

¹⁸ As seen in the background section, this can be further separated into 'an experience' as the in-the-moment sensory input during playing, and 'experience' as processed knowledge added to previous knowledge within the player. In this thesis the separation is not clearly detailed, mostly because both seem possible to achieve. However 'an experience' could be seen as what happened in the play session, while 'experience' is what is gained when relating this to other experience (from both inside and outside of the game), comparable to the frame leakage discussed in the background (page 33).

how this one difference leads to greater differences between the two games: while EverQuest is a friendly environment with players talking, in Ultima Online there is a constant threat of being hunted down and killed whenever you were online, resulting in players banding together in small tight teams to protect one another.

Similarly to the MDA-framework (Hunicke et al., 2004), this model can provide an understanding of how changes on one level lead to changes in the others. With an awareness of there being multiple things happening on each level, we can pinpoint a situation in a design by looking at what gives rise to that situation (Construct→Activity, and Activity→Experience), and redesign the right parts. We can separate the play into parts and through awareness of the levels focus on a single part in our analysis (Construct, Activity, or Experience); and we can explicitly design at the construct level to elicit certain activities or experiences on the other levels (see *Figure 7* for a more visual explanation).

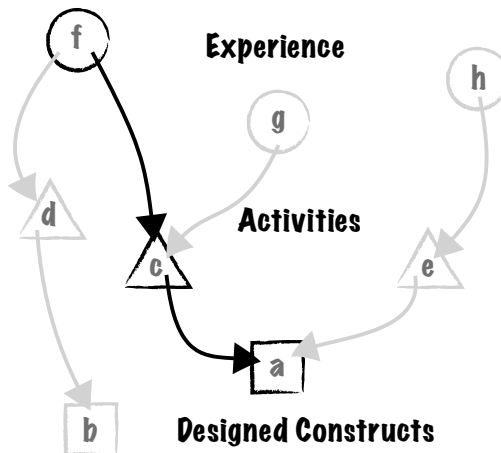


Figure 7. In this example one experience (f) stems from two activities (c, d), of which one (c) also influences another experience (g). That activity (c) stems from one construct (a), while the activity (d) stems from the construct (b), suggesting that changing any of these may affect the activities and by extension the experience (f).

As a practical example, taken from the *Busking Studies*, the activity of standing and watching a performance (c) stems from the performer’s designed construct of the stage (a). This activity conflicts with the everyday use of the street (d), as the street is designed for walking, and doing ‘walking on the street things’ (b). The street performance experience (f) stems from the activity of standing and watching the show (c), however, that experience is influenced also by the other street activities. In one recorded case a large dog walked by just behind the audience, something the performer had not designed but was a ‘normal street’-construct affecting the situation (b). This resulted in several of the audience members, instead of watching the show, changing their activity to watching the dog (d), affecting the experience of the whole situation (f).

For most reasonably complex games, it might not be possible to achieve a full understanding of the game from artefact to experience. But with this framework a situation can be isolated in ‘depth’, by focusing on only certain levels or interrelation, or in ‘width’, by focusing on only directly related constructs, activities, or experiences.

When observing how different constructs, activities and experiences relate to each other, we need to have an awareness of there being several connections, all relating to one another. While focusing on one of the five lenses, we need to take into consideration everything that it influences, and all that influence it as well. In practical terms, this is achieved through reflecting on the situation, one lens at a time. This enables us to analyse the situation through questions such as those in Table 1.

As noted in the design cases, there is not one explicit way of separating different activities from one another; nor are there explicit ways to separate different constructs or different experiences. The separation has been effected using other design tools and several have been discussed within the publications. Most of the focus has been on gameplay design patterns.

<p>The Experience: What the player feels and thinks.</p> <ul style="list-style-type: none"> • What is the created experience?
<p>From Activity to Experience: How the player interprets the activity.</p> <ul style="list-style-type: none"> • How does the activity create the experience? • Does the activity create any other experiences? • Are there any other activities that influence the experience?
<p>The Activity: What the player does.</p> <ul style="list-style-type: none"> • What is the created activity?
<p>From Construct to Activity: How the player interprets the construct.</p> <ul style="list-style-type: none"> • How does the construct create the experience? • Does the construct create any other experiences? • Are there any other constructs that influence the experience?
<p>The Designed Construct: Rules, system and artefacts designed and implemented.</p> <ul style="list-style-type: none"> • What is the designed construct?

Table 1: The five 'lenses', and analytical questions to ask in each lens.

Gameplay Design Patterns

Gameplay design patterns (Björk and Holopainen, 2006, 2005) are an ever growing collection of semi-generic design elements (Björk, 2013), related to one another, which through examples show how different design patterns can affect one another, and the players. The concepts are usually based on studying existing games, rather than designing new ones, and rely heavily on these design examples.

Inspired by patterns in other areas, such as architecture and computer programming (e.g. Alexander et al., 1977; Gamma et al., 1995), gameplay design patterns are made to be a design tool, useful for solving design issues. Unlike patterns in other areas however, they are not only for solving problems but used also as inspirational building blocks even before a problem arises. This is intermediate-level knowledge, and thereby applicable in many, but not all, game design situations.

As the patterns are closely related to both rules and the artefact, the focus is on interaction and activity, rather than the experience of the game. Because of this focus, and because gameplay design patterns suppose an engrossed, or engaged player and focus on the activity within the game, they can be seen as game focused rather than focused on the player. They succeed in documenting how to design, but fail in creating meaningful structures to differentiate between player behaviour and game mechanics. However, structuring gameplay design patterns into different kinds on different levels might be fruitful work that could make them useful as a tool for this separation. Similar examples of structuring game design elements in a hierarchical system can be found in e.g. Zagal et al. (2005), who take an ontological approach, but they, too, focus on game first and player activity second.

The gameplay design patterns are a deliberate attempt to address games as second order design. However, as with MDA they fall prey to a certain level of determinism. Documented patterns strive to describe relations between rules and game artefacts, and play activity. Hence, the focus is on the interaction with the system, rather than the players' actual activity within, and experience of, the system. While the framework succeeds in connecting designed structures to player activity, it fails to capture why and how players engage with the system, such as the experience of a social player with her focus both in and outside of the game.

Applying gameplay design patterns as the individual building blocks of the FAtE-model seems to be a fruitful way of building up a language of elements to apply. For this to be useful the patterns first need to be divided into constructs, activities, and experiences. In this, their current shape, this separation is not done, and the patterns are a combination of mainly constructs and activities, all described with an artefact focus.

Connections to the Cases

This design thinking is most clearly visible in the cases of *Passing On* and *Codename Heroes*, where it was used as a design tool, in a less developed format. Many of the ideas formed during the case study of *I'm Your Body*.

In *I'm Your Body*, the system was built to entice a certain type of answer, in the form of memories, feelings, and attitudes. Meanwhile the artistic expression also strived towards a freedom in how to use the tool. This decided form of experience together with the undecided activity gave rise to ques-

tions among the users on how to engage. In workshops a socially agreed system for how to use the tool developed, leading to unofficial 'rules'. These concerned e.g. the type of memories shared, and how they were reacted to (mostly childhood memories, and concerns about current development problems, being answered by comments about similar memories or feelings about other places).

When *Codename Heroes* was designed, the experience of spatial empowerment was explicit. The game was supposed to give you the feeling that you knew that you dared to, and could, 'take on the world'. When designing the game, the designers always returned to the question of how to get the players to feel this, and before the game was designed the type of activities the players needed to perform was decided upon. Players playing the game needed to move out into unknown places in a safe way, while themselves being able to set the limits for what they wanted or did not want to do. In these places the aim was for them to gain new power of some kind, to feel rewarded for going there. In the final game this was achieved through virtual messages that needed to be moved (physical) towards their destination, while the player also looked for magical artefacts hidden in different spots, containing virtual and physical clues and powers.

Another part of designing on an activity level, rather than designing directly for an experience, could be seen in the fact that the games target group of young women was deliberately not clearly expressed in *Codename Heroes*. The look and theme of the game did not (and did not intend to) give this away. Instead of trying to attract the audience through what would have been an attempt to design directly for experience,¹⁹ the game designers took the longer route of designing the game rules to elicit behaviours popular among many young girls, and empower them.

In the other design example where the model was tried out, *Passing On*, the idea was to design so as to create a slow paced activity and make the player interact, think and look around. To create this kind of experience, the key was to make the activity slower. This was achieved by designing a system with a slow and ineffective communication, thus forcing the play speed to slow down, as the players could not continue until they had understood one another. This was a communication system that no player would have accepted in an everyday situation, but due to playful engagement they accepted and used the system for its intended purpose.

¹⁹ For example, by choosing colours and motifs traditionally perceived as 'for girls, sometimes labelled as 'pink design' (Cassell and Jenkins, 2000).

Enticing Playful Engagement

(Paper II, III. Supporting paper VIII)

According to Huizinga (1949), all play is voluntary. If you are forced to play, the thing you do is not play but is merely an imitation of it. More recently this was expressed by Stenros (2015a) as a separation between play, an activity, and being playful, an attitude. This would mean that designing playful activities is hard, not to say impossible, as you cannot make players play them, at least not playfully. If it is voluntary, this must be their own choice.

However, players and participants do play. And, as shown in the previous chapter, they often play what the designer of the game or playful activity sets out to make them play.

If a designer wants to, but can't force, someone to be playful, they still need an approach to make players play, and want to play. In an ordinary game this choice to play happens as the game is started. A deck of cards is brought forth, a computer program is run etc. In non-standard playful activities, such as most current games in public settings, this might not be as obvious.

For a voluntary player to be able to be voluntary, there needs to be awareness of that possibility. The potential player needs to understand, or learn to understand, that there is a possibility to join in, and they need to know how to code the situation as playful. If the form of the game is not known to the player, that can also mean that the player does not have the previous knowledge needed to interpret the situation as a chance for play.

Therefore, especially in non-standard playful activities, the design of the invitation is important. In a traditional game this can be as simple as someone asking 'do you want to play this game?', or from a design perspective, for the product to be placed in the shelf of games in the store. In other types of games and playful activities the invitation might need to look different. This invitation, however it looks, needs to create attention and interest, as well as an understanding of how to engage, and to create a way of framing the situation as play.

Design Principle: Invite Play through Constructs that Encourage Playful Engagement

Designing games and playful activities involves the task of building artefacts, places, and systems that people *want* to engage in playfully. Often it is tacitly assumed that people want to engage, and rightfully so, as when people go to the shelf to bring out a game they usually do it with the intent of playing that game. However, if the game, or playful activity, is not obvious, that playful engagement cannot be taken for granted.

When it is less clear how to engage playfully, the design of the *invitation to play* becomes important. This can be the case when the type of play is previously unknown to the player and the player has not seen that type of game before, when the invitation to play is ambiguous, as in pervasive games, or it is unclear how to reinterpret the activity as playful, as in brink play.

This thesis argues that when designing public play, the first encounter is an important factor to design for, and especially the first encounter for the first potential player. If the design is of a type that it is not obvious how to interact with, for both that person and for others in the surroundings, engaging in the activity may be uncomfortable, as the situation is no longer what it 'ought to be' (Goffman, 1956). At this point there is a risk that the potential player chooses not to try, but instead continues with 'the normal'.

However, this is not an encouragement to remove the uncomfortable aspect, but rather to help the potential player to cope with it. Throughout the cases studied, this issue has been dealt with in several ways. The following is a compilation of those approaches:

- **Create interest:** Especially seen in the *Busking Studies* case. The performers created an initial interest, or at least curiosity, by deliberately behaving out of the ordinary, without forcing the audience to respond. As examples, loud sounds, often musical, were played; performers danced, talked loudly and performed small visual and audial magic tricks.
- **Invite the audience to playful re-keying:** By giving the participants a hint as to how to interpret the situation, the designer can help them towards a playful rekeying of it. In the *Busking Studies* case, this role was played by the performers laying out a rope on the ground. If the audience have seen a street performance before they know to treat that rope as the edge of a stage. Even if they have never seen a show before, that border might help them to understand this as a stage, as a connection can be made to other stages. In the *DigiFys* case, this was achieved by designing play nodes to resemble artefacts from similar play activities. A funnel in a playground is meant to be spoken into; a big button will be pressed etc. This could be compared to a playful approach to affordances (Norman, 1988), but with less focus on individual interactions and more focus on the activity at large.
- **Ease people in:** By the participants being given a chance to connect indirectly, they can find ways to come to grips with the unease. In the *Busking Studies* case this could be seen in the performers not socially connecting to all audience members. At the outskirts of the audience, people were watching the show while doing other things, such as window-shopping in a nearby store. As

the show went on, the focus on the show gradually increased. In a way this was also used in the case of *Codename Heroes*, where the participants first signed up, and got introduced to the game by the usual classic means, but then, as they went out to play, the first tasks were simpler and over time they increased in their level of ‘out of the ordinary’.

- **People attract people:** Once the first people get involved it seems easier for others to join, and as more people get involved the threshold decreases further. It seems that as others engage, what the situation ‘ought to be’ gets closer to being involved. This could be seen in both the *Busking Studies* and the *DigiFys* cases, where gaining the first audience or players could take time, but as soon as someone started to interact, others followed. In the case of *Busking Studies*, the performers even have a term for this, ‘catching an anchor’. This thesis argues that the main design focus in attracting people to playful activities should lie before this point, although that does not mean it can be ignored at later stages.

The latter two points can be compared to the ‘honeypot effect’ found in work with large public displays, and the peripheral awareness of part of the audience, who show interest in what is going on, and especially in what others are doing, while themselves staying out of the actual activity (Brignull and Rogers, 2003). The main difference between this thesis and the honeypot effect lies in the fact that where the honeypot mainly observes the effect, this thesis takes a stance in deliberately designing with this in mind, overcoming its negative aspects, and using its positive.

Where voluntary engagement in the activity is concerned, it seems to be possible to separate it into two main stages to design for. As seen *inter alia* in the *Busking Studies* case, the performer first works towards creating an *engagement*, a playful intent, a mental state of wanting to join. Once this is created, the engagement can be turned into *commitment*, actual investment and interest in the activity, a willingness to continue playing, or caring for the experience.

Connections to the Cases

In the design cases, enticing engagement has been dealt with differently, but for the main part the focus has been on creating interest and making it possible to join all throughout the game.

Among the design cases, *Passing On* may be the game most easily understood as a classic game. Even though the activities within the game may be unlike many other games players have played, it is understood as a game. The players join it by picking up the phone, and starting the application, and then start playing the game. In this case, the question of how people were

supposed to understand that it was a game they would be able to play was never addressed. In the tests it was a simple task of asking ‘do you want to try the game?’ As the game was understood, or in Goffman’s (1974) terms *framed* as a game, the understanding was there and the players never had to question how to enter into the magic circle.

What might be interesting to note is that even though the game was played in a public setting, over a large area, and near other people who were not playing, in interviews the players did not say they felt as though they were doing something other than playing a game. There were no comments on the game’s pervasive elements. The setting of course influences this, since public place games were the focus. But the design and presentation coded the game as a game, rather than presenting it as something different, and this might have helped players to themselves code it as a game or play activity, rather than some form of experience in the public setting.

Codename Heroes has a design aesthetic close to the early Alternate Reality Games (ARGs).²⁰ However, where these games often used a ‘this is not a game’, or TINAG, aesthetic, disguising the game as real, only showing vaguely that something was out of the ordinary, *Codename Heroes* clearly stated itself to be a game that you could join. However, even the most hardcore ARGs, disguising themselves as ‘real’, have clues to their being games. In these clues, in ARG circles called ‘rabbit holes’, after the hole the White Rabbit went into and Alice followed in *Alice in Wonderland* (Carroll, 1869),²¹ the game is usually flagged as a game, or at least as something out of the ordinary, giving a hint that it is possible to join. This is an invitation, however, as ARGs are still something most people are not used to, which means most people have not learned to see this invitation (see *Different Forms of Experience*, p. 39), hence it was avoided in *Codename Heroes*.

A less successful, yet knowledge creating experience, was found in *I’m Your Body*. For the involved users, possible playful and engaging material existed in the digital part of the case. Even though this material was used to inspire physical installations in the locations it was played in, these installations had no obvious invitation to play in the digital application, making it hard to choose to start using the app. Once there were users, invited through the workshops rather than the physical sculptures, the participants found ways to use the app and give it meaning, but without the explicit and obvious invitation this did not continue to happen outside of the workshops.

The case which worked most explicitly with invitations is *Busking Studies*, where the focus was on the ‘design’ of the audience. This might not ob-

²⁰ See e.g. http://www.argology.org/_what-is-an-arg/, <http://www.argn.com/>, https://en.wikipedia.org/wiki/Alternate_reality_game

²¹ Or, judging from the release date and when the first ARGs started, the real reason might in fact be the movie *The Matrix* (Wachowski and Wachowski, 1999), where the protagonist Neo gets asked to follow the White Rabbit, and later gets the choice to join, and see “how deep the rabbit-hole goes”, referencing Carroll.

viously be about playfulness, as the audience is to a large extent ‘just standing there’, but they are actively engaging in a situation where they are watching, applauding and sometimes even talking back.

The performers in the street is a situation out of the ordinary, and as a passer-by it might not be obvious how to behave, as you do not know the situation, and you are used to framing the street as a street, not as a stage. Goffman said that the street in this situation was ‘not what it ought to be’ (Goffman, 1956), and this situation, where what it ought to be does not fit with how it is, may lead to embarrassment. For the performers the design of the audience is a matter of turning this situation into a situation where what ought to be is to be part of that audience. In interviews the performers even explicitly referred to this, saying that for every performance they need to teach the audience how to be an audience. They do this through invitations, encouraging people to stop and watch. Frequently, this is done through sounds (also seen by Gardair (2013)), by letting people take their time before asking them to join, and sometimes through direct interaction (even though this also seems to scare away many people who are not that engaged). Visually, the performance area is often marked out by a rope; with the rope meant to encourage people to come up to the rope and stand there watching. In several interviews the performers pointed out that the rope was there to bring people closer, rather than to keep them out.

In the *DigiFys* case, digitally enhanced ‘play tools’ were placed in the environment in a playground connected to a school. In observations of how these play tools were detected, the sounds from the devices played an important role, as they made sounds as they were discovered, reacted to, and explored. Once the play tools were discovered, exploration and play took over, almost always with groups of children. Also, if other children were playing, this seemed to attract more children, similarly to the way in which the existence of an audience attracted a larger audience in the *Busking Studies* case. One more observation was how communication to a place was almost always answered. If children at one communication node, placed in one place, called up another node, the children at that location answered. This behaviour could be seen even in cases where they clearly were not interested in playing telephone, as in one case where a child, while playing another game, repeatedly came back to the communication node only to tell the people calling to shut up and stop doing that.

Designing for Unexpected Engagement

(Paper I)

If we treat games as second order design (Salen and Zimmerman, 2004, p. 168), designers do not design play, they design *prerequisites* of play. The players then create the game when playing it, interpreting the rules of the designer. However, it is not a given that the players will follow the set rules; they are free to treat the game as they wish, changing, breaking, and reinterpreting the ideas of the designer.

In many current game design models, especially in the computer game area, an immersed or engrossed player, working in conjunction with the designer, is taken for granted. With this design style, valuing immersion (Ermi and Mäyrä, 2005), or flow (Csikszentmihályi, 2008), only one type of play engagement is in focus. For this type of engagement the models works well. From the theoretical stance in this thesis, regarding the magic circle as a social and mental contract, a similar engagement can also be addressed, mainly through the idea of frame engrossment (Goffman, 1974). The approach can be useful for understanding a situation such as where a constructed frame takes on a natural meaning, e.g. the money in Monopoly (Darrow and Parker, 1933) temporarily starting to mean something ‘real’ for the player.

However, this way of studying games or playful activities takes for granted that the player understands what the designer’s intended experience or activity is, that the player actually wants to have that intended experience, and that the player will follow what the designer has set out to make for them. If we look at child’s play, as well as other situations, even in games with strict rules, we find there are situations when the rules bend and change, sometimes making a better game, sometimes breaking the game. In these situations, even though there is no immersion, flow, or engrossment. there is still playful engagement with the game.

Design Principle: Four Playful Approaches to the Construct

Even though all the cases studied had vagueness designed into them, it is not until recently, in paper I, that a structure was proposed for *how* this ‘unstructured’ engagement works. In several instances, in the cases studied as well as in observed play at large, there are situations where the players do engage, but not in the way intended by the performer. In studies of different possible ways of engaging, four modes of engagement could be found. By being aware of these, the designer can also design so as to give users a way of ‘breaking’ the system, and using it in the wrong, or at least an unexpected, way. The four modes are:

- **Conformant:** Conformant play represents the ‘normal’ way of engaging, where the player follows the rules set up by the designer and performs the intended activity together with the other players. This includes what Suits (2005) described as “the voluntary attempt to overcome unnecessary obstacles”, but it is broader in that it covers all playful activities, not only playing games. When playing a role-playing game, and accepting a strange request by the game master, since you know it will speed the story on, you are conforming to the storytelling. When a child uses a tractor to carry sand in the sandbox, they are conforming to what the toy represents.
- **Explorative:** Explorative play is following the rules as they are written, but without a striving to win, or to ‘go along’ with the group, but rather trying to see what other possibilities are in the construct. This form of engagement relates to the open-ended play that Bekker, de Valk and others from their group have designed for (Bekker et al., 2010; de Valk et al., 2012). It captures the mode of engagement that arises when a player (or a group of players) stays within the structure-framing play, but either does not fully understand the intended experience or deliberately abandons it. This can lead to frictions in the game group when some people are conforming and others are exploring, as even though the written formal rules are not broken, the way those rules are played differ. Explorative play can be seen in board games when players are trying out the rules, as well as in roaming the land, to see what is there in online open worlds such as *World of Warcraft* (Pardo et al., 2004), or in a child avoiding stepping on the cracks in the pavement.
- **Creative:** Creative play explicitly departs from the intended use, and maybe also the goal, but in cooperation, or at least discussion with, the co-players, striving to change the construct into something else. In board games this is seen in ‘house rules’, and own ways of playing in that social circle. When the child who avoids stepping on cracks tries to convince others they should also not do so since the cracks are lava, the child is moving into creative use of the pavement construct.
- **Transgressive:** Transgressive play is breaking the rules, explicitly or inexplicitly, without a social understanding in the group, either for the purpose of own winning (cheating) or to deliberately ‘turn the situation ugly’ (‘trolling’). Even this behaviour can be designed for. As an example, Wilson (2011) designed and discussed the computer game *B.U.T.T.O.N.* (Deneken et al., 2010) with vague rules that needed to be interpreted socially outside of the computer, giving rise to uncertainties as to how this should be

done, and resulting in the players trying to see how much they could cheat without the others stopping them.

These four types of play acknowledge that design happens both with the designer and in the social negotiations between the players. It also acknowledges that the players have an understanding of, and a communication with, the designer, through what this thesis has called the ‘designed construct’.²² The designer can be ‘heard’ in rules, in a systems programming, in the physical form of an artefact and so on. To acknowledge this, the paper refers to both designer and players as ‘the designer collective’, as they are all together in designing each play session.

These four types of play are mapped in two dimensions, the approach to the construct and the approach to the design collective.

- **Approach to the designed construct** refers to how the player treats the (often, but not always, written) rules. Either the player plays *within* the rules, not questioning them, or the player plays *about* the rules, giving them a focus in the approach to play, exploring what can be done with (or without) them. This is close to what Stenros (2015b) referred to as playing the game versus playing the structure.
- **Approach to the designer collective** refers to the approach to especially the other players, but also the designer (more obvious in a one player game). Either the player *agrees* with the design collective, and there is a common view on the rules. This does not mean that all the players need to agree that they are the ‘right’ rules, but they are aware of the current way of playing. In the same way a non-present designer need not give approval of the change, but everyone involved in the game session is aware they are changing the rules. Or the design collective *disagrees*, meaning they do not have a common understanding of how the game or playful activity should be played.

The four modes of engagement, mapped along the two dimensions, can be seen in *Figure 8*.

²² In the article ‘construct’ is referred to as ‘structure’, partly in order to use a similar language as some of the previous authors the article comments on. The same way in which the FATÉ-framework uses the word ‘construct’ it is also used here. The reason for this choice is that it connotes a broader spectrum, making it clearer that it refers to all things that are possible to design, including rules, computer systems, physical artefacts etc.

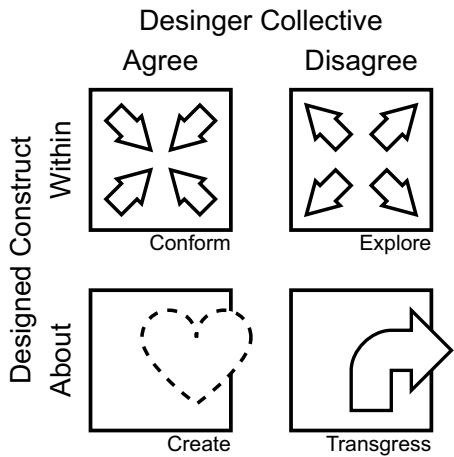


Figure 8. Four modes of engagement mapped along two dimensions.

Connections to the Cases: Enjoying and Getting the Experience

Throughout all the cases, vagueness in use was deliberately designed. This, together with a design open for all players to add their own content, was meant to encourage creative and inquisitive use. In presentations by the author this has often been called co-creativity, to differentiate it from ‘user created content’, which connotes the user in a more passive role, being ‘used’ to create things. Co-creativity is intended rather to mean both cooperation and the creation of new valuable creative content, shared directly amongst users. This was originally an aesthetic choice, but became more central to the exploration of playful engagement over time.

Based on the design ideals from the artists in the project, *I'm Your Body* did not have clear rules on how to use the application. Instead, the rules were worked out with the users in workshops during its use, leading to many different and varied ways of using the application. The case study ran before the work on different playful approaches was conducted, however. Looking back at the case, connections between the model and the case are clearly visible. *I'm Your Body's* digital part had a deliberately vague system which was intended to force an explorative approach, and the play happening in the tool did indeed create explorative play, with users putting all kind of information in the system, and testing to see how it evolved. However, with everyone in this explorative mode, and with such an open system, the response from the system was low, and it took time before an understanding of the systems' possibilities evolved. As it evolved, mostly in workshops, social rules were built, and the activity started to reach conformant play, with some types of messaging becoming the most usual. This spread also to other users, who learned the social rules by reading what others had written. This movement between forms of engagement is only touched upon in the article, and how these movements are shaped would be an interesting area for further

exploration. With such an open system, and new users showing up without previous knowledge, other uses continued to appear even after this happened, both explorative, testing the limits of the system, and creative, using the system for other purposes, such as one person using it to write a place-based diary.

Even transgressive play could be seen in *I'm Your Body*, if we step out of the phone app and into the physical sculptures. The sculptures were created with the permission of the landowner and in that way 'conformed to the system'. However, when placed in the environment several of them were vandalised. The artist could have treated this according to the official system of reporting to the local authorities and so on, but instead chose to treat it as a form of communication and she herself responded by changing and shaping the sculptures in the direction that the vandalism suggested. In this way, by transgressing the system (both vandal and artist), the act was turned from destroying and reporting, into a form of artistic communication about feelings related to the place.

In *Passing On* the final goal of the game was explicit, and therefore the endeavour was explicit. The design limited possible communication, and made communicating despite difficulties into the core activity of the game. It did not decide *how* this communication should be done, or how it should be used, leaving this to the players. In this way the players needed to learn to communicate, and in this way the gameplay became explorative. At first the players needed to get to know the system, through exploration of what was possible. Even after this, since the solutions for communication were not built in, but instead socially created between the users, the game continued to be explorative, with the two players each trying to learn how the other one communicated.

In the *Busking Studies* case, the performer wants the audience to conform to the activity of being an audience (including watching, applauding, and maybe mostly paying). However, as the performers themselves are transgressing the (non-play) rules, they first need to convince the audience to do the same, and to start to watch. The situation becomes a balancing act between conformance and transgression, with the performer and the audience in a cooperative design of the situation, with the performer in a leading role, but completely dependent on the audience to conform to the performer's view of reality, while transgressing the everyday situation of walking on a street. If the performer can't make them transgress, they won't stop to watch. And if the performer can't get them to conform to being an audience, they might continue transgressing, disturbing the show with 'heckling', or going back to their previous activity of walking.

The prototypes tested in playgrounds in the *DigiFys* case were also deliberately designed for open use. They had no goal, and no reason. They gave feedback for certain activities, but did not give this feedback a certain meaning. This was a deliberate design for explorative and creative play, moving

the meaning-making to the users, giving them the chance to make up their own mind as to what it meant, and whether there was a way of winning. So far the test has only been relatively short, the longest over one school week, and the main form of play has been explorative, with the children testing the equipment, disregarding the (deliberately hidden) designer meaning and finding their own reasons for the system, such as using the chute as a slide; and creative, with the children building their own meanings together, using what is in the artefact to create their own games, such as when the chute is turned into a piece of lab equipment, shooting transformation rays onto objects and other people.

Conclusion

This thesis has set out to identify and model a way of constructing a player activity in order to create a desired player experience, through harnessing playful engagement, and more specifically to do this in public settings. The design examples are about playful activities, rather than ‘games’, and all are in different kinds of public settings, where outsiders are able to see, and react, to the play.

Finally, three concepts, or design tools, have been proposed. The concepts have discussed playful engagement and second order design; the problems that arise in designing for voluntary engagement, and how to design invitations; and finally how to deal with engagement when users approach the design from outside of the obvious approach of following of rules.

The work took a game design research approach, based on knowledge gained mainly from game studies and interaction design. The results have been validated through a theoretical background and empirically through a number of design examples.

Significance, Relevance and Limitations

Zimmerman et al. (2007) proposed four qualities needed to assess the contributions from design research: documented process, significant invention, relevance and extensibility. Höök & Löwgren (2012) propose the validation design concepts both ‘horizontally’, by relating to similar concepts; and ‘vertically’, by finding the concept present in multiple design instances; and finally triangulating the knowledge through reflection, articulation and abstraction.

The knowledge discussed in this thesis has been developed during multiple design projects, all with somewhat different views, goals, people, and research approaches. The differences between views could create problems in relating the projects to one another in a sensible way, and also pose problems for readers unless the ideas that lie behind each project are clearly stated. I argue that the diversity of the projects is also their strength, in that the different occurrences of similar problems provide multiple views. This constitutes a form of triangulation, and contributes to Höök & Löwgren’s horizontal validation. Another way this thesis triangulates is through multiple

theoretical perspectives from several domains. This correlates to Höök & Löwgren's vertical validation.

A common way of judging research is through its falsifiability. This may be hard in intermediate level knowledge, as it does not set out to be universally true, and is one reason to instead judge it on its significance, relevance and extensibility (Zimmerman et al., 2007). The reoccurrence of design concepts indicates that they are significant, relevant and extensible even outside the scope of the thesis cases. In this thesis, are several examples from outside of its own cases. Further, the author has recently begun to use these concepts in classroom settings and design workshops, where others have successfully used them for their designs. However, this is still in an early process, and continued use will better show its relevance for design. In some of the cases—especially *I'm Your Body*—people did not engage in the intended way. The fact that this could be explained through the concepts further points to their relevance for design of playful engagement.

As concerns the documentation of case studies, this thesis is restricted to presenting the documentation that is included in the published articles. These articles typically present only a few perspectives on a case, and as such they fail to fully represent the rich data that has been gathered from each of them. This is a necessary compromise as the thesis aims to present broad concepts rather than a deep analysis of the single case use.

The knowledge is treated as 'intermediate level knowledge', and as design knowledge. That means that the reader needs to be aware that the knowledge may be applicable in some, but not all, related design cases, and this applicability needs to be addressed by an informed designer with a thorough understanding of that individual case. However, the broad horizontal and vertical grounding of this work speaks towards the design concepts being relevant and transferable within a large portion of design for play.

A Political/Activist Approach to Design Research

This thesis is based on design research, and as such it is concerned first and foremost not with how things *are*, but rather with how they *ought to be* (Simon, 1996). This is far from being objective research. The researcher is personally involved, and the executed research will affect the world around it; if it didn't, it would not be good research. Similar views on research can be found, for example, in action research. There, this is treated as political, and connections can also be drawn to the way in which a constructivist view on social science admits an understanding of the world to be constructed and an understanding of the world to be created in each individual.

With this political interventionist perspective on research, the question of what to change, and how to change it, becomes part of the ethical considerations that need to be made before, as well as during, the research. From this

perspective, design for voluntary engagement can be seen as intentional disruptive democracy, where the designer's ideas are presented to the users. Meanwhile, these ideas are, of course, also influenced by other sources, such as cooperative partners and funding; in this case companies, municipalities, and several other organizations. Some of these projects had explicit political design goals. Both *I'm Your Body* and *Codename Heroes* are described as having been designed to create empowerment in the player group, but all held agendas—even if not explicit—and even if only expressed through the designers subconscious choices.

The author strongly believes in the cases' goals as a striving towards effecting positive change in the individual player, and by extension, society at large. However, judging whether it was the right thing to do must ultimately be the decision of the individual reader of this work, and of the players of the games.

Now, when you are aware, go back and read the thesis all over again...

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