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ToDiGRA

Transactions of the Digital Games Research Association The Nordic DiGRA Special Issue

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Introduction: Exploring Nordic Game Research

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Nordic DiGRA 2012 Conference was held at the University of Tampere on June 6-8, 2012. In this Special Issue of the Transactions of DiGRA journal, we present a selection of the best papers of that conference.

The study of games, players and related phenomena has increased both in its academic and geographical range during the last decade. The Nordic DiGRA 2012 conference aimed to bring together Nordic and non-Nordic games researchers to discuss the cultural and social context of games and play from multiple perspectives. 2012 marked the tenth anniversary of the Tampere Computer Games and Digital Cultures (CGDC 2002) conference, which also provided an opportunity to reflect on the last decade of development in Nordic game studies, as well as its wider international scope.

Out of the 47 submissions, there were 24 papers selected to the conference after a double blind review of full papers. The article by Simo

Järvelä & al., "A Practical Guide to Using Digital Games as an Experiment Stimulus," received the Nordic DiGRA 2012 Best Paper Award. In addition, there were two panels, one round table discussion, and a special track (not subjected to the review process) on gambling studies. The majority of papers came from the Nordic countries, but altogether 15 nationalities were present in the list of speakers. Nick Montfort (USA), Espen Aarseth (Norway/Denmark), Minna Ruckenstein (Finland), and Kristine Jørgensen (Norway) delivered the keynotes by invitation. Out of the track themes, most popular were "design of games," "social player studies," "games as media and communication," and "critical approaches to game studies."

The collection of articles presented here is based on the conference review process; they represent the strongest contributions of the conference. In addition, there has been a rigorous and thorough review process during journal publication. Since the conference presentations, articles have undergone substantial revisions. We would like to express our gratitude for the conference reviewers, ToDiGRA journal reviewers, and the ToDiGRA editors, for their invaluable efforts in reviewing the papers. Our special thanks to the authors who have put much effort in writing and rewriting their articles to meet the ToDiGRA format and standards.

The first article, by Jaakko Stenros, reviews the history of the concept of the magic circle, its criticism and other metaphors that have been used to capture the zone of play such as world, frame, bubble, net or attitude. The various conceptions of social, mental and cultural borders are reviewed and criticisms toward the concept of magic circle are addressed. As a result, a model is presented in which the psychological bubble of playfulness, the social contract of the magic circle and the cultural game forms are separated.

In their article "Player Types: A Meta-synthesis" Hamari and Tu-

unanen investigate the ways in which players have been typified in research literature. Their aim is to distinguish typologies relevant to researchers and for designing and marketing games. By synthesizing the results of various studies and comparing them, they draw implications for further studies. The previous works on player typologies are further analyzed using a concept-centric approach and synthesized according to common and repeating factors in the previous studies. As a result the player types in previous literature are synthesized into seven primary dimensions: intensity, achievement, exploration, sociability, domination, immersion and in-game demographics.

Linderoth, Björk and Olsson, in "Should I Stay or Should I Go? A Study of Pick Up Groups in *Left 4 Dead 2*," report an autoethnographic study of pick up groups (groups formed organically by players at the time of play) in the game *Left 4 Dead 2*. The study focuses on pick up groups as social arenas and the role of game design in structuring interaction. They analyze issues such as inclusion and exclusion, social position and the relation between the game context and the players' "wider worlds." The study tentatively suggests that positive perceptions of other players' out-of-game identity can save a game from falling apart, yet negative perceptions of other players' values and out-of-game identities pose no threat to the game activity.

"Player-reported Impediments to Game-based Learning," by Harvianen, Lainema and Saarinen, addresses the question of how games function as learning tools from the perspective of player-stated problems. It is based on interviews and essays, collected from university students who reported problems dealing with unrealistic levels of trust and competitive play. These players searched for the logic in the game as an artifact instead of considering decision alternatives applicable to real-world situations. The main source of difficulty appeared to be that for many participants, games are framed as an activity that is to be done competitively. Along with reporting the impediments, the article

discusses potential solutions.

Digital games have proved useful as a stimulus in research settings. "A Practical Guide to Using Digital Games as an Experiment Stimulus," by Järvelä, Ekman, Kivikangas and Ravaja, examines the advantages and challenges of using games in experimental research with particular focus on strict stimulus control in matching and regulating task type, data segmentation and event coding; compatibility between participants; and planning and conducting data collection. They provide a breakdown of the steps necessary for using a digital game in experimental studies and offer a checklist for researchers to account for the reliability and validity of the experiments. The article also provides a case study illustrating how their considerations apply in practice.

Digital gameplay is now firmly embedded in everyday practices in many Scandinavian homes. Enevold's article "Digital Materialities and Family Practices: the Gendered, Practical, Aesthetical and Technological Domestication of Play" deals with the constitution of gaming practices in families, focusing especially on the material objects essential to play and their role in everyday life. Enevold uses ethnographic methods and anthropological practice theory to attend to the domestic spaces of leisure and play, the home environment, in which a large part of today's practices of playing digital games take place. She focuses on the staging of material artifacts of gaming and demonstrates how everyday practices order space-time and artifacts while domesticating play and conditioning performances of family, gender and gaming. The article also provides a history of the domestication of play.

The Nordic DiGRA 2012 Conference also served as the closing event for "The Creation of Game Cultures - A Case of Finland," a major research project funded by the Academy of Finland and carried out by a consortium of partners from the Universities of Tampere, Turku and Jyväskylä. The project resulted in an improved understanding of playing and gaming habits in Finland. Issues such as how much traditional

and digital games are played in Finland, who are the primary players of various game types, and what are the main types of playing activity have been investigated in the Player Barometer survey series initiated in 2009 as part of the project. According to the latest Player Barometer almost all Finns (98%) play at least some form of game (traditional or digital) sometimes, and most of them (89%) could be classified as “active players,” meaning that they reported playing at least one form of game at least once a month. When digital games are more closely scrutinized, active digital gamers have already grown to be majority in Finland (54%). In terms of age, the average digital gamer continues to approach the average of entire population; in our 2011 findings, the average age of a digital game player was 37 years (for more details, see Karvinen & Mäyrä 2011).

The project also resulted in the creation of even more multidisciplinary dialogue in game studies, especially bridging the gaps between gambling and entertainment play as well as between digital and non-digital game play. This is important especially in light of how popular gambling (or ‘money gaming’) is in Finland: according to our survey active gamblers form a majority (55%) of the Finns.

In the Nordic countries, the role of games is not fixed but rather changing dynamically. In Finland, as we closely examined the evidence of our three-year survey data, we noticed that the oldest age group (70-75 years) had increased their game playing in statistically significant manner when all forms of games were considered. Active players constituted 75% of this age group in the 2009 sample, but in 2011 this figure had risen to 91%. Clearly either the older generation is becoming more interested in games, or they have started to report their game playing more openly - both explanations are important. We also found that digital game playing had increased from 2009 to 2011. In 2009 there were 51% of the sample qualified as active digital game players, whereas in 2011, active gamers increased to 56% of the

sampled population. These findings have also been incorporated in a recent international comparison between gaming habits in various countries (Quandt, Chen, Mäyrä & van Looy 2013).

Topics such as the merging of the social functionalities of gambling and entertainment play, mapping out of the Nordic LARP scene, “social games,” games as part of history culture, the relation of digital play to digital sports, archival and museum presentation of games and related artifacts, game realism, game narratives, and games as signifying structures were addressed in the project. This list, together with the wide variety of topics included in the Nordic DiGRA 2012 Conference (conference papers are available in the DiGRA Digital Library) give a good sense of the richness and activity in game studies in the Nordic region. We offer this selection of articles as a window to that lively scene.

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Digital Materialities and Family Practices: The Gendered, Practical, Aesthetical and Technological Domestication of Play

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INTRODUCTION

Digital gameplay is now firmly embedded in everyday practices in many Scandinavian homes. This paper deals with the constitution of such practices by taking a closer look at the choreographing of the material objects essential to play and their role in the “design of everyday life” (Shove et al. 2007). Previous studies have looked at how players’ gaming habits are tied up with time restrictions and time allowances that to a large extent are gendered (Enevold & Hagström 2008; Enevold & Hagström 2009). Here I turn to the domestic spaces of play, scrutinizing the home environment, in which the large part of today’s playing of digital games takes place. Thus, instead of looking at how gaming¹ is moving *out* of the bedrooms and into big LAN-landscapes (Taylor & Witkowski 2010), this paper turns to the “domestication of play,” and thus goes *back* inside the house, to see what it is doing to families and what families do with it. Domestication is understood as the process which makes play an everyday practice of the domestic realm and “bends” it to the wills and norms of the family. This article also investigates influence in the opposite direction: how play conditions domestic practices.

This paper is *not* about player motivation or how players game. Nor is it a theoretical ludotopic inquiry closely connected to game design (Waltz 2010; von Borries et al 2007). It shares some resemblance to Gidding’s “microethnographic” work (2009) but is not focused on the

gameplay “event.” If I were to use the terminology in Giddings’s study of the interrelation and co-constitution of gameplay with an emphasis on eradicating the distinction subject/object, perhaps this study would be an examination of the home-event, or possibly the family-event. As adamant as Giddings is about not separating screen/player or subject/object, I am adamant about not separating play/home as co-constitutive of everyday life and the everyday practice and performance of family and home, gender and gaming.

Giddings’s study brings to mind the application of Jon Dovey and Helen Kennedy’s discussions of technicity (Dovey & Kennedy 2006; Kennedy & Dovey 2007), which emphasizes the connection between human subjectivity and technology. Here, although I still aspire to identify “relationships between technology, agency and aesthetics in everyday technoculture” (Giddings, 2009:149) this paper has both a narrower and broader material focus; on the one hand, it looks to game devices only, not specific games or gameplay, and traces their placement and trajectories around domestic space over time. On the other hand, this article pays attention to the design of the *wider* material setting of everyday family life –furniture, outlets, and interior decorating. Gaming is thus understood as merely one practice² out of many depending on and affecting (or “colluding with” to use Giddings (2009) terminology³) other domestic materialities and practices. In short, using cultural analysis, ethnography, and practice theory whose theoretical origins and influences are explained below, I focus on material, *not* virtual, artifacts of gaming, specifically screens, consoles, and hand-held devices essential to play. I examine their locations and movements around the house, practices that “domesticate” play and influence playing practices and family performances. Domesticating digital materialities, gaming objects and, consequently, play, is integral to the design of everyday life. The empirical tales show how this takes place, and, in the process, a history of the domestication of play unfolds.

Domestication as used here feeds into a body of work that deals with the adoption and appropriation of technology of households (see for example Silverstone, Hirsch & Morley 1992; Silverstone & Hirsch 1992; Lie & Sørensen 1996; Silverstone & Haddon 1996; Pantzar 1997). This article adds to this so-called “first wave” of domestication theory by investigating digital games as a key contemporary digital culture and information technology. In domestication theory, households are seen as significant economic and socio-cultural nodes of consumption and participation in the meaning making of media and information technology. This article does not propose a model for household domestication (see for example the four-phase model in Silverstone, Hirsch & Morley 1992 or Mansell & Silverstone 1996; or the domestication process as “a set of trials” in Lehtonen 2003), but provides cases from ethnographic field studies rather than a media or discourse analysis (see for example Routarinne 2005) of domestication. As in the above-mentioned theories of domestication, the end-users are in focus here. This article specifically underlines the role of these users by connecting domestication theory to practice theory, outlined in the following section.

DESIGNING EVERYDAY LIFE & PRACTICE THEORY

The “stuff” (Miller 2009), the material consumer objects, that we surround ourselves with and relate to in our homes can be discerned as vital to many different everyday practices. I have chosen here the staging of the practices of play via material gaming objects and their relation to the practice of family, which in this paper are understood as mutually constitutive. To study domestic spaces and the commonplace arranging of objects means to align with social science and anthropological research interested in material culture and its role in shaping everyday life. The discussion of the significance of objects spoken of in terms of their agency pertains to a long-standing tradition of theorizing in which the issue has been to determine whether “structure” or “individual agents” or combinations thereof make up the fabric of the social.

To the research efforts that attempt to explain social reality by combining structure and agents belong science and technology studies that center on the significance of artifacts (Latour 1992; Bijker & Law 1992) and how such objects are integral to shaping “the socialness” of daily life (Latour 2000). Like Shove et al.’s (2007) and Miller’s (2008; 2009) research of consumer culture, which also works in this vein, this paper goes one step beyond reading objects for their symbolic values and looks closer at the use of objects—here, in the sense of *when* and *where* certain objects of digital gaming are used—and its consequences for, and origin in, the dynamics of play and family. In doing so, norms can be found surrounding gender, gaming, and culture, to name a few, connected to the choreographing of game devices around a family’s domestic space. These are also integral with designing everyday life and defined by aesthetical, practical and technological conditions and choices.

In this paper I use what is often termed a new wave of practice theory (Schatzki, Knorr-Cetina & Savigny 2001). It is a tradition of practice theory that synthesizes its many origins and often is used in consumer research (see Shove 2003; Warde 2005; Shove et al. 2007; Miller 2009) to analyze the meaning of objects in relation to the design of everyday life (Shove et al. 2007). This moves somewhat away from analyzing the discursive aspect of playing digital games and more firmly into the “doing” of it. However, I reiterate, the focus is not a phenomenological interest in smell, feel and texture of objects (Pink 2009), but their significance and meaning in home-making, family-making and related activities.

Shove et al. (2007) combine the emphasis made in Latour’s work on non-human actors with that of practice theory, which in Reckwitz’ work centers on such concepts as “bodily movements, things, practical knowledge, and routine” (Reckwitz 2002). Practice theory originates from the 1970s and has developed by aid of several thinkers over the

years, with Sherry Ortner making a notable contribution to the field of anthropology (1984). Practice theory as articulated here is influenced by Ortner (1984) and has its roots in Pierre Bourdieu's work (1977) focusing on the importance of architectural forms for human action, Giddens' (1984) theories of structuration and Judith Butler's philosophical deconstructions of gender (1990). Butler's theory of gender performance is deeply anchored in the lived experience and appearance of the body in daily life. Here, the focus is not so much on the anthropology of the body as on the artifact used by players, whose bodily movements are influenced by the nature, mobility and movability of their playing devices, and what they reveal about family life (Miller 2001). Yet naturally, as the case studies below will illustrate, the architecture of domestic space figures into the staging of domestic life and the body. The body is the human vehicle which acts out the play, the work, the listening, etc. It is obviously vital to the understanding of human behavior, culture and social action from an everyday perspective.

RESEARCH METHODS AND EMPIRICAL BASIS

This paper originates from the research project "Gaming Moms" that I have run together with my colleague Charlotte Hagström at Lund University for approximately five years (2008-2013). The fully expanded aims and scope of the project can be found on the project's research blog (Enevold & Hagström 2008b). To briefly summarize: the main aim of that project has been to nuance stereotypical notions of gamers and gaming. The project has included approximately 75 informants in total. The material has been gathered using a variety of tools: discourse analysis, an online-questionnaire and a mix of qualitative netnographic and ethnographic methods: e-mail questionnaires, semi-structured face-to-face-interviews in the informants' homes, player diaries, photographic documentation of game spaces and auto-ethnography.

The project has used both an *emic perspective*, that is focusing on what

the studied players name as significant and an *etic perspective*, which is the focus of the researchers as observers and the terminology they use for analyzing the observed. Auto-ethnographically collected material is viewed and used as researcher-reconstructed data (Strathern 1987) rather than text used to create a fiction-style auto-anthropology (Ellis 2004).

In the highlighted cases used below, which have been extracted from the approximately 15 that allowed access to the informant's home, the initial and main focus was on the mother's position, doings, practices, utterances etc., but, as the research progressed and developed, the empirical collection naturally came to include material also on other family members. However, fathers figuring in the narratives below were not systematically consulted for information. It should also be noted that in some families, fathers did not play computer games at all – this is as a rule stated in the case narratives accounted for below. But their presence and opinions obviously played a large part in the family dynamics and everyday practices. Their views and activities are nevertheless mainly gathered through observation – listening in and participating in the daily life of families – and only sporadically through ad-hoc interviews and sometimes through informal conversations. For the overall analysis, the case narratives reported here are combined with empirical findings from the large project, whose methods are accounted for in the first paragraph of this section. All informants have consented to the information being used in an academic context.

I should hasten to add that the analysis presented in this article emerged as the research project developed in exciting and unanticipated ways. The original research questions included inquiries into the everyday practices of adult women gamers and potential time and activity conflicts they experienced in their everyday life with their immediate surroundings – family, work, and other factors or persons – directly or indirectly connected to their gaming. Although somewhat

different in scope from the original research project, this analysis stays within the same realm of investigation: the everyday practices of gaming paying specific attention to gender and family issues, which makes it possible to generate conclusions about the constitution of not only the contemporary gamer but of gaming as a domestic technology, its history and its factoring into the equation of equality, work and leisure in everyday life in today's Western society.

DOMESTICATING PLAY

Domestic space-time ordering

In constructing the scenography of the home, deciding where items should be placed (or not placed), and moving objects from one room to the next, play is staged and simultaneously the family. Play is in the process *domesticated* in the double sense of the word – brought into the home, but also subordinated and subjected to the norms of the family and the home. Studying the artifacts of play, it is clear how playing practices are being performed more or less consciously; game-time and game-space are bounded (at least temporarily) by seemingly routine movements around the house. The case material has generally demonstrated relatively undramatic family scenes. Far-reaching surveillance and forceful disciplinary actions have been infrequent. As a rule, gaming is regulated through less overt tactics. Rather, game space and time seem to be regulated in an automatic and routinized way and motivated, or ruled, by a range of norms, explicit and implicit, which I will go through below. Of course, both covert manipulation and open surveillance do occur. Certain families do try to create a “reverse” panopticon situation (Foucault 1979) by placing computers centrally, but these situations seem short-lived and are quickly abolished as children grow older and insist on their own gamespace. Families Four and Five, presented below, as well as Family Twelve (which is not presented below but consists of a family of one mother and a child of thirteen), serve as good examples of limited surveillance practices. Most family cases and their everyday family and gaming rules and per-

formances are better explained using a model employed by Shove et al. (2007) engaging a form of practice theory that strives to account both for individual agency and social norms in the construction of social reality. This inclusive theorization of practice resonates better with the way the co-constitution of play and domestic space is carried out in a process involving family members as well as gaming materialities.

Rooms and Regulating Norms

Families organize their homes around objects for many reasons; some are explicitly stated as being *practical*, others as *aesthetical* or *technological*. The home is constructed through a number of practices such as sleeping, eating and playing, which are hierarchically evaluated in relation to subject positioning as well as object positioning. An example is that of the domestic space that exists in most homes. All examples in the study are from white European, middle-aged, upper middle-class families. The domestic order mainly discussed here depends upon its construction at this particular intersection of wealth, class, ethnicity, nationality, (dis)ability and age. I want to acknowledge that it thus represents a limited privileged segment of Scandinavian households.

Five people live in the household of Family Five, three children and two adults. All children are under the age of eighteen. In most homes, there is a domestic space called a bedroom. Bedrooms are in the average Scandinavian family with children who can be found in the project- material, and the example of Family Five, a space primarily intended for *Sleep*, *Work*, and *Play*, in that hierarchical order. Eating is completely ruled out.⁴ In Family Five's bedroom is placed a double bed, a closet, a bookcase and a corner table with a "good" stationary computer, that is, a fairly new computer with a graphics card, processor and internal memory optimized for gaming.

Family Four has four members. The two children, both under eighteen, each have a computer in their rooms. The mother has a comput-

er in the parents' bedroom and the father has a computer in the living room. The activities in the parents' bedroom are here ordered along similar lines as Family Five, although Sleep here gets more competition, since this bedroom compared to that of Family Five is quite small. In Family Four, the parents' bedroom is also the main office of the mother who mainly works from home.

In Family Five, there is only one more and older computer of inferior quality placed in another room. Family Five abides by a number of norms that are both implicit and explicit as to what type of activity can go on in the bedroom, in this case the parents' bedroom, but this basically also goes for the children's bedroom at this moment in time. These activities are ranked according to a system of unwritten rules. They work according to norms about domestic activities that look more or less like this:

Sleep. Sleep is ranked highest among all activities: whoever wants to sleep has prioritized access to the bedroom. It is the activity that more or less without question is allowed the most amount of hours in a 24-hour cycle of everyday life. Sleep does not need to compete with any other activities and is considered a healthy and useful activity. If somebody, the husband or wife, or any of the children, wants to work or play on the computer, this is frowned upon by the person who wants to sleep, and if the disapproving person wins out in the conflict, play is either excluded or relegated to somewhere else. There is, as said, at this moment in time one more computer in the home, which is possible to occupy. However with five people in the household, that computer is often taken. If the person who chooses sleep does not get her/his way, the person who takes a seat at the computer in the bedroom often plays/works with a bad conscience. To take into account individual characteristics, the father in this family is hard of hearing and is not as easily disturbed as the mother. Still he is less interested in computers and does not play computer games himself, thus dislikes activities

on the computer more than the mother does. She sleeps less heavily, but she is also more generous with allowing one of the children a late night chat with friends or a quick check into their online game before bedtime after homework is completed on the bedroom computer when the other siblings occupy the computer in the other room. Being a gamer herself she has a different attitude to the computer both as technology for work and for play.

Family Four experiences more friction when it comes to occupying the bedroom space. The father in this family is a very light sleeper and wants nobody else in the room while he sleeps, whereas this is allowed in Family Five. The size of the room also makes it very warm and stuffy, which allows for less comfort when it is time to go to bed. Since play often takes place late at night after work is done and a family meal has been prepared and eaten, the heat-producing activity of the hardware is at its height in the evening when bedtime draws close.

Work. The underlying norm operating regarding work, in both families, is that it should preferably be carried out in an office or wherever the job is primarily physically located. If somebody chooses to work in the bedroom, that person must accept being disturbed. Work time is conditional and time-limited. It is of course important to note here that the view of work and of work time differs greatly between different professions, age groups and social classes to name a few possible factors of influence. People who work strict eight-hour days between approximately 8am and 5pm may differ vastly in their opinions from certain groups of professionals who make little distinction between work time and leisure time. A lot of research has been done on the relationship between work and “free” time (e.g. Nippert-Eng 1996; Brannen 2005), and the relation of this blurring of boundaries to the separation of time-space in postmodernity (Harvey 1989). In Family Five and Family Four, the fathers both have office-bound occupations and schedules, whereas the mothers often work from home or fre-

quently bring work home. They consequently end up blending traditional work and playtimes to a much greater extent than the fathers or the children.

Play. In both families play should usually be done when everyone else plays, or when there is no work left to do – school work, house work, maintenance, taking out the trash, shopping. Homework and work that is brought home should similarly be finished before play is allowed. If somebody plays outside of communal times, rule number one that stipulates sleep's prioritized position is brought into effect. In relation to the children, their age and lower position of authority and power are used to regulate their playtime. Those who want to play outside of sanctioned playtimes are in Family Four verbally warned off or reprimanded. This goes for both adults and children. Play practices are also in both families, although in different ways, regulated by the classical "gender-power system" (Hirdman 1988, building on Scott 1986).

Gender. The dominant gender system is usually that which dictates that the mother or woman in the domestic sphere be the one to make sure that there is food in the house and/or is the one who should keep an eye on what the children are doing. This is a norm that overrules most other norms and is the superior and silent principle that overrides many other norms in a majority of the families that this project studied.

In Family Four, food responsibilities as a rule fall on the mother. Food preparation is explicitly stated as prioritized before all other activities, specifically play. If the mother in Family Four is not seen (in view) for what is perceived as too long a time period or the rest of the family is hungry, this norm is automatically called into effect. The rest of the family members do not make dinner, but encourage the mother to stop her playing or working to prepare food, if she has not already

done so. Working late is in this case a complicated situation, since work in effect is in the home and not spatially separated from the time and space of *family* or *play*. The gender-power system generally impacts relations also between brothers and sisters in families, as many other studies into the distribution of gaming and technology have shown (for example Schott & Horrell 2000; Kerr 2003; Crawford & Gosling 2005; Dixon & Bodreau 2009). However, in the cases reported below, the family constitutions were such that no conclusive material can be presented here that might show how children acted or came into gaming differently from their siblings due to their gender. Data was not collected such that detailed information can be given on gendered negotiations between parents and children. This would have required considerably more research and a different research focus, but is a question well worth pursuing in future studies or follow-up visits.

Family. All of the norms and practices that are taking place in domestic space and time constitute what become naturalized ideas of what it means to be a *family* and what play and work are in contrast to the family and to each other and to other activities. Joint activities are favored or implicitly ranked higher in both Family Five and Family Four. For example, family meals are prioritized before individual snacks and non-play activities are rewarded – if the children go outside or read or help with housework this is highly praised. If they or any of the adults perform work on the house, repair, clean or vacuum, this behavior is commended and further strengthens the position of work vis-à-vis play and the family vis-à-vis individuality.

To further illustrate the significance of the gaming devices, their number, type and location, I will give further examples from the perspective of owning, possessing and placing game artifacts as well as how the design of the everyday life and playspace changes over the lifetime of the family hand-in-hand with technological development and acquisitions.

Staging - Scenographies of Play, Gender and Family

When I first meet Family Five, they have two computers. One is placed in the parents' bedroom, the other in the youngest child's bedroom. The youngest often sleeps in the parents' room, which makes that child's bedroom a rather open and public room. At the same time, the parents' bedroom is also "open" to the children; they are allowed in at almost any time of the day, except when *both* parents are asleep. The out-dated, "bad," computer is placed in the youngest child's bedroom room and the more current, "good" one (which is what they call it) in the parents' bedroom. This is done out of fairness; no child should have more access to computers than any other. At the same time, the parents can exercise control over and oversee the children's computer activities. Both computers are set up with the screens turned out into the room. The "good" computer has a set of speakers. Earphones can be plugged into this computer as well, but these earphones tend to "disappear" and cannot always be located, which means that sometimes there is sound coming from this computer. By setting the screens up this way, the parents keep an eye on what the children do and distribute the time evenly between the children and between their homework/play activities. Fighting over game time is not allowed.

The above-described arrangement is an ordering of space that is *practical* in terms of parenting and teaching siblings to share. However, sometimes the placement of gaming devices is done for less practical reasons. It should be added that the "good" computer is primarily bought for the purpose of supplying Family Five with a good PC for online gaming. But, why then is the machine not placed in the hallway, which is an open space between the bathroom and the kitchen, where there is room for it? It is an even more "public" space that all members of the family share and that the parents spend more time in and have more overview of than the bedroom that they mainly use to sleep in. After all, does not sleep come before play?

Sometimes domestic space is organized due to limitations of square footage or family size. In Family Five, each child has its own room, so space is not an issue. The reason for not purchasing more computers is mainly that of keeping track of gametime and the idea that more computers than three would be excessive. There is an open space in the hallway mentioned above, but the father of the family has rejected it on aesthetic grounds. At this point in time, there is no wireless internet connection in the home. The two existing computers are connected to a modem through cables. The official owners of these computers are the parents. The children do not have computers of their own.

The two computers are placed very close to the cable outlet on the wall; a hole has been drilled through the wall to avoid having a long cable pass through two rooms; “it looks terrible” claims the father. He is meticulous about hiding wires and cables and would have built the electrical system and cables inside all walls if he had constructed the house himself. He has now managed to keep the cable length to a minimum. Had one of the PCs been placed in the kitchen, the cable situation would have been unacceptable. He also finds the PCs with their big screens hideous and unwieldy. In addition to the idea of a shared computer and avoiding excess gametime, *aesthetics* thus plays a major part in designing the domestic space and consequently everyday life practices such as play and homework. Actually it even *precedes* the idea of control and other practical functions. It is also obvious that the cable installation dictates which two rooms get to house the computers – in this case, the architectural plan, the material conditions of the wall construction, the outlets and technological conditions of wiring. Moreover, the internet provision through cable to the computers rather than a wireless connection in the home forces the family to stage their domestic practices around it. Decisions about *where* play should be carried out – what table, what room, what type of device thus depends on much more than individual choices. The architectural conditions and aesthetic preferences regulate play by excluding

other bedrooms (inhabited by the other children) or living room, kitchen and hallway, from being playspaces. Of course, accepted play preferences and habits also dictate that internet access be acquired in the first place and that a “good” PC be purchased. These in turn were domesticated by the *aesthetical*, *technological* and *practical* conditions and resulting stagings of the home and family.

Another example of the co-constitution of spatial arrangements, family and play practices comes from Family Six. Once a family of six, this family constellation now consists of two adults and one child. Family Six has built a game room for the entire family, which contains three stationary PCs. They have space to do this since they live in a huge four-story house. Since both parents are avid players, they both feel their gaming has affected their children. Their ideal of what it means to “do family” is discordant with extensive play practices. When their playing was at its peak – timewise – and all children lived at home, the mother still had most of the responsibility for food preparation, which caused conflict between the husband and wife and between them and the children. They used to play *World of Warcraft* (Blizzard 2004) and were both intent on acquiring certain sets of gear through playing matches in so-called Battlegrounds, which generated credits that could be turned in for valuable items. At the time this was a popular activity that required signing up for a battle and then queuing, sometimes for up to 20 minutes, to play. If you were not physically at the computer to accept your invitation to join a battle once it was extended to the player by the system, you lost your place in line. This was cause for upset in this family, (the kitchen stove was rather far from the PC) and the mother tells me that in retrospect it felt rather crazy, but completely motivated and justified at the time. In order not to neglect the family but still achieve the goal of the game she had set, they worked out a system where they took turns watching the computer and she was running back and forth to the kitchen to check on the food. Building the game room they retained some of the traditional collective practice

of family, by co-locating in domestic time-space. This mother plays with and talks to her fellow-players wearing her headgear with one of the ears uncovered, so she can talk to, and hear, her husband and her youngest child, who also has a computer in the game room, simultaneously. As can be observed here and in other examples, audio also plays a significant role in the process of domesticating gameplay and performing gender and family. Domesticating play, designing their space, arranging their digital materialities, they have revised both their notion of what play and doing family means.

Choreographing domestic time-space

As Family Five has grown older, their domestic gaming landscape has gradually changed. When I visited again four years later, they are not only four years older, which is significant not the least in the case of the children regarding the increased responsibility and abilities they are supposed to have in relation to games and gaming (according to their parents), the passing of time has also affected the parents who I understand have lived through a cultural adjustment to the presence of both gameplay and screens as everyday devices that they now take more for granted. The past four years their home-gaming devices have shifted places, some have been replaced and new ones have been acquired. There are more screens, consoles, loudspeakers, earphones and related devices present all over the home.

One reason why time spent on computer gaming, but also on other activities performed on personal computers, is often regarded as negative by general opinion and portrayals in media is that it appears to exclude those around the player. The person in question plays or talks with somebody that cannot be seen or felt by anybody else but the person at the computer. This exclusion, or audio-visual distancing, is in both Family Five and Family Four perceived as more “serious” if the person and/or the screen is not within sight. In Family Five all screens were previously turned out towards the room. Now, they are all turned

away from the door opening as gaming has become more privatized and individual. On the other hand, it has also become more collective. I return to discuss this in more detail below.

In Family Four, where the conflict over play/work time was more tangible, the screens were in the parents' cases early on turned away from public eyes. Nobody wanted to be monitored by the other since the tolerance for play had been reduced as the appeal to family values of collectivity had been strongly voiced. It is essential to note here that work cannot be negotiated to the same extent as play – work has a very strong position versus play, as was indicated above. This resulted in both parents keeping their screen activities to themselves in a move to retain control over their time spent at the computers. If dinner needed to be fixed, this could wait a moment longer in the case of work, but not in the case of play. Play *must* in both Family Five and Family Four cede to joint activities like film watching or food-consumption. The practice and performance of family thus outweigh the practice of play in both cases. As a result, the distinction between play and work in some instances are intentionally blurred. To mention a related example: in Family Eight (a family of three), a mother sometimes goes down to check on the washing machine, but this is also the place she keeps her laptop and she thus plays a couple of rounds of a short game online while she is down in the basement. In my interpretation she still prefers to label this activity “work” since work strongly supports the assumed ideal of mother and of family – she avoids potential conflicts with norms underpinning the family. A mother out of sight is as a rule not a good thing (see for example Enevold & Hagström 2008; 2009).

The advent of mobile computers in all shapes has radicalized the spatial and temporal ordering of both family and play practices. The mobilizing qualities of the laptop now neutralize the negativity of gameplay as well as work that takes place out of sight. The father in

Family Five has now purchased a laptop of his own. The parents now pay bills together taking the laptop with them to the living room. In Family Two, which is a family of three who used to be seven, in which the mother previously felt the tension that would arise when she left the living room to play some of her games late at night, is now able to sit next to her husband, who eventually also has obtained a laptop. They use the laptops for different purposes – he watches TED-talks and nature films and reads the family blog that one of the children has set up. She watches movies, plays games and emails and does a lot of work-related writing on hers. But, they do this in silent togetherness (both use earphones so as not to disturb the other) and the husband is reportedly quite pleased with this change. They maintain the sense of, the practice of, family and collectivity in the face of, and thanks to, technological change.

A very important factor is that Family Five as well as the other families described now all have wireless internet access. In Family Five's living room there is now also a big flat-screen TV, an Xbox and a Wii. The Wii has four remote controllers (*practical* ordering) neatly placed in a rack inside a cabinet (*aesthetic* ordering). Some play practices have thus been moved from the PC out of the bedroom into another public family space. The mother has also obtained a laptop. This means that TV-watching, gameplay and work now at times take place simultaneously in the living room, similar to Family Two. Play is domesticated, but play-devices also domesticate the players, the family. It draws social action, play, through cultural material objects like games, to specific spaces. The new flatscreen and the introduction of the Xbox brought more family members into the living room, not only to games but also to DVD-watching. At the same time their new game artifacts dispersed them. At the end of the four years, each child also got a screen of their own: the youngest started playing games on an iPod, the other two got their own PCs in their rooms. The parents bought a laptop each. The majority of the family could now move around

independently. Eventually the youngest child in Family Five also got a stationary computer and a private TV and the Xbox was moved into that child's bedroom. I noticed on subsequent visits that I saw the children less often – they were cooped up, as it were, in their rooms. On the other hand as the Wii and Xbox first entered the home, they had occupied the living room and the TV in bigger groups, playing loudly with friends.

Evidently, teenagers often want to be by themselves, and Family Five adapted and decorated accordingly. For a short period of time a long cable was (under protest from the design-sensitive father) drawn from the router in the main access room through a number of other rooms to the room of the oldest child, who was the first to insist on a private computer. As soon as possible this cable was removed and replaced by a wireless internet connection. The mobilization, or choreographies of play and family in Family Five did not stop with wireless internet and individual computers. Smartphones arrived and added supplementary options for gameplay, emailing and listening to music as well as almost endless relocation options for their human bodies in relation to the technical medium needed for the chosen activity. Playing a game in front of the television while together with others became inconspicuous and almost passed under the radar for acceptable family-room activities.

Of course, the type of games that can be played on a smartphone is limited, and big online-games still require specific technological objects to be played. Adding vocal conversations over software like Teamspeak, Ventrilo or Skype into the equation, the practice of playing in teams or with others over the internet require the privacy of the bedroom in order not to disturb others' play, work or TV-watching. Both music and talk are transmitted over such auditory channels, that is, the gaming child does not only play music locally, listening to Spotify or private collections, but may also take part of other players'

auditory output, for example, conversations, sound effects, and music. This, in turn, contributes to keeping certain types of games on the lower rungs of the ladder of activities allowed in the home, since they are both more audible and noticeable. Despite this, the big threat of gaming to "performing family" seems more or less reduced to manageable size. As the parents adopted the new technologies and familiarized themselves with them, they also felt more in control of what their children were doing without them. In Family Seven, a family of four, the event of the iPad brought one of the parents who had previously played extensively in the bedroom, into the living room, a move which significantly reduced the amount of stress expressed by the other partner who thus were able to co-locate in a sense similar to Family Two. In Family Five, mobilized gaming devices also reintroduced play into the parental bedroom by way of the mother's laptop on which she played games sitting on the bed after having dinner with the family, a procedure which is still a non-negotiable practice in most studied families.

As a final illustration, I offer you a tale from the socio-cultural field of my own family. As we – my mother, my son and I – sit down to hang out in front of the TV, and as most other families in this study, we have just finished a shared family meal, my mother, formerly not very keen on the rest of the family's penchant for gaming, hauls out her newly purchased iPad. She immediately has to work hard to gain sovereign control over her Wordfeud⁵ game (hbware 2010) ferociously fighting off my game-hungry son who wants to help her place the tiles. Although I suspect my mother's interest might wane with time, our conversations have been considerably reduced because of her new friend the iPad and her new love: the game. Our family performance has indeed altered with the advent of new material gaming objects. I look at the two of them on the other side of the coffee table. Nobody wants to talk to me and nobody wants to watch the program with me. What do I do? As a gamer and child of the times, I pull out my iPhone and roll out another word.

Conclusion

To conclude, in this article I have examined a number of families' implicit and explicit stagings of play, but also of family and gender. It demonstrates how integral everyday practices, seemingly mundane scenographies and choreographies – *practical, aesthetic* and *technological* ordering of domestic space-time and game artifacts, are to producing and conditioning everyday performances of gender, family and gaming. It shows how play is *domesticated* – subordinated and subjected to the norms of the family and the home, and vice versa, how play conditions the domestic. The empirical tales show a change over time in everyday practices that make up the design of everyday life from the perspective of digital gaming materialities. In the process, a history of the domestication of play can be discerned.

The physical presence of bodies and screens, visuals and sounds, in the same space reduces the threat of the unknown, the unseen and the unheard. The increased mobilization of gaming devices changes communication and interaction patterns in families (who can afford to acquire them). Over time, family members—parents and children—are habituated to new cultural practices and technological artifacts and the resulting subject-technology relation, or technicity (Dovey & Kennedy 2007), is part and parcel of their everyday practices. Everyday practices depend on an “ensemble of procedures . . . schemas of operations and of technical manipulations” (de Certeau 1988:45). Technicity, whether situated by the terminology of Bourdieu’s “habitus” or Foucault’s “ideology” as de Certeau phrases it (1988:45) is integral with the conditioning of everyday practices. Everyday practices are without doubt, whether reflective (Giddens 1979) or results of less reflective habituation (Bourdieu 1977) ideological and produce in daily doings, routines etc, socio-cultural categories such as gender and class. Here, everyday practices are seen to produce ideas of gender, play and above all the nuclear bourgeois family. They *enforce*, but they also renew and *alter*, ideas of how *family* should be performed and how it should

move and stage itself and the material objects upon which it depends in domestic space. The design of everyday life and digital materialities, domesticates play and, in turn, play (re)constitutes family practices.

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Endnotes

¹I make in this paper no distinction between playing and gaming. This is part of my professional mission and a discursive tactic rather than an omission. Strategically, gaming and playing need to be viewed on equal terms as gaming and playing come encumbered with ideological notions that have political significance, specifically within the context of making game culture evenly distributed between different gaming subject positions (Enevold 2009; 2011).

² One could perhaps speak of gaming practices as several events, but the philosophical discussion of what constitutes events is quite large, complicated and much too space-consuming to be brought up here.

³The collusion term, although metaphorically appealing, may nevertheless be best suited to understanding gameplay events, not the least

because of its etymology.

⁴For the sake of simplicity I leave amorous interactions aside, since this is a practice that has a discourse of geography and morality all its own and is just too complicated to enter into this discussion.

⁵Wordfeud is a wordgame for smartphones and the iPad that basically is a copy of Scrabble but for only two people.

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Player Types: A Meta-synthesis

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INTRODUCTION

Recent developments in game business practices have especially elevated the need for distinguishing between types of players and play styles. For example, the new business models related to selling virtual goods has multiplied the amount of sold products within one game product or service as opposed to the retail sale of games. With the new business models game publishers subject the entire game and game design with its different value offerings to more accurate scrutiny in terms of marketing. Today, virtual items in games are no longer designed only to be an integral part of the finely tuned game balance. Instead, designers also have to think who would potentially be the customer for the virtual goods in question. These increasingly relevant questions that linger in the cross-roads of game design and marketing call for the use of marketing practices of segmentation and differentiation as a part of game design (Hamari & Lehdonvirta 2010; Hamari 2011; Hamari & Järvinen 2011). Another complementary development can be seen in the context of “gamification,” where game design is increasingly being applied towards the goals of marketing (Huotari & Hamari 2012; Hamari 2013). Hence, even in this context, understanding player types and motivations even becomes essential.

This paper reviews different ways in which players have been typified in previous relevant literature and forms a comprehensive meta-synthesis of the identified types. The aim is to investigate and clarify the current state of research and to suggest further research avenues. The paper proceeds as follows: in the next section, we derive the theoretical underpinnings and the perspective of the paper to the player typologies. In the third section we outline the research process. The fourth segment combines previous literature on player typologies. The final section of the paper presents conclusions and proposes future avenues for research in player typologies.

Ways to categorize the perspectives to player types

Segmentation is a fundamental concept in marketing theory and literature, which has also always been a central part of marketing practices, if developed conceptually as such. In marketing theory, segmentation (and differentiation) can be traced back to beginning of 20th century. Shaw (1912) described differentiation as meeting (identified/segmented) human needs as accurately as possible in such a way that it builds up demand in the targeted customer segments. In practice this implied that products were designed with certain end-users in mind, as opposed to mass marketing, where no aspects of the offering (e.g. the product itself or advertising) were differentiated towards a specific target group. Segmentation is the activity that aims to identify these customer groups (Kotler & Keller 2006). The goal of segmentation is to better serve customers by being able to offer products that better match their needs and wants.

Later marketing literature has attempted to more accurately reach different modes of segmenting customers. The goal of segmentation is to identify groups of people that are as homogenous as possible, but that differ from each other in a significant way. In marketing literature, the following four overarching categories of segmentation have acquired an established standing:

In **geographic** segmentation people are divided into groups based on their place of residence, for example country, county, city or so on. Considering the gaming context this could mean that gaming cultures differ between countries and continents.

In **demographic** segmentation consumers are categorized according to many descriptive features, such as age, gender, education, occupation or social status. These could be for example young male students or married middle aged women.

Psychographic segmentation is a more sophisticated approach, since it tries to group people according to their attitudes, interests, values and lifestyles. An example could be a social extrovert who enjoys meeting new people and likes surfing around the net.

Lastly there is **behavioral** segmentation which is an approach that tries to find patterns in consumers' behavior towards or with a product. Variables include benefits sought in a game, user status and usage rate. A gamer might play every now and then to relax and take their mind off work.

Research process

The present paper is a meta-analytical review of the previous works on player typologies. Meta-synthesis as a research approach attempts to interpretatively integrate results from different inter-related studies (Walsh & Downe 2005). As such, the research process for the paper proceeded from literature search conducted in the most cited game studies journals and conference proceedings. More precisely; databases such as ACM Library, ScienceDirect and ProQuest were used as the main sources for previous studies. In addition some papers were found through searches in Google and Google Scholar. Terms/keywords such as "player types," "player typologies," "player motivations," "games and marketing" were used for finding related studies. Referring to papers'

reference lists also led to previous studies on the topic.

As a result of this literature search, the selected papers were analyzed based on an author-centric approach (Webster & Watson 2002) by connecting all the works to the main categories of segmentation in marketing theory (Kotler & Keller 2006) as well as to list the different types of player typologies found in those studies (Table 1).

The next step of the process moved to a concept-centric analysis, where the findings were pivoted and categorized based on the found player typologies (Table 2). This approach enabled us to analyze the qualitative differences of player typologies in game studies research.

Review of player typologies

If we reflect upon the studies on player typologies, we can immediately notice in game studies the geographic or demographic aspects have not been of primary interest in research on player typologies, although there has been some research which has broken some of the preconceptions about the "player prototype." For instance, Williams et al. (2009) found that female players actually played more *EverQuest 2* than their male counterparts. Although similar empirical research is being done on players, this paper will focus on papers that have attempted to conceptualize player typologies through their motivations, traits and behaviors. The studies on player typologies and categorization seem to have focused on psychographic and behavioral aspects. When it comes to game genres clearly some of them are more frequently covered than others. From Table 1 we can see that MMOs and online games are the most frequent. This may be problematic with respect to generalizability of reviewed studies.

Author(s)	Year	Basis	Methods	Presented player types	Games in the study
Whang Chang	2004	Psychographic	Quantitative – factor analyses	Single-oriented player, Community-oriented player, Off-real world player	Lineage (MMO)
Tseng	2010	Psychographic	Quantitative – factor analyses	Aggressive gamer, Social gamer, Inactive gamer	Online games in general
Yee	2006, 2007, 2012	Psychographic	Quantitative – factor analyses	Achievement, Social, Immersion (+subconstructs)	EverQuest, Dark Age of Camelot, Ultima Online, and Star Wars Galaxies (MMOs)
Zackariasson et al.	2010	Psychographic	Conceptual-analytical	Progress & provocation, Power & domination, Helping & support, Friends & collaboration, Exploration & fantasy, Story & escapism	World of Warcraft (MMO)
Stewart	2011	Behavioral Psychographic	Conceptual-analytical	Guardian/Achiever, Rational/Explorer, Idealist/Socialiser, Artisan/Killer, Conqueror/Wanderer, Manager, Participant, Hardcore, Casual	The same ones as in the previous studies that it combines
Bartle	1996	Behavioral	Qualitative observations & Conceptual-analytical	Achiever, Explorer, Socialiser, Killer	MUDs
Lazzaro	2004	Behavioral	Conceptual-analytical	Easy fun, Hard fun, Altered states, The people factor	Non-exclusive
Drachen et al.	2009	Behavioral	Quantitative - clustering of gameplay data	Veteran, Solver, Pacifist, Runner	Tomb Raider: Underworld
Ip Jacobs	2005	Behavioral	Quantitative – factor analyses	Hardcore gamer, Casual gamer	Non-exclusive
Kallio et al.	2011	Behavioral	Triangulation of quantitative and qualitative data	Social mentalities, Casual mentalities, Committed mentalities	Non-exclusive
Hamari Lehdonvirta	2010	Behavioral	Conceptual-analytical combination of qualitative observations and marketing theory	For example character levels and classes	EverQuest, Habbo, Puzzle Pirates, World of Warcraft... (Online games)
Williams et al.	2006	In-game demographic	Triangulation of quantitative and qualitative data	Group centrality, Size of the guild, Type of server, Faction	World of Warcraft (MMO)

Table 1: Studies on player types

Especially gamers' motivation and in-game behavior has been covered extensively. Psychographic and behavioral typologies are however oftentimes challenging to distinguish because they are close to each other and therefore this categorization boils down to how these aspects have been observed in individual studies. For example, Bartle's (1996) types were originally interpretations of in-game behavioral patterns, but Yee (2002) took the types and used them as a basis for his motivation-based theory. Tseng (2010) did a psychographic analysis on the gamer market, but one of his segments (Inactive gamers) encompasses the fact that many belonging to that segment are ex-gamers, which is actually a behavioral quality and not a psychological factor.

In the subsequent sections, we will review the papers. The review is divided into sections based on the perspective from which the players were categorized in the reviewed papers.

Psychographic basis

A prominent way in previous literature and in popular discussion has been to divide user population into hardcore and casual players, although it also has been criticized (e.g. Bateman et al. 2011) as too simplistic. In the reviewed literature these two types are treated either as a segmentation in itself (Ip & Jacobs 2005) or as a part of a more comprehensive and multifaceted player type model (Stewart 2011). As opposed to casual players, what Ip & Jacobs call hardcore players are people who are more dedicated to gaming in almost every way, demonstrating for example deeper knowledge of the industry, playing longer sessions more often and spending time discussing on game-related forums. Hardcore players also want to differentiate themselves from the mainstream and modify the game they are playing.

This model, as is, is of course very simplistic and generalizing if we are looking for player types that are as homogenous and descriptive as possible. It raises a question of where such a boundary could be drawn

dividing players into more and less engaged ones. It is rather a scale of engagement; people have a degree of willingness to participate, make effort, pay money and so forth for different things. Perhaps modeling hard-coreness and casualness as a continuum would make some sense to this simple notion instead of understanding it as a dichotomous division. However, as games are complex services, it might be difficult to infer whether a person is a hardcore player within the context of the entire game or whether the player is merely interested in some parts of the game.

Stewart's (2011) claim is that hardcore behavior implies a significant level of immersion in the game world. According to Stewart, hardcore players require their games to be intellectually challenging and provide interesting and compelling adventurous experiences. Stewart suggests their preferred games are adventure and puzzle games. This might sound a bit surprising, as in popular discussion being hard-core is commonly related to younger males (Selwyn 2007) who play action or strategy games, which Stewart regards as games that casual players would prefer. This sounds interesting in the sense that many of today's adventure and puzzle games are differentiated mainly to the female market, and most of the action FPS games are seen as being designed towards masculine pursuits. Within the focus of this paper it is not of importance what different authors regard as preferred games for each segment. However, these varying notions of the "hardcoreness" seem to imply that there are multiple different interpretations about its meaning and that it remains as a central term in the popular literature and discussion (e.g. Juul's *Casual Revolution*, 2009).

The problem with dividing players into just two categories is that it seems to be filled with excess simplifications and even implausible speculation on, e.g. the suggested game types. The question of hardcore and casual gaming behavior does not seem to be black and white. Instead of being two clearly identifiable and explicit groups, there are

those players – most if not all of the people in fact – who are positioned somewhere in between the two extremes. In the hardcore-casual analysis we are actually looking at a scale instead of a typology. In Stewart's case the types are part of a more extensive model but still, how can the division between hardcore and casual players be based on immersion, and solely immersion, in the first place? Can players be or not be just as immersed in a game of any genre? As also pointed out by other studies (e.g. Yee 2007; Kallio et al. 2011), immersion is a part of a much more complex set of motivational factors that guide player behavior, which should be taken into account in order to fashion a much more robust segmentation of players.

Behavioral basis

Behavioral segmentation is concerned with how player, users or customers behave with and within products and service. A study conducted by Drachen et al. (2009) looked at how a set of players completed the popular adventure game *Tomb Raider: Underworld*. They identified four different styles each with different playing patterns and solutions to specific problems and also a certain level of performance. By using game log information such as total number of deaths and completion time, the players were divided into the following four groups.

Veterans, as the name suggests, are the most seasoned players. They die fairly rarely and complete the game very quickly. Solvers take their time to solve the puzzles encountered during the play. Pacifists die mostly from enemies (as opposed to e.g. falling), and are fairly fast at completing the game. Runners are named according to their swift play-through of the game. Hamari & Lehdonvirta (2010) compared the status hierarchies, player progression and affordances in games related to different ways of playing and found that the way games are often structured resemble the way in which marketers also think about customers. Games and especially persistent online games are commonly structured through character leveling in multiple different progres-

sion metrics. This, the authors point out, is similar to how services and customer loyalty programs are structured in progressions in multitude of service dimensions and where different products can be differentiated to customers in each step of these progressions. Authors show that, in online games, virtual goods have also been targeted to certain players in certain stage of their progressions and style of play according to these aforementioned criteria.

This way the developers of the game could track, for example, the hardcore/casual continuum by operationalizing the in-game behaviors to the already established structures built into the game, such as levels and achievements. While Hamari & Lehdonvirta (2010) do not explicitly propose a player typology they suggest methods and a framework for segmenting players via in-game behavior.

The four archetypes

Bartle (1996) is one of the most referenced authors with respect to player types. His player typology is based on observations about player behavior in Multi-User Dungeons (MUDs). According to Bartle's player types, there are two dimensions to playing, namely action vs. interaction and player-orientation vs. world-orientation. By determining one's position in each of the axes one could determine which of the resulting player types he or she fits in. First of the types is Achiever who prefers action and is world-oriented. An Explorer prefers interaction and is also world-oriented. Killers prefer action and are player-oriented. The last type is Socialiser who prefers interaction with other players. Figure 1 demonstrates these four types' relations to the player preferences and each other.

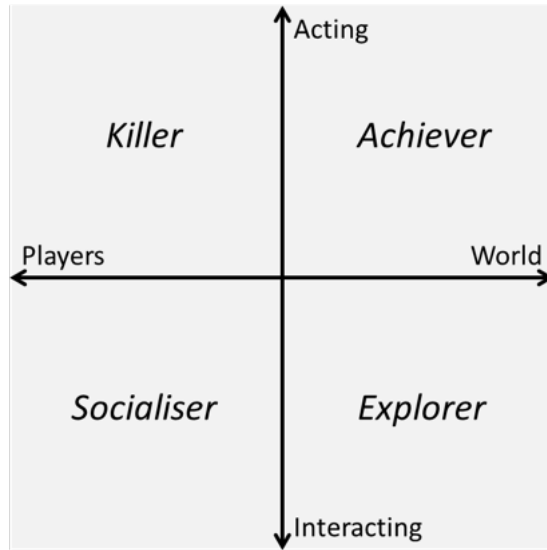


Figure 1: Bartle's player type axes

Bartle's player types have also received criticism for being too dichotomous and simplifying, although possibly a good tool for design purposes. The central criticism seems to be based on the notion that people's behavior and motivations can change in time and based upon the context, and therefore it can be difficult to pin-point exactly to what category a person belongs to. Another central point of criticism has been that in reality players have multiple motivations existing simultaneously but the magnitude of different motivations differ across players / player types. While Bartle's types are commonly used as a clear-cut categories, the frameworks consists of scales instead of nominal categories (Figure 1) and therefore, some of the criticism towards Bartle's types about being too strict are partly unwarranted. Therefore the dichotomous criticism seems to stem more from how Bartle's types have been used rather than from the original work. However, it would make sense to quantitatively test the relationship between the four types and scales of "interaction – action" and "player - world" orientations. Yee (2002; 2006; 2007) has carried out a line of empirical studies

about player motivations using Bartle's types as one of the references to ground the initial work. He used factor analysis to validate five motivational factors in his first article (Yee 2002). Putting emphasis on the later work we present only the latter results, which saw five initial factors transformed into three main factors, which altogether included ten sub-factors. According to Yee (2007), the three factors that motivate (online) gamers are Achievement, Social aspects and Immersion.

Yee's Achievement and Social factors resemble Bartle's world-orientation and interacting axes, but are not still perfectly analogous. Some underlying facets (or sub-factors) that Yee found to be applicable to Achievement weren't the same as in Bartle's heuristics. For example, Yee (2002) did confirm that achieving game goals was part of the Achiever type, but that it also includes the wish to gain power in the game setting. However, a will to beat the game was shown to be a motivating factor for gamers. Bartle did not cover Immersion explicitly, but Yee found that immersing oneself to the game world is one major motivation for play.

These motivational factors are not exactly player types, like Bartle's, but they can be seen as a possible basis for psychographic segmentation based on motivations for play. The relationship between psychographic and behavioral factors is that the latter are partly a manifest because of the former and thus as no surprise the conceptualizations of both end up being very similar. If a person reports having a motivation for achievement, it is expected that studies that investigate the actual behavior, found connections to these motivations. Another interesting point about player typologies is that when game developers started to use them as tools in game design, the games gradually started having the exact same dimensions that are found that people like. For example, some game designers have made sure that the game has the elements that resonate with every player type in Bartle's typology (based on discussion with several game designers).

Stewart (2011), in his conceptual piece, combined the Bartle's behavioral typology with several different conceptualizations, some of which are not even related to players, but rather to system abstractions. The author's goal seemed to be to force as many different concepts into only four dimensions and thus resulting in many strange and unfitting combinations (see source for more details). In an interesting question remains, however; would these different traits/motivations correlate also if studied empirically?

Zachariasson et al. (2010) merge Yee's motivational factors and identity construction based upon towards self and others. The resulting can be described as Progress & provocation, Power & domination, Helping & support, Friends & collaboration, Exploration & fantasy, Story & escapism. The first two relate to Yee's Achievement, second two are under Social, and so the latter two stem from the Immersion factor. Because the typology is based on Yee's model, the outcome is very similar to both Yee and Bartle including the concepts of achieving goals, being social while playing and immersing oneself in the game.

Other approaches

There are also other approaches to explaining possible motivations behind gamers. Tseng (2010) approached the question with two motivational factors, namely the need for exploration and the need for conquering. The need for exploration entails not only the obvious exploration, but also social and achievement orientations. Need for conquering then quite logically consists of attributes linked to Bartle's Killertype, i.e. enjoying killing others and seeing their misery. The statements used in the survey obviously point to these four archetypes established earlier. After using factor analysis on his data Tseng divided players into three segments accordingly. Aggressive gamers scored highest on both factors. Social gamers score high on need for exploration but lowest on need for conquering. Inactive gamers score some-

where in-between, that is, lowest on first factor and in the middle on the latter factor. The naming of Social gamers segment is a bit curious because the exploration factor included other aspects of gameplay also. But in this case, “exploration” means also for example discovering new relationships, so the segment can be concluded to be inclined to social activities.

Based on their study on lifestyles that people lead in the online game *Lineage*, Leo Whang & Chang (2004) divided the population of an online game into single-oriented, community-oriented and "off-real world player." According Whang & Chang, single-oriented players view any game as a single player game, and as a result prefer to act alone even in a game with rich social features. They do not want to be interfered with. Community-oriented players, on the contrary, represent the part of a player community which appreciates the social aspect of playing and embrace it with great enthusiasm. This group is similar to the type or motivation which is identified as “social” in many studies. The off-real world type of player aims to achieve personal gains in the game world by any means necessary and is very anti-social. This type of player is also discriminative in the game world, unlike the single-oriented player. Off-real world players also have a tendency to play a role instead of appearing as their real world self. Off-real world players can therefore be equated with Yee’s Immersion motivation, but also Bartle’s Killer type. Community-oriented is clearly the Social type. Single-oriented seems to match the Achiever kind of player.

Kallio et al. (2011) discard altogether the traditional type theories. Their goal was to fashion a gamer mentality heuristic which would be independent of any domain or genre. They suggest that the play style depends on so many variables, such as the company in which the game is played and time available for playing, that placing gamers in rigid “boxes” doesn’t work. The mentalities that they suggest are

divided into three main categories each with three sub-categories. The first set of three is Social mentalities i.e. Playing with Children, Playing with Mates and Playing for Company. The second one is Casual mentalities i.e. Killing Time, Filling Gaps and Relaxing. The last one is called Committed mentalities and it consists of Gaming for Fun, Immersive Play and Gaming for Entertainment. These sets quite directly correspond to aforementioned factors, such as gaming intensiveness (hardcoreness - casualness), social motivations, and immersion.

In-game demographics

Game design and game mechanics are a fairly new and industry-specific way of looking at marketing. Not only do they give relevant data on the player, game designers as marketers can be for once proactive about segmentation and actually affect the way segments are formed within the game. This has been studied from the viewpoints of both real-world products (Zackariasson et al. 2010) and digital items (Hamari & Lehdonvirta, 2010). Zackariasson, in fact, suggests that marketers might have better luck targeting their products towards the avatars instead of players.

As mentioned in the previous section, Hamari & Lehdonvirta proposed a two-dimensional segmentation related to the game design. The vertical component would correspond to the progress of a character, such as advancing in levels could be accounted in part for being committed to the game i.e. gaming intensity, and in part for drive for progressing, which would be related to achievement as a motivation. As the horizontal component there are different avatar classes, generic examples being for example warrior and wizard, and professions, such as blacksmith and tailor, to pursue. This is in-game demographic segmenting. According to Hamari & Lehdonvirta differentiated digital products could be developed and marketed to match the needs of players of given dedication and orientation to the game. Williams et al. (2006) studied the meaning and value of guilds in

World of Warcraft. The authors do not offer a thorough player typology or suggest a way to segment players explicitly; they identified many game design related features that work as good indicators as to what player's preferences and orientations are. For example what they found was that players in specific role playing servers play the game in a completely different fashion than people who are less interested in posing as someone fictional. Role players are deeply immersed in the game world. Also, smaller guilds are usually more tightly knit together than larger ones, meaning that the members are more active, or more social if you will. Also, the type and size of the guild is related to one's ambitions of achieving end-game content, since only larger guilds have the resources to pursue such a challenge which requires a considerable group force.

Typologies combined: a concept-centric summary

The findings and the different concepts discussed in the analysis section along with responding segments and other typologies are summarized and presented in Table 2. The "Concepts" are common ideas that recurred across several papers. The concepts were given names that reflect the common ideas discussed in the papers.

Most covered concepts in reviewed literature seem to be Achievement and Sociability. The bottom three concepts Domination, Immersion and In-game demographics appear the least. Especially In-game demographics could be found only in few papers.

Concept	BARTLE 1996	LASSARO 2004	WHANG & CHANG 2004	IP & JACOBS 2005	WILLIAMS ET AL. 2006	YEE 2006 / 2007 / 2012	DRACHEN ET AL. 2009	HAMARI & LEHDONVIRTA 2010	TSENG 2010	ZACKARIASSON ET AL. 2010	KALLIO ET AL. 2011	STEWART 2011
Gaming intensity and skill (<i>Hardcore, Committed mentalities, Aggressive gamer, Veteran, Casual, Casual mentalities, Inactive gamer, Pacifist, Avatar level, Amateur</i>)				✓			✓	✓	✓		✓	
Achievement (<i>Achiever, Single-oriented player, Guardian/Achiever, Aggressive gamer, Achievement, Progress & provocation, Power & domination, Runner, hard fun, Casual (Stewart), Avatar level, (Semi-)professional</i>)	✓	✓	✓		✓	✓	✓	✓	✓	✓		✓
Exploration (<i>Explorer, Solver, Rational/Explorer, Aggressive gamer, Social gamer, Immersion, Exploration & Fantasy, Story & escapism, curiosity</i>)	✓	✓				✓*	✓		✓	✓		✓
Sociability (<i>Socialiser, Social mentalities, Community-oriented player, Idealist/Socialiser, Social, Helping & support, the people factor, Friends & Collaboration, (Semi-)professional, Amateur</i>)	✓	✓	✓		✓	✓			✓	✓	✓	✓
Domination (<i>Killer, Artisan/Killer, Aggressive gamer, Off-real world oriented player, Progress & provocation, Power & domination, Casual (Stewart)</i>)	✓		✓						✓	✓		✓
Immersion (<i>Immersion, Committed mentalities, Exploration & fantasy, Story & escapism, Off-real world oriented player, altered states, Hardcore (Stewart)</i>)		✓	✓		✓	✓				✓	✓	✓
In-game demographics (<i>Avatar class and profession, non-clan member, Amateur, (Semi-)professional, Group centrality, Size of the guild, Type of server, Faction</i>)					✓			✓				

* Included in Immersion

Note: Although the papers are covered here in the same table, it does not imply that they would be directly comparable with respect to their scope.

Table 2: Concept-centric listing of the player typologies in game research

Criticism on player types

Any abstraction that simplifies a phenomenon can be criticized for that fact. Player typologies seem to fall within easily criticized abstractions for several reasons: 1) they are commonly discussed as if the types were dichotomous, whereas in reality any such psychological factors ought to be measured and discussed as scales (see Nunnally 1978), 2) player types are an abstraction of an abstraction: a player type essentially re-

fers to an emphasis in the set of motivations or behaviors. Typologies, such as Bartle's, should be understood as an archetypal categorization, where the types represent a player type whose certain motivations and behaviors are stronger than in other player types. For example, an explorer type might be more curious, explore more and spend more time weighting different alternative courses of action. Other motivational and behavioral dimensions are here then assumed neutral. 3) Motivations and behaviors of a player might not fully transfer between different types of games, however, this does NOT render measuring player motivations and behaviors useless, but on the contrary, calls for a systematic investigation between game types. This situation would indeed call for unified measurement scales in order to investigate differences over game genres. 4) Typifying gamers can be seen as counter-productive from a phenomenological perspective where the aim is not so much in generalizability and comparisons but rather in investigating player experience on a richer level. However, in a more structured qualitative approach, player typologies may prove a useful aid. 5) Furthermore, as player types are described and defined in variety of ways in literature, it has been a somewhat of a subjective step to codify different presented types within the categories in the paper. Hence, a limitation of this paper as well as the entire research on player types is its manifoldness with respect to the different perspectives (archetypes vs. scales – traits vs. motivations vs. benefits vs. behaviors). Therefore, further studies could elaborate even more on comparability of player typologies. 6) It is also questionable whether we even need frameworks that are specific to playing or whether game studies should simply adopt existing frameworks from the larger context of psychology. It seems that both approaches exist, since some typologies have been adapted from existing personality types and some (such as Bartle) have been conceptualized based on observations of players.

Conclusions & Discussion

The field of study in player types is perhaps surprisingly uniform. The current studies could be synthesized into five key dimensions pertaining to motivations of play/orientation of the player: **Achievement**, **Exploration**, **Sociability**, **Domination**, and **Immersion**. Additionally, in relevant literature, notions of how Intense the mode of play, was commonly articulated as continuum or dichotomy between hardcoreness and casualness were largely present in most of the studies. Furthermore, some studies have suggested using “in-game demographics,” such as class and progression as one basis for typifying players through behavioral measurement.

Even though the research has focused largely on well-defined player types, there are also those who question the approach of categorizing players (e.g. Kallio et al. 2011). Indeed, “player type” can give the impression that a player would strictly belong to a certain type. However, this study would like to highlight that whether player types were referred to as nominal or as ordinal in previous studies, the types will nevertheless provide ground for further measurements of player traits, attributes and motivations as well as hence help in forming a more refined understanding about them. At this stage of the research continuum, a couple of different perspectives to player types mix together, such as types in accordance to motivations of play (Yee 2007; 2012), gaming mentalities (Kallio et al. 2011), traits of the player (Bateman et al. 2011), their behavior and self-selected in-game demographics. The aim in this study was to bring these separate perspectives together, which all have commonly shared a common nominator: “player types.”

Our findings also show that the amount of dimensions pertaining to player types is rather low in the respective literature and very much based on Bartle’s (1996) original work. In addition to the Bartle’s achiever, explorer, socializer and killer, only immersion oriented play

as a qualitative mode of play/player orientation could be found on the same abstraction level from other literature. Outside these psychographic types, previous literature has also suggested using in-game demographic factors (Hamari & Lehdonvirta 2010; Zackariasson 2011) and gaming intensity (Ip & Jacobs 2005; Drachen et al. 2009; Hamari & Lehdonvirta 2010; Tseng 2010; Kallio et al. 2011). Some works, such as Yee (2006) and Kallio et al. (2011) do provide sub-dimension to the higher abstraction level player motivation and mentalities; however, on this abstraction level the studies do not add additional dimensions of player types. We were surprised for instance, that within this stream of literature, there were no mentions of such motivation to play such as sensory enjoyment, aesthetic enjoyment, playfulness or utilitarian gaming motivations, such that professional eSports player might have for example.

These findings suggests that we have not yet exhausted the study on identifying player types from perspectives of motivations, ways in which players play or how they can otherwise be segmented according to their behavior within and around games. Therefore, further research on identification and abstraction of player types is still a potential way forward. This suggests that the research stream on player types could benefit from further synthesis, validation and comparative studies. Parallel with this work we call for constructing more measurement scales for all the found player types in order to quantitatively use the types in further research. Yee (2012) has started this work by developing scales for achievement, immersion and social motivations. Many of the typologies are behavioral and attempt to explain the relationship between the player and the game in order to understand them. Working back from actual behavioral use data, connecting it to psychological factors and mapping their correspondences could provide a potential avenue for further research, especially because games offer effective ways to measure actual user behavior in parallel with conducting psychometric investigations.

Implications to game studies

For quantitative game studies, the results of this paper give qualitative validation and summary on found player traits and pre-disposition from a bottom-up perspective. Thus, the results help further quantitative game studies in developing further measurement scales for studying players and relationships of different player traits with different player behavior within games and gamification. Most of the player typologies have been built based upon observation within MMOs and other online games. Therefore, further studies could employ these measures for studying differences across game types, platforms and play contexts.

For qualitative game studies, the results of this paper might not be as fruitful for further research agendas, since qualitative studies should strive for investigating more fine-grained phenomena rather than examining players only as seen through pre-defined factors. However, one should note that most work on player types thus far has emanated from qualitative works regardless. The name “player type” is misleading in the sense that of course no player falls within any one of the types defined in the literature. The results, however, do summarize the ongoing (mostly qualitative) research on player types. Furthermore, the identified player types could act as a point of departure in qualitative studies for investigating player experiences on a finer grained level.

One especially interesting further inquiry could be in investigating the feedback loop of how established player typologies affect the design of games and how they further strengthen the common ways to play. This might create a situation where gamer typologies are self-fulfilling and self-validating. In other words, designing a game for certain player types might result in the same player types ending up being the dominant ones within the game as well if measured via behavior. Game designers have made sure that the game has the elements that

resonate with every player type in Bartle's typology (based on several discussions with game developers).

In contextual terms, player typologies, and game research in general, could provide points of departure for studies outside what can traditionally be seen as games. For example, the use of gamification and persuasive games is becoming more commonplace in differing contexts (Hamari et al. 2014), such as commerce (Hamari 2013), organizations (Jung et al. 2010), healthy lifestyle (e.g. Hamari & Koivisto 2013) and marketing (Huotari & Hamari 2012). The studies on how people play and what kinds of motivations they have can help related research in other realms.

Implications to game design and marketing

Although the research stream on player types is not directly associated with marketing literature, player types has been a central interest to game companies with regards to the design and marketing. Furthermore, the process of identifying user groups could be compared to that of marketing and segmentation. Techniques applied are those used in segmentation as well (e.g. factor analyses). Some typologies that were covered have potential to be used as a basis for segmentation. For example Yee's (2007; 2012) motivational factors could act as such a basis for psychographic segmentation. Some authors, on the other hand, have based their typologies directly on marketing theory. Hamari & Lehdonvirta (2010); Hamari & Järvinen (2011); Zackariasson et al. (2010) and Tseng (2010) refer to marketing theory and discuss segmentation in their papers. The results of this paper could help game companies better understand their clientele, and the results could be used as a starting point for a more thorough and "exact" segmentation. In addition, in relation to game design, designers now have in their knowledge the common behavioral patterns and motivational factors of players and can design and develop their games accordingly. Furthermore, established psychometric measurement scales can further

be used in predicting for example the use and purchase behavior within games between players with different motivational orientations.

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Player-reported Impediments to Game-based Learning

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INTRODUCTION

The history of training games and simulations goes back at least 3,000 years (Keys and Wolfe 1990). Journals such as *Simulation & Gaming* have documented training games and their results for four decades, and while their significance is under frequent debate, games and simulations are accepted as a valuable part of the educational toolkit - at least in fields where they are in constant use. Their educational significance, especially in areas considered physically or fiscally risky (e.g. crisis management, aviation, business), remains strong. In this article, we present critiques expressed by participants of business simulation/games, outline it in context, and suggest options for removing or at least weakening those learning impediments.

The process of adding game-like elements to activities, “gamification,” is offered as a solution to various problems in both learning and general society (McGonigal 2011), and as certain organizations successfully adopt play as part of their culture (Warmelink 2011), it is necessary

to also see the problems of the way simulation/games function as learning tools. It appears that *at least* some players - in their own view, *at least* - do not reach the full learning potential from such artifacts. This, according to them, is because they concentrate on game-play in a manner that prohibits some types of learning incentives from functioning. This may not be the full truth, but since in all game-based learning we are currently just extrapolating from case examples and do not have a commonly shared theory for understanding it (Klabbers 2003), such reports have to be taken seriously until more credible learning assessment methods have been devised.

In this article, we answer the question of what business simulation/game players themselves see as potential impediments to their game-based learning, and how to possibly solve the reported problems. It draws on both simulation/game research and the study of educational and recreational games and simulations in other areas. Combining these and player interviews, we display how the perceived “game” context and the resulting competitiveness affects learning. While games may very effectively negate existing mental models (Tsuchiya and Tsuchiya 1999) and teach systemic thinking (Senge 2006), it appears that players are often still fixed into the mental model (a deeply ingrained assumption, generalization, or even picture or image that influences how we understand the world and how we take action) of a game being solely a competition (we will later discuss the negative consequences of business games considered solely as competitions). As a result, they default to a game-based logic, instead of using the simulation/game as an opportunity to learn real-life practices and skills. We believe this to be a major cause of problems with game-based learning.

METHODOLOGY

Participant interviews were conducted by Harviainen, following the discourse-as-interview practice (unstructured, often informal discourse that includes the interview questions; see Kvale and Brinkmann 2009).

The respondents were selected randomly. Five interviewees were students (three majoring in business studies, two from other faculties), two (Alex and Robert) were top-tier executives in their mid-50s, who had both played business games as a part of their studies. Three of the students (Jack, Jim and Iris) were interviewed multiple times. The interviews were translated from Finnish by Harviainen.

The interviewees were initially asked general questions about their experiences with business simulations. As all spontaneously expressed experiences of problems with learning from simulation/games, follow-up questions were directed to ascertaining more data about those issues, in a probing interview (Stewart and Cash 2006). The answers were then compared to 102 player essays, collected by Saarinen and Lainema from simulation/game-based courses they taught, in order to make sure that the reported problems were not singular incidents, tied to any single game, or to deployment by a particular teacher. (The student interviewees had written similar essays after the simulation/games they played, but their essays were not included in this particular data set.) The player-reported problems we discuss in this article were all mentioned by several respondents, from multiple games. We believe that this process was sufficient to remove the risk of the participants reporting only game-like qualities of the simulation-games, as responses from both data sets pointed to the same conclusions, of their own initiative. As Jørgensen (2012) has shown, game players sometimes report widely dissimilar experiences and motives than outside observers believe them to have. Regardless of whose assessment of the learning situation – observer or player – is more accurate, this obvious dissonance requires more research. Thus the necessity of this article.

All respondents had experiences with commercial digital games as well as digital business simulation/games. The business games from which the interviewees responses came (most prominently *LEKA*, *RealGame* and *Intopia*) were too numerous and complex to describe here, but

they all deal with high-realism simulation of the management of fictional companies that purchase materials, manufacture products from those materials and then sell the products. Some of the games had companies of only one type, whereas in others, participants steered companies which also collaborated with other student-led companies along a supply chain between suppliers and manufacturers. The students had played both turn-based (“batch-processing”) and clock-driven (“real-time processing”) business games, the corporate-professional respondents solely turn-based ones. Our data showed, however, that very similar answers arose regardless of which exact combinations each respondent had played. Gender furthermore had no significant influence on the students' responses, nor did their study majors. The sole significant difference we found was that according to two interviewees, business students in their deployment groups had been much more likely to take risky, big loans than had the non-business students who played in the same deployments.

We have chosen to exemplify common answers by suitable interviewee quotes in each chapter, but all of the findings were reported by multiple respondents in both interviews and essays.

SIMULATIONS AND GAMES AS LEARNING TOOLS

In business simulation games – unlike in the actual world – participants are free to experiment with policies and strategies without fear of jeopardizing a real company (Senge and Lannon 1997). Such freedom is nevertheless relative to the gaming situation and can be for example constrained by team play or time zone differences. Even in such cases, where group pressure may limit experimentation, it includes the kind of reflection and inquiry for which there is no time in the hectic everyday world. Thus, Senge and Lannon argue, participants learn about the long-term, systemic consequences of their actions. Simulations designed for general purpose management learning are useful for helping individuals to see relationships between various business decisions

and potential outcomes (Senge and Fulmer 1993). The insights gained from experience with these activities may be transferred to an organization when participants face situations that remind them of similar challenges faced in the simulation.

Lately simulation gaming has been seen as the kind of learning activity that realizes the ideas of constructivist learning (Lainema 2009). Lave and Wenger (1991) emphasize that the traditional view of learning as internalization is too easily construed as an unproblematic process of absorbing the given, as a matter of transmission and assimilation. Instead, the focus should be on the skills of *reflectivity* of the learner, not on remembering. Constructivism focuses on the process of knowledge construction and the development of reflexive awareness of that process (Bednar et al. 1992). Learning is a process of enculturation that is supported through social interaction and the circulation of narrative (Brown et al. 1989). Instruction should not focus on transmitting plans to the learner but rather on developing the skills of the learner to construct plans in response to situational demands and opportunities. Instruction should provide contexts and assistance that will aid the individual in making sense of the environment as it is encountered (Duffy and Jonassen 1992). The learner is building an internal representation of knowledge, a personal interpretation of experience (Bednar et al. 1992). Learning is an active process in which meaning is developed on the basis of experience. Learning must be situated in a rich context, reflective of real-world contexts for this constructive process to occur. The goal is to portray tasks, not to define the structure of learning required to achieve that task.

Duffy and Cunningham (1996) exemplify constructivism in the form of problem-based learning. The focus should be on developing the skills related to solving the problem as well as other problems like it. Skills are developed through working on the problem, i.e., through *authentic activity*. It is impossible to describe what is learned in terms

of the activity alone or in terms of the content alone (p. 190): “Rather, it is the activity in relation to the content that defines learning: the ability to think critically in that content domain, to collaborate with peers and use them to test ideas about issues, and the ability to locate information related to the issues and bring it to bear on the diagnosis”. The teacher does not teach students what they should do/know and when they should do/know it. Rather, the teacher supports the students in developing their critical thinking skills, self-directed learning skills and content knowledge in relation to the problem.

Simulation gaming exercises seem to support and fulfill most of the constructivist requirements for effective learning environments (Lainema 2009). All the aspects above – developing the reflective and interpretative skills of the learners, the social interaction of the learning environment, the narrative nature of a game, self-directed nature of the learning process, the richness of the game learning environment, the potential authenticity of the experience – support the use of simulation games in education. Authenticity and realism has a role both in simulation games and constructivism (Lainema 2009). The learning artefacts themselves are called *simulation* games. What is simulated is some of the critical features of the reality (Saunders 1995). Keys and Wolfe (1990) define a management simulation game as a simplified simulated experiential environment that contains enough verisimilitude, or illusion of reality, to include real world-like responses by those participating in the exercise. The very essential feature of supposed authenticity of the simulation games, that is the basis for potential learning, is not without problems, as we will discuss later in this paper (see Schaffer and Resnick 1999, on how “authentic” can be varyingly interpreted in educational contexts).

According to Elgood (1996) games in general have some advantages compared to lectures:

- Games can have considerable subject knowledge built into them. They can pose problems, demand answers and respond to the answers with a judgment that is knowledge-based and right. Students learn by experience rather than by hearsay.
- In a lecture, it is not guaranteed that the information transmitted is also listened to and understood. Although this cannot be guaranteed in a game environment either, the nature of business games usually creates interest on the subject matter, because the participants are themselves operating on the matter. This would suggest that in games even if less is being officially transmitted, much more is being received.
- In games motivation is further enhanced by the expectation of enjoyment and freedom of action that is associated with the word 'game'. Human individuals are often competitive by nature.
- In games there is usually discussion between the participants. Thus, the views of many people are being considered. Elgood mentions that the process of understanding may receive more help from discussions with somebody operating at one's own level rather than with an expert.

Our respondents, in both interviews and essays, pointed to these advantages, yet at the same time cast a shadow on uncritically accepting them as reliable and sufficient, as will be discussed below. They also mentioned shifts in perspective, in accordance with the idea of changing mental models. The means of simulation gaming to be used to change governing mental models and to create a shared mental model among participants (Tsuchiya and Tsuchiya 1999) are:

- Voluntary learning: the fun element of gaming encourages participation.
- Creation of turmoil: the conflict and turmoil created by a game raises a doubt in mental models and lessens resistance to change.
- Big picture: when the participants grasp the whole, the individual

mental models become larger. As a consequence, compatibility of participants' mental models increases and the creation of a shared mental model becomes possible.

- Compression: compression of time and space makes experiential learning possible and accelerates the learning process: the outcomes of actions are experienced in a short period of time.
- Risk-free environment.
- Shared experience: essential for the creation of a shared mental model.
- Rich interpretation of history: the expansion of our comprehension of past experience through gaming enables us to learn from small episodes within the real world.
- Cause maps: the cause maps developed through participation in playing help participants to interpret and make sense of their lives.

As a summary from a literature survey, Keys and Wolfe (1990) note that many of the claims and counterclaims for the teaching power of business games rest on anecdotal material or inadequate or poorly implemented research designs. These research defects have clouded the business gaming literature and have hampered the creation of a cumulative stream of research. Dickinson and Faria (1995) sum up the findings of five major review articles (viewing all together 160 studies) on the effectiveness of business game training compared against other instructional methods. Simulation gaming was found to be superior in 46.9 %, not as effective in 16.9 % and no learning differences were reported in 36.2 % of the cases. They conclude that simulation games are at least as good as other instructional methods and possibly superior.

That conclusion seems a bit naïve, as drawing this kind of assumption of the applicability of simulation gaming in general in different educational situations is quite questionable. As Villegas (1997) notes, no concrete evidence exists that simulation games are superior or more

effective than other techniques used in training. Gosenpud (1990), in turn, states that researchers should stay away from the kind of study where the experiential method is compared with others (usually in terms of some very general measure of cognitive learning). This kind of study is value laden, stimulates unnecessary controversy and the knowledge gained from it is in terms of winners and losers, nothing else.

Keys and Wolfe (1990) note that most of the research has been focused on team performance in games, not learning, with the assumption that high performance teams learn the most from a game experience. Thus, they note, research is needed to evaluate the relationship between learning in a business game and performance in a game. We think that *we need research on the conditions which facilitate learning through gaming*. Performance is interesting mostly from the point of view of student assessment.

Business games are often, quite inconsistently, criticized because of the lack of well-designed evaluative studies to establish learning validity. Although this is certainly partly true, it should be recognized that it applies even more so to learning from the commonly accepted teaching methodologies such as cases, lectures, or simpler exercises (Keys and Wolfe 1990). One should furthermore note that research on training simulations and games does not necessarily apply beyond immediate boundaries, because fundamental differences may exist between educational uses of commercial games, designed-for-education games, and the drill-simulations of, say, soldiers and firemen (Whitton 2009).

Motivating games are exceptionally good at prompting out-of-game information seeking and learning. Even if nothing formal is learned, players may pick up things such as etiquette, group management and social skills (Duchenaut and Moore 2005). Different games foster different kinds and facets of learning. Whitton (2009), following Gagné,

et al. (1992), lists five main categories:

- Intellectual skill (Concepts, rules and relationships, and making discriminations such as using algebra to solve a mathematical puzzle).
- Cognitive strategy (Personal techniques for thought and action, such as developing a mental model of a problem).
- Verbal information (Relating facts, such as recalling the names of the bones in the hand).
- Motor skill (Actions that use muscles, such as dancing).
- Attitude (Beliefs and feelings, such as choosing to read detective fiction).

Digital games can be used to support all five types, even as one single game will not support all of them. For university level training, the intellectual, cognitive strategy and attitude facets are the most important, as they directly tie into what is taught at that level. While games can assist in memorization and comprehension, their true value lies in the higher domains (Whitton 2009), offering spaces for experimentation and cognitive development through the freedom to try and fail (Tsuchiya and Tsuchiya 1999). They also support affective learning (as per Bloom 1956), even when players go against teacher or designer intent, because such “functional bad play”, i.e. exploration of the game-system’s limits, too, is often beneficial (see Myers 2010). So where is the problem?

THE MAP IS NOT THE TERRITORY

Simulations and games may mimic real-life situations as closely as possible, but they are not real life. This is especially true of simulations that already deal with abstractions like virtual money. Lloyd (2007), in her study of the learning practices of Australian firemen, found that even physical simulations are considered “theory learning” by participants. Until the lessons are turned into embodied knowledge remem-

bered by their bodies, it is not seen as real knowledge. This is despite the fact that games and simulations have been documented as producing psychophysiological reactions in line with real-world experiences (Kivikangas et al. 2010).

Educational games depend on immersion for their learning potential. It is not just a lure for getting people to learn, but a fundamental requisite of their proper function as educational tools (Balzer 2011). On the other hand, too much immersion is again harmful to the learning (Henriksen 2008), and needs to be addressed by proper briefing before and after, as immersion and reflection may contradict each other (Henriksen 2010). Furthermore, games designed to be educational need to be directed, in order to produce the desired results (Hsu 1989). Sandbox-type games (open-form games which offer lots of freedom of action) are not as suitable.

ACCENTUATED TRUST

Jim: "Before the start of the game [given that we ended up on different levels of the supply chain], Jack and I decided to form a permanent chain. We would buy solely from his team, and he sell exclusively to us, no matter what happened. So we were able to act as [if we were] one larger company, which gave us an edge over the others in the game. The downside was that if Jack would have decided to screw us over at any point, we would have been doomed."

Q: "Would you have trusted someone you did not know beforehand that much in the game?"

Jim: "No."

Q: "Would you trust someone that far in real-life business deals?"

Jim: "No."

Q: "Not even a friend like Jack?"

Jim: "Hell, no. The stakes are so different there."

(Jim, business student)

One of the key problems mentioned by the interviewees was a perception of unrealistic trust amongst players. In Roberts' (1969), terms, this is like learning to fire blanks while real corporations use "live ammo". When playing a game with people they know, participants know what sort of behavior they can expect from their fellows. At the same time, playing with people one personally knows heightens arousal and positive valence created by the game, even if the players are not present in the same room (Kivikangas et al. 2010). As this is combined with on one hand the lack of real monetary risks, on the other the social risk of betraying one's friends, a situation of potentially accentuated trust is born. Jack and Jim both stressed that because the setting was artificial, they felt no need to even calculate the risks involved in trusting each other, and instead just went "all in."

Therefore, at least in the case of some players, levels of cultural trust and mistrust related to the consequentiality of exchanges of resources (see Misztal 1996) are altered. In other words, certain players develop temporary systems of trust that may have no correlation to what they would do in normal life. Whether this is towards increased or lessened trust depends on the persons in question and their past history. As far as ethics are concerned, it can be considered good that players do honor their deals, but real-world economics cannot be trusted to always function that way.

It would thus appear of interest to conduct experiments in forcing players to re-evaluate such trust. The simplest, but rarely feasible, way would be to have only strangers play together. One possible option for addressing accentuated trust would be the assignation of additional goals, such as working as a traitor against one's own team on behalf of a competitor or sub-contractor, looking for such a traitor, or seizing managerial control of one's team. This can be done by administering pre-written characters (i.e. fictional personas players have to portray), thereby allowing participants to distance their game-internal actions

from their real-world personalities and thus lessening associated stigma. Smaller alterations, such as the definition of a mandatory managerial or teamwork-participation style, are also possible.

EXCESSIVE COMPETITIVENESS

Educational games are very much games of skill. In many cases, no chance component is present. This seems to cause some players to treat them as competitive, even when directly instructed to do otherwise:

Q: "Were you instructed to play individually and to treat it as a learning exercise?"

Iris: "Yes, very clearly."

Q: "Did you nevertheless play it as a competition against each other?"

Iris: "Yes, totally. Of course we did."

(Iris, natural sciences student)

Corporations compete with each other in real life, and managers sometimes make irrational choices, so why is there harm in competitive play? This is because one of the key advantages of simulations is that they make it possible for players to try out various strategies without tangible risk to themselves or a real corporation (Crookall, Oxford and Saunders 1987). If the competition is too fierce, there is no chance for significant exploration, or correction of errors later on, as the players' minds are set on performance, not learning. Making errors becomes just something fatal to winning, not a means of learning. Due to excessive competition, chances are not taken, as participants stick to what is perceived as winning strategies, even if those strategies would be completely absurd in real life. This phenomenon was noted by all of our interviewees, pointed out in essays, and mentioned as the most irritating facet of business games by the two corporate professionals.

Several solutions to this problem exist, ones that do not remove a teacher's ability to assess performance or learning. They do, however, introduce other complications. For example, constant teacher observation is highly inefficient and time-consuming. One option is to simply make the players work without knowledge of each others' progress. This, however, requires single-session runs (to prevent corridor-talk) as well as the removal of any possibilities of the players comparing "scores." It is also a move away from realism - real corporations devote significant resources to environmental scanning, in order to ensure their position on the market (Choo 2002), so to use it would be again a step towards game-based logic.

One possibility is increasing transparency, which can be done in several ways. Lainema (2008) has recommended opening up the "black box" of game mechanics for the players. This would permit more exploration of techniques instead of vague ideas and adaptation to new tactics when others appear inefficient. Likewise, managing tools should be visible, so as to differentiate between management skill and technical knowledge (Lisk, Kaplancali and Riggio 2012). Another option would be the introduction of environmental scanning into the simulation itself: by devoting game-internal resources to corporate benchmarking, players would be able to analyse the performance of the other companies and apply the successful methods in their own teams. This would lead to both increased realism and collective learning, as players could directly benefit from each others' experiments.

One more option would be the development of more complex simulation-games played as competition against the game system itself, but with the presence of multiple players in them, so that the human aspect is not lost. Research on massively multi-player online games (Ibid.) has shown that this will foster shared learning, effectively breaking down what Huysman and de Wit (2002) call the "individual learning trap," where people hoard what they learn. Competing

against each other, in turn, accentuates the trap, as players are not willing to risk losing their edge. In such a case, the social nature of learning is turned against itself, because a significant part of the social setting (the players) promotes not sharing what is learned.

UNNATURAL RISKS

“When I studied, I hated the business games. Our team, made of people with years of actual business experience, was always losing, because we tried to run the fictional company like a real one, while the younger students just played it as a competition. Therefore as the end approached, we too would start making [real-world-wise] insane choices, like selling all the workers to slavery, as we were graded by profit alone. [...] [I’d] cut it in mid run, to prevent last-minute changes. And judge it with criteria not tied too much to just profit.”

(Alex, top-tier executive in a multinational company)

The game situation is not seen as matching a real one. The taking of unnatural risks, “*as if there were no tomorrow, because we knew there would not be one,*” was reported by all interviewees and in several essays. As noted above, one of the key points of using simulation/ games is that they are without real risk (Tsuchiya and Tsuchiya 1999), and well-calculated risk-taking is what allows businesses to progress and succeed, yet as reported by the interviewees, the perceived lack of game-internal risks causes (or at least allows) participants to treat the game less seriously.

A serious problem is embedded in that assumption: people will not necessarily explore and experiment, but rather just seek the “correct answer” defined by the game designers for gaining the optimal result. Instead of using the possibilities of the game being not real to see how failure may happen (Myers 2010; Crookall, Oxford and Saunders 1987), they start stabbing in the proverbial dark to find the magic

bullet. In such situations the damage goes beyond just stupid risk-taking: despite of what game-education idealists claim, the players are actually learning the wrong thing - believing that instead of calculated risk-taking, one should utilize unsuitably high risks so as to potentially get a similarly high return - which brings us back once more to the risk of game-internal learning. There is not much use to a fireman who is unable to stay safe because he has been dealing with just fake fire.

Ways out of this trap exist, the first and foremost being active facilitation where absurd decisions are immediately put to question, a process that, however, can usually be implemented only in small-scale games. It is highly unlikely that any real-world wagers would actually remove the problems. Neither are they solvable through improved interface design: as shown by Faaborg (2005), even highly advanced live-action role-playing games, easily able to meet and even transcend all criteria set for “mode III” training simulations by Klabbers (2000), i.e. being “learning environments in which the learners are given the opportunity to interactively build their own system of resources and rules[, and which provide] conditions for the interactive self-reproduction of social systems,” suffer from severe cases of inflation.

Several potential solutions exist. It is possible to implement a “public trust” measurement/grading system, which would mimic stock market reactions to outrageous risks. That option, however, carries along with it a designer’s or teacher’s own set of value judgments, potentially leading to misrepresentations of a free market. Another solution is much more insidious, and possibly much more engaging: virtual property and possessions have real value to people who actively participate in continuous online environments (Castronova 2005). Similarly, many players appreciate public achievements in other forms of networked play. Therefore one significant alternative would be the linking of learning games/simulations to an achievement system of some kind, one which other players would be able to voluntarily peruse or ignore,

as they see fit.

A teacher may also extrapolate from the end-state of the game, testing the viability of the choices. Selling off one's means of productions and realising stocks of half-produce would merely mean that the company would crash, whereas the carefully planned production and supply chain would make it through the extrapolation. Several interviewees recommended this approach.

OUTRIGHT CHEATING AND GAME-BASED LOGIC

“Our team was doing bad, until we, between play, heard from older students that there was a bug: we could charge as much as we wanted for [a product], as its sales numbers were fixed, regardless of price. That way we acquired money really fast, and were able to invest it into other projects, enhancing our general efficiency.”

(Jim)

Simulation players do cheat. When asked for more details, Jim said that “it felt right, given the game-nature of the activity,” yet said he would not cheat in “normal games.” The nature of this seemingly strange response lies in participant expectations: in a training situation, everyone wants to shine, and the activity itself is outlined *as a competitive game*, i.e. something many people take as “not so serious” by default (see Salen and Zimmerman 2004). There therefore exists the idea that everyone is willing to do what it takes to win, even if the simulation-game is not framed as a competition. This makes dishonesty seem normal.

Dishonesty, in this case, means not traditional “cheating,” i.e. the breaking of game rules or social contracts relating to the game for the purpose of winning it (Consalvo 2007). Rather, it is the following of game-based logic (Suits 1978) instead of real-world logic, as men-

tioned above. Under normal gaming circumstances this would not be a problem. In a learning game, however, it distracts from learning (Henriksen 2008). Instead of reflection, players may either skip the lesson completely, as part of “just a game,” or adopt game-logic based ideas to real life: for example, in 2008 Nascar driver Carl Edwards tried to bounce his car off a wall, an idea he claimed to have picked up from video games (Harris 2008).

The ability to read a game as a system is essential to both enjoyable game-play and to learning from that play (see Wardrip-Fruin 2009). If the players however utilize their abilities of game-system analysis (“procedural literacy”; Bogost 2007) solely to exploit the game system, and fail to compare it to real life, their learning remains tied to game-based logic instead of reality. Game-based logic may not in all cases be harmful to learning processes, but the risk exists at all times. If players try and understand the logic of the game, in order to either exploit it or to score at least some points to save face, when they are far behind others (Henriksen 2008), they may learn to look for similar mechanisms in real life. If, however, they skip the lessons as simply situation-related and insignificant, all that which is learned during play may be discarded after it, despite even a good debriefing (Kim 1993). That which is viable in the game may not be viable when confronted with the materialistic reality. This is why it is imperative to recognize that performance is not the same as learning, and to apply that idea to grading the students’ play (Knotts and Keys 1997).

Lainema (2003) lists six potential problems between a simulation game profit, student learning and students’ performance assessment (p. 90). First, profit making in a game does not correspond to learning. Secondly, those participants who make the most mistakes may very well also learn the most (being in line with the educational views on problem-based learning). Thirdly, is success in real-world equal to a better understanding of business logic? It is probable that factors

like individual character and gender play an important role in the real-world, but not necessarily in games. Fourth, making the biggest profit sounds like quite a one-sided goal and research variable. Business organizations can succeed well in the light of some other values (like human well-being and committed employees) and short-term profit making may be secondary but the implicit assumption underlying many business games is that good financial performance is a good measure of the participants' overall achievement, encompassing strategy formulation and implementation. Burgess (1999) refers to the management literature about the difficulty of ascertaining in practice a direct relationship between the two variables. This highlights the danger of assuming that good performance implies good strategy. Fifth, a formally excellent strategy may not necessarily lead to success in a game. In a truly interactive game, how a certain strategy works depends on the opponents' strategies. For example, if all the participants choose the same formally excellent strategy, probably none of the participants succeeds very well. Sixth, as Burns et al. (1990) note, a false assumption exists, which connects measures of performance and measures of learning in many studies. Performance indicators can imply learning when learning has not occurred.

It is therefore absolutely necessary that game-based teaching not tie itself to just playing. The students have to reflect on the play afterwards, both through formal debriefing as well by themselves. Focus should be placed especially on dynamics between the decisions they made and the results of those decisions, so as to not reward cheating, or, more precisely, cheating that does not contribute to learning. This is in line with rewarding overall performance and learning, not just elements such as direct profit (Whitton 2009).

DISCUSSION

Players bring much more than just their school training into a simulation. Gosenpud (1990) describes the problematic area illustrative-

ly: the learner often learns things not intended by the designer, and often this unintended learning is more valuable because it is relevant to the learner. Designers cannot furthermore rely on players “stealth learning,” i.e. learning without realizing it, as stealth learning, in many cases, prohibits reflection, because the learner is not sufficiently aware of it (Whitton 2009; Henriksen 2008). Evaluation, defined by the designer, may miss the real worth of the experiential because what is valuable for the learner is defined by the learner and may have nothing to do with the designer’s intention. Players can have highly significant pre-expectations that affect learning, but not everyone does. Not all people who have grown up with digital culture are interested in gaming, nor do all players consider them worthy as learning tools (Whitton, 2009). Most of what players do during a game is based on rules and behavior patterns not specified in the game material, but on what they bring along. Without that, the play would not be possible (Crookall, Oxford and Saunders 1987). Of special interest in this article’s case is that they bring their concepts of “game” into the game, playing it accordingly. The upside of this is the potential for extended learning - players who like the simulation/game will want to continue playing, and voluntarily plan and study for the game (Lainema and Saarinen 2009). This was reported by all five of the currently-studying interviewees, as well as in many essays. The downside, as discussed, is that a game is easily seen as being a competition, where learning is incidental and ancillary to the task of being the best. That, too, can be used for great advantage with a properly done debriefing, as much of the real learning takes during post-game reflection. Yet we believe this to still be insufficient.

Many games create significant cognitive changes during play, but the changes, in most cases, soon dissipate. Practical skills can be retained longer, but without use those too will wither. Therefore it is necessary to anchor the learning into existing modes of action or a cultural context that keeps it active (Harviainen and Lieberoth 2012), even when

the game itself is used as an anchoring tool for earlier learning. Pre-game workshops are also highly useful (Bruun 2011). They explicate goals, both in playing style and results, and enable the players to find more opportunities for personally suitable anchoring.

We are aware that all of the recommendations we have suggested in this article are known to be in current use somewhere. The issue here, however, is rather different: The underlying problems - regardless of whether they were experienced by just these interviewees, or are more ubiquitous - must be understood, and changes implemented in order to address the real impediments. This brings us back to Senge (2006): if we are to teach game-players systemic thinking, we ourselves have to see the simulation-games as systems, not simply directed tools. To do that, it is necessary to look beyond the confines of simulation-games, into recreational games, and the way they engage players. If the game-as-system has been suitably framed, participants will contribute to it. Changing the frame changes their perspectives on the system, including what within it is considered good and bad (Van der Heijden 2004).

It is highly unlikely that the reported problems would result from failures in deploying the games, given that our respondents reported learning impediments with several simulations, all of which were run by different supervisors. The issue is more complex, and not something that should be left unanalyzed because it provides weapons for those who oppose game-based learning. It appears that just like theorists, players too may view simulations and educational games differently, based on their personalities, the way they relate to gaming in general, and each game's traits (type of play, winning conditions, etc.). For some, educational games are representations of real worlds and real-world phenomena, even when they contain fantasy elements. For others, like our interviewees and essay writers, they are "operating realities" in their own right, meaning they are seen as not necessar-

ily having direct or explicit representational power, ability or value. They are competitions, with their own rules which take precedence over learning purposes. As in recreational games, this does not negate educational value, yet works against immediate reflection, and should be addressed during debriefings. Asking the participants, for instance, how they think the game session differed from reality - instead of just assuming they know - may be sufficient as a tool for starting an anchoring process (Harviainen and Lieberoth 2012). For this purpose, we especially recommend the use of reflective essays as a part of the debriefing process, preferably also between game sessions. Reflective essay, in this context, is a written report of a participant's views and even feelings about game session activities. It is a personal reflection based on personal experience, in which a set of guiding questions or topics help participants to focus on relevant issues and thus gain the most benefit from the time invested in simulation game sessions.

It is quite possible that the players who suffer from the problems listed in this article do gain educational advantages from the games, they just do so differently. It is our hypothesis that for those players, the anchoring aspect of the learning games is heightened: By playing, they do not learn as much as some others do *during play*, but their style of play allows them to use the game to apply their earlier learning for a superior performance which, in turn, leads them to retain that earlier knowledge better. It is obvious that further studies are required, so as to both ascertain this hypothesis as well as to see whether the players who report learning impediments actually, incidentally learn as much as the others do, and are simply either less adept at recognizing learning, more adept at recognizing potential problems, or both.

CONCLUSION

Certain players appear to seek performance at the expense of learning, as they consider games to be a competitive activity. This guides them to unrealistic trust and a game-based logic of business phenomena

(e.g. searching for the logic in the game as an artifact instead of considering decision alternatives which would work in real-world situations), as well as outright cheating. Such players may nevertheless learn by playing, even if they do not recognize that fact themselves. In order to combat these perceived learning impediments, experiments should be conducted with new types of games, while adding more thorough briefings and especially reflective debriefings and anchoring to currently used simulation/games. By guiding student-players to see the wider array of options offered by game-based learning, their enjoyment of the activity can be preserved, while simultaneously increasing the likelihood that the educational goals of the activity will also be reached. In order to do this, the idea of game performance - profit - as the main criterion for grading students has to be abandoned.

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A Practical Guide to Using Digital Games as an Experiment Stimulus

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Introduction

Digital games¹ engage the player in complex behavior, which—depending on the game design—can call upon various types of cognitive and emotional processes. As such, games provide an excellent vessel for examining a multitude of concepts central to psychology, from memory encoding, to social skills and decision making. Game-like task setups are classic to experimental psychology: early examples include e.g. Deutsch & Krauss's Trucking Game (1960) and The Prisoner's Dilemma (Jones et al. 1968). Contemporary psychological research has also begun to utilize digital games (e.g. Fehr & Gächter 2002; Frey

et al. 2007; Slater et al. 2003). In a summary on the use of games in psychological research, Washburn (2003) distinguishes four distinct manners of using digital games in experimental setups: utilizing games as stimulus to study other forms of behavior; involving games to manipulate variables; using games to provide education and instruction; and employing gaming as a performance metric. In addition to psychological studies, games are central stimuli to any research striving to understand games and gaming as a phenomenon, evaluating design decisions, and measuring the effects of playing or the gaming experience itself.

As of yet, there exists little instruction on how to choose digital games for experiments, including research directly focused on the gaming experience, or the short and long term effects of gaming. The field also lacks guidelines regarding the experiment setup with games, and the work relies on accumulated know-how. This presents challenges to both researchers themselves and for those who are interested in the published results. It is especially challenging to compare findings between various studies or to generalize the results across different experimental setups. These difficulties will likely become even more pertinent as interest towards games spreads to new disciplines, as suggested by the use of games, for example, to present forensic evidence in the courtroom (Schofield 2011), or to study animal cognition (ludusanimalis.blogspot.se).

In addressing the use of games in experimental setups, the recent work by McMahan et al. (2011) is a rare exception, as it tackles the relative merits and drawbacks of using commercial video games as a stimulus. The authors also present criteria for game selection and game mode selection, and mention the importance of controlling participant demography. However, they offer only brief discussion on the importance of managing confounds during gameplay and the experiment they present considers only very straightforward gaming tasks where

play affects the scenario minimally. This paper takes up the discussion, extending the level of detail.

We have employed games as stimuli in our lab at the Aalto University School of Business for a decade now, using them and psychophysiological methods (Cacioppo et al. 2007) to study the gaming experience (e.g. Kivikangas et al., 2011; Ravaja et al. 2004, 2006a, 2006b, 2008), but we have also used games to access other processes, such as learning (Cowley et al. 2012), social dynamics and physiological linkage (Järvelä et al. 2013) and multimodal information processing (Ekman et al. 2010). Altogether, this body of work covers all four functions identified by Washburn. This contribution draws upon practical know-how gathered during the course of these experiments and the considerations we have found, sometimes by trial and error, to be pertinent for using games as a stimulus.

Different research methods place different demands on how digital games are best utilized, and also on what has to be taken into account when designing the experiment and analyzing the data. We consider motives for game choice, use of metrics, and approaches to controlling relevant experimental variables. We also describe the practical issues involved in setting up an experiment utilizing a commercially available game title. While the focus of this paper is on digital games, various virtual environments provide similar possibilities and challenges when used as a stimulus in experiments. The following discussion considers uses of games in very strictly controlled studies. Therefore, the work will be valuable both to researchers who wish to utilize games in similar studies, but also provide relevant considerations to those working with more forgiving setups. In addition, readers interested in the results of game-related research may find this paper useful when evaluating published studies, considering the possible pitfalls in experimental setups, reconciling conflicting data and assessing the generalizability and relevance of individual results.

GENERAL CONSIDERATIONS FOR CHOOSING DIGITAL GAMES AS STIMULI

Digital games are a natural choice for a stimulus, not only when studying gaming and the gaming experience, but also for other research questions calling for an engaging, yet challenging activity (Washburn 2003). Digital games, and modern games especially, are very complex stimuli and they are in many ways a unique form of media. There are a large number of readily available commercial games that could potentially be used in an experiment, but the choice has to be made carefully.

Advantages of Using Digital Games in Experiments

According to the Electronic Software Association (ESA 2011), 72% of American households play digital games. Gaming is not limited to a certain age group, and 29% of the gamers are above 50 years old. A study in Finland (where we recruit most of the test subjects) showed that 54% of the respondents were active video gamers. Non-digital games included, as many as 89% reported playing games at least once a month (Karvinen & Mäyrä 2011). This confers three specific benefits. First, the high penetration in the population serves to make games more approachable than abstract psychological tasks, which helps in recruiting participants. Second, the high familiarity with games allow the use of more complex tasks, that engage subjects in ways that would be very difficult to grasp if framed as abstract psychological assignments. Third, with proper screening, test procedures can rely on previously gathered exposure, which allows addressing, for example, accumulated skills and domain expertise. With experienced players detailed instructions are not needed unless it is desirable that the participants play the game in a specific manner.

As digital games are designed to address a range of emotions and with specific intent to cause certain reactions within the player, successful titles can be considered highly ecologically valid² instruments for

eliciting emotions for various purposes. Different game genres typically address different emotions, e.g. horror games aim for quite different emotional reactions and mood than racing games or educational games. Meta-genres such as casual games or social games introduce yet further dimensions to the emotional spectrum of playing. With the proper selection of games, a broad scale of emotions can be elicited in a relatively targeted fashion. However, as games most often do not focus on a single emotion, genres and styles are not guaranteed to provide any specific experience.

Furthermore, digital games provide safe virtual environments to conduct studies on topics and situations which might present either practical or ethical challenges in a non-digital form. Yet the level of realism in games and virtual environments is high enough that they can potentially be used to simulate and draw conclusions about real-world events. For example Milgram's classic study (1963) is considered unethical by today's standards, but Slater and colleagues (2003) were able to replicate the study using a virtual game-like activity. In addition, as McMahan and colleagues (2011) state, using off-the-shelf games provides benefits of quick implementation, avoids some researcher bias and enhances study reproducibility.

Challenges

The distinctive qualities of games have to be well acknowledged if they are to be used in an experiment. Particularly the variation inherent in gaming will call for extra care in choosing the game title(s) for the experiment and defining experiment procedure. Furthermore, adequate data collection might prove challenging when using commercial games due to limited logging capabilities.

Similarity of stimulus

A major challenge with games is that the actual content of the game is defined and shaped by various factors. This creates a challenge for

experimental research, where it would often be preferable to use as identical stimuli as possible across all study participants. Instead, with games the interactive stimulus is never the same, but changes according to participant actions. In virtual environments and MMOGs (massively multiplayer online games) this is even more prevalent as they are influenced by a large number of players at the same time. In addition, game settings, random elements within the game and AI operation all affect how the game proceeds. While the fact that games are widely played ensures target group familiarity, the disparate skill levels of players can also considerably affect how they play and experience a game. Since games are interactive, this skill difference tends to cause not only different experiences, but often leads to changes in the actual content of the game. For example, a skilled player will likely progress further in a given time, use more diverse and effective playing styles, or have an access to more advanced game items than a less experienced player.

Therefore it is of utmost importance that the researcher is well aware of the dependent variables and how they might be influenced by the stimulus properties that vary between participants. The choice of what game is used must be done so that the stimulus is sufficiently identical between participants in the aspects relevant to the dependent variable. After that, any additional variance in the game can be considered irrelevant for the experiment, but it is good to note that the variation still contributes to the attractiveness of the game for the participant. It would be a mistake on part of the researcher to seek to strip a game from all variance, and risk making the game into just another psychological task without the positive qualities games can offer.

Furthermore, it is important to acknowledge that since game research is still a young field, there is little agreed upon theory on precisely which are the relevant aspects for a particular effect or game quality, or how to systematically describe them. Thus, even seemingly simple

decisions will likely be based on assumptions about aspects that are not yet fully understood. As is common in debates around new media forms, the discussion on digital games has its dystopian and utopian visions, which introduce a number of personal and political agendas into research. Particularly for researchers that are personally less familiar with games there is a significant risk of overlooking how seemingly separate game features combine and influence the playing experience, that is, failing to identify game-specific features that confound the main effect (c.f. Adachi & Willoughby [2011] discussing the possibility that it is competition, not violent content, that accounts for game-induced aggression). An agreement on desirable procedure can help mitigate these issues and make work more accessible and comparable across discipline borders.

Off-the-shelf vs. custom games

In general, the closed code of commercial games limits the possibility of modifying the game to suit the experiment. Developer tools and mod kits make some adjustments possible. For example Staude-Müller et al. (2008) used mod kits for *Unreal Tournament 2003* (Epic Games & Digital Extremes 2002) to modify the game to suit their experimental setup and also controlled the stimulus and documented it in exemplary manner. However, it is worth noticing that any major changes come with a risk of compromising game quality. The closed system of most commercial games can also make it difficult to ensure what the program actually does. Adaptive difficulty adjustments, randomly spawning adversaries and minute modifications to auditory and visual stimuli can be hard to spot without extensive game analysis prior to the experiment, but still affect the results.

A common disadvantage with commercial games is also the lack of logging capabilities (i.e. saving the data about what exactly happens in the game on code level). In some cases open source alternatives are practical for this particular reason. If available, log files are immensely

useful, as they can be used in e.g. event based analysis, segmentation, performance appraisals and to spot game manipulations not evident from video recordings.

It is not uncommon for researchers to develop their own games to ensure that they target the desired effects and have a full control over the stimulus. With custom-made games the researchers have an opportunity to modify every detail of the stimulus and tailor the task to suit whatever the experiment might need. However, in addition to requiring considerable amount of work and time, custom-developed games may introduce experimenter bias. Games developed by small-budget research teams also are less likely to be as well-balanced, rich in content and engaging as commercial titles designed and developed by professionals. Employing less engaging games for research undermines one of the biggest advantages of using games as stimulus: when the games are engaging, the participants focus deeply on the task at hand and are more likely to act as they would outside an experiment and feel less distracted by the experimental setup. Thus, more engaging stimulus can produce better data.

PRACTICAL AND METHODOLOGICAL CONSIDERATIONS

Besides general considerations on why to use digital games as a stimulus in the first place, there are several more practical and study specific questions that are relevant when designing an experiment. In this chapter we will discuss issues that are tightly connected to the methodology used. In our experience, there are four main considerations when preparing a study using games as a stimulus: (1) matching and regulating task type, (2) determining data segmentation and event coding, (3) ensuring compatibility between participants and (4) planning and conducting data collection.

Matching and Regulating Task Type

Finding a suitable game is one of the first steps in designing a study.

Gameplay consists of various tasks that define what type of a stimulus the game actually is. One way of approaching the question is to examine the kinds of cognitive tasks that are necessary to overcome the challenges presented in the game: concentration, problem solving, using memory, quickly focusing attention, fast reflexes, planning ahead, spatial awareness, etc., are all tasks that are common in games, but disparate game genres generally weigh the importance of various cognitive tasks differently. Furthermore, all game tasks need to be considered in relation to the context they are presented in—the same task, but e.g. with different time limitations will produce vastly different reactions. Intense repetition and extended task times can also significantly change the nature of a task compared to less taxing options. For example, both *Tetris* (Spectrum Holobyte 1985) and a modern first-person shooter game might be an appropriate stimulus for a performance-based stressor task, but while the first is designed to be constant and increasing stress, the second might have wildly varying arousal levels (depending on the game, level, and play style), not to mention the added efforts of 3D spatial processing, emotional content from the narrative, and so on.

Naturally the game should be chosen according to what type of a stimulus is preferable. There are no general rules applicable for how to make this selection. Games differ widely even within the same genre, and yet—depending on the research questions—comparable effects may be found in games of very different styles. In fact, choosing a game title is only part of the task of determining the experiment stimulus. The choice of stimulus goes down into choosing levels and playing modes, and narrowing down tasks that are conducive to the intended research. For example, a study examining the effects of violent digital games might be based on General Aggression Model, which posits that violence in games elicits arousal and that contributes to resulting aggressive behavior (Bushman & Anderson 2002). In order to make such claims, it would be of utmost importance to make

sure that the compared games would not differ in quality, that the pace of the game is similar in both cases and that the overall gaming experience is equally engaging in both cases, as all these factors might affect arousal levels (cf. Adachi & Willoughby 2011). Often this has proved to be a challenging requirement to meet. For example, Ballard & Wiest (1996) conducted a study where the classic fighting game *Mortal Kombat*[™] (Probe Entertainment 1993) was compared to a no-name billiards game to find out the effects of violence to hostility and cardiovascular reactivity. However, in addition to the amount of violence, the two games are so remarkably different on a number of factors (e.g. pace, characters, and type of challenge) that the differences in reactions can hardly be pinpointed to be the result of an increase in violence. Yet, the same experiment also provides a positive example of stimulus control by comparing two modes of *Mortal Kombat*[™]—with or without blood. In doing so all other factors remained the same, which creates a strong setup for examining the effects of increased violence-related content.

When available, game taxonomies provide helpful sources for making informed game choices. Lindley (2003) slightly modifies Caillois' (1961) classical four elements (*competition, chance, simulation, and vertigo*) identifying three primary descriptors (*narrative, ludology, and simulation*), upon which operate additional dimensions differentiating the level of *chance vs. skill, fiction vs. non-fiction, and physical vs. virtual*. Elverdam & Aarseth (2007) provide a higher level of detail with their 17-dimension taxonomy. Their taxonomy bears a strong link to game design, indeed, they specifically point out the relation to the component framework in Björk & Holopainen's (2004) *Patterns in Game Design*. Finally, Whitton (2009) provides a breakdown of game choice for education, in which she details the expected cognitive and emotional engagement within certain genres. Beyond these, less general taxonomies abound, for example differentiating games particularly based on interaction style (Lundgren & Björk 2003; Mueller,

Gibbs & Veter 2008), or the forms of social interaction they provide (Manninen 2004).

Reviews and ratings (for online reviews and rankings, see GameSpot, GameZone, IGN, Metacritic, or GameRankings)³ can also be helpful in choosing the game. The ratings give an overall assessment on the quality of the game, which—while not objective—is not influenced by researchers' own views and preferences. Ratings are especially helpful when selecting multiple games to be used in the same experiment, as similar ratings lessen the risk that observed differences are simply due to comparing games of diverse quality. For example, Shu-Fang Lin (2011) studied the effects of shooting either human or monster opponents in a digital game. The study was conducted using *Left 4 Dead* (Turtle Rock Studios 2008) and *25 to Life* (Avalanche Software & Ritual Entertainment 2006) as stimuli. This study completely overlooks the significant difference in quality between the two games (*Left 4 Dead* has received a Metacritic metascore of 89/100 while *25 to Life* scores 39/100), and also ignores the impact of genre (survival horror vs. gangsta shooter) and the player character's portrayed motivations for killing opponents (survival vs. lifestyle), which all introduce confounds to the reported effects.

Commercial games commonly have large number of adjustable features which can be utilized in the experiment setup. Visual settings, sounds, game preferences, difficulty levels, number of opponents, play time, and controls can all be used in controlling the stimulus and creating the necessary manipulations. Finally, task choice (the game actions) involves considering the length of task (can the task be extended, how long does it take, how much does the length vary between participants, and is there enough or too much repetition?), how static the action is (is the difficulty level static or does it vary?). For any extended play scenarios it is necessary to consider how well the intended playing time matches the game in question, so as not to create

untypical scenarios which would undermine the ecological validity² of the gaming scenario.

- Define your tasks and find out what can be expected to affect them to get an understanding what kind of games could be suitable and which could not.
- Play the potential game to get a feel for the tasks involved and to spot factors that might inadvertently influence your task.
- Use available reviews to pinpoint effects, challenges, and possible shortfalls in the game design. Compare those with your understanding of relevant aspects of the task.
- Use available ratings to ensure the quality level of the game meets the study requirements.
- Utilize game levels and game control features to create desired variation.

Determining Data Quantification and Event Coding

To be able to analyze effects associated with gaming, researchers typically need a strategy to quantify the gaming data. One possibility is of course to use a block design, for example to compare different games, levels, or game modes against each other. However, sometimes block designs are inadequate. For example, the focus of interest may be smaller events, such as particular actions (e.g. finishing the race, killing an opponent in a first-person shooter [FPS], or picking up a mushroom). For these cases, event-based analysis allows researchers to gain data on the events of interest, and minimize the confounding data from actions occurring before and after the moment of interest. Event-based designs, however, introduce some additional considerations for the researcher. The choice of event coding is based not only on the game's available actions, but also on how isolated these actions occur during gameplay. Often there are over-lapping events that are hard to differentiate from each other. With multiple elements affecting the subject at the same time, it can be impossible to say which of the elements caused a certain reaction or behavior (and to say, for

example, whether the reactions during a combat FPS game were due to shooting at the enemy, to being shot at, or to both). On the other hand, if events are too unique, the sample size might not be adequate for statistical analysis unless it is compensated with a high number of participants. The easiest events to study are those that appear frequently, and in sufficient isolation from everything else.

The same repeating event can occur in different contexts within the game thus framing it differently and so having a different meaning. Whereas some of this diversity can be controlled by fixing game parameters, the level of control varies greatly between games. The common solution is to gather a large enough sample of similar events so that the effect of random noise (e.g. slightly varying framing of the same event) is balanced out. Naturally these considerations should also affect game choice, as games where the same type of event occurs repeatedly are more suitable stimuli as it is easier to have a satisfying sample size of events under scrutiny.

The optimal time scale needed for events has to be balanced in relation to the metrics used in the experiment. Various methods have different time resolutions. This often limits the size of events that can be examined. The necessary resolution influences the temporal accuracy needed for timestamps and also for data synchronization; these should all be in accordance with the research method used. The aim is to select a resolution for event coding that does not limit what can be analyzed from the data. Therefore, even longer duration events should preferably be coded with very accurate starting and ending times. As an example, the psychophysiological method (Cacioppo et al. 2007) allows accessing precise events, as the data is gathered continuously with millisecond precision. To benefit from this level of accuracy, game events must also be coded with millisecond precision. The nature of the effect under scrutiny also determines the necessary duration of events and how event response times are matched to metrics.

The choice of method for analyzing the data can to some extent mitigate the challenge provided by concurrent and overlapping events. For example, the Linear mixed model (Hierarchical linear models) incorporates both fixed effects and random effects, and is particularly suitable to repeated measurements, where the effect is simultaneously influenced by many factors. This statistical method is necessary if the data is hierarchical (e.g., events within conditions within participants) or the number of samples varies within the unit of analysis (e.g., if a particular event occurs a different number of times for diverse players). Simpler data structures may offer the possibility to use other analysis methods.

While typical events in digital games are quite clearly separable from others, in some cases it is not self-evident how events should be defined. They might take over a longer undefined period of time (e.g. in a horror game, how long exactly does the suspense before release last?), or larger events may consist of a number of smaller events in ways that are difficult to precisely define for coding purposes. In these cases data driven approaches may be utilized to explore what clusters of events occur in the material, for example applying machine learning algorithms to find repeating patterns and connections in the event data (see e.g. Kosunen 2012). Data driven approaches may also be applied in order to provide complementary perspective to, or even to test the validity of, coding strategies done by other means.

When deciding on the event coding, it is useful to remember that one can always go from specific to general, but rarely the other way around without recoding the data. Finally, event coding is closely related to data acquisition and how you plan your experiment. It is advisable to have a clear idea of what events will be used in analysis and how they are to be processed, and plan the experiment accordingly. Options are often quite limited afterwards if enough data was not collected in the first place.

- Choose a game where the desired events occur often enough, preferably in isolation.
- Critically consider the various contexts in which events occur. In case of suspected effect, keep track of the context (log it) for each event occurrence.
- Ensure that the event of interest and metrics operate on similar time scales.
- Mitigate overlap and simultaneity by choice of statistical method. Take care that the hierarchical nature of data is accounted for.
- Consider data driven approaches if applicable.
- Code too much rather than too little detail. Extra coding can always be disregarded later, but accessing uncoded material is difficult.

Ensuring Compatibility Between Participants

Fundamental to a successful experiment is ensuring compatible test conditions between multiple participants. Since the game as stimulus changes depending on the participants' choices, skill level, and preferences, this requires a balance between stimulus design (see Matching and regulating task type) and careful participant selection.

Recruiting participants

Unless the research specifically addresses learning, some experience with digital games is usually preferable, as learning basic skills can take up significant time and effort, and any time spent on training sessions are away from the actual experiment tasks. Choosing only subjects that are experienced enough with the task at hand can ensure deeper skill levels during the experiment than what could be achieved by including a practice session or by giving instructions prior to the test session. In contrast, if novices are given too little time to get acquainted with the game, the lack of basic gaming skills is likely to influence the quality of the data. Importantly, gaming skills do not necessarily transfer across genre borders, and even within a certain genre small changes in e.g. controller behavior can have a major impact on play performance.

Theoretically, a large enough random sample of males and females provides the best basis for generalizing results over the general population and avoiding a gender bias. However, in practice this goal is often problematic to achieve. Although many women play digital games, gaming is still much more common among the male population (ESA 2011; Karvinen & Mäyrä 2011), and therefore acquiring comparable numbers of experiment participants of both genders with good sample size can sometimes be difficult—particularly so if comparable gaming experience is a prerequisite. Similarly, it is virtually impossible to conduct an experimental study that would have enough participants in each age group to provide statistically significant results without limiting the amount of relevant variables through participant selection. Instead, these factors have to be taken into account when analyzing the data, interpreting the results, and generalizing them.

Comparable stimuli

It is impossible to create gaming stimuli that is identical for all participants. Instead of aiming for similarity, the researcher should focus on what makes or breaks the experience of interest, and devise strategies for handling variation within this perspective. To ensure stimuli are comparable, and to minimize the impact of variation on results, the imperative is to identify the critical factors that affect the dependent variable(s), and control those as well as possible. Indeed, some variations may be necessary to ensure the overall gaming experience is compatible between participants. Moreover, in some cases individual variation in actual game content is not a problem, for example if measurement concerns general-level experiences such as overall performance and stress levels. Also, if both events and measurements can be narrowed down to a shorter time frame, these shorter spans of gameplay can be comparable between participants even when the whole game sessions are not.

One common aspect which requires consideration is game difficulty. Some games have built-in difficulty adjustments that automatically balance and change the difficulty of the game according to the player's performance and choices within the game. Depending on the context and what is being studied, self-adjusting difficulty levels may either escalate or counterbalance the challenges of using a stimulus with inherent variability. When the aim is to ensure similar experiences across players, automatic adjustment can be useful in creating relatively equally challenging gaming experiences to players of varying skill levels. In contrast, if using the same content for all participants is critical for the experiment, automatic difficulty adjustments can be detrimental to the process. Furthermore, automatic difficulty adjustment is often hard to detect. In the absence of reliable information (e.g. from the developer) to confirm or rule out automatic difficulty adjustment, identifying it generally requires considerable familiarity with digital games. Moreover, even knowing that a game has difficulty adjustment, a researcher may struggle to determine precisely how the system works and how it impacts content.

If performance, and processes related to it (such as general arousal and feelings of frustration), are not relevant for the dependent variable, the difficulty of the game might not be relevant either. In such cases, difficulty level could even be left to participants to choose for themselves. However, this might necessitate using other ways to ensure comparability between trials, for example, by assessing subjective difficulty by a post questionnaire.

- Be selective with your participants, but cautious about generalizing results.
- Pay special attention to gaming experience already when recruiting participants.
- Evaluate gaming experience for the specific genre, game type and title used in the experiment.
- Decide if it is more important to ensure identical tasks/events, or identical difficulty level—if not possible to control both. If possible, include a metric to capture the dimension you do not control (subjective difficulty, counting the number of adversaries, etc.).

Planning and Conducting Data Collection

Depending on the research method used a varying amount of data is needed but all data segmentation and event based analysis require information on what happened in the game. When available, automatically logging gameplay provides a superior method for segmenting system data with sufficient temporal accuracy. Most games do not employ sufficient logging of game events, or alternatively, logs are not available to the researcher. In this case, events have to be marked afterwards by reviewing recorded gameplay (e.g. from video recordings), which can be very laborious. Furthermore, it is often the case that not all player actions can be identified and differentiated based on mere recordings—in modern games with lots of different objects on the screen, it is not clear from the game video alone where the attention of the player is focused at a given moment, for example (though eye trackers can be used for that). Mod kits often provide extended logging capabilities, if available.

If a built-in logging system is not feasible, some logs can be collected externally. Key loggers, screen capture videos, and mouse-click recorders can provide helpful material both for analysis and preprocessing data before manual coding. At least a screen capture video of

the game play should be recorded. Be sure to include good quality sound, as audio cues may be used to differentiate between visually similar-looking actions or inform about off-screen events. Most games have one or more innate performance metrics in them. High scores, achievements, goals, kills, repetitions, accuracy, lap times, duration, rewards, new items, levels, etc., can be used as dependent variables or as covariates, complementing and validating external performance metrics.

It is imperative to calibrate the timestamps of different data sources. This is especially important if the analysis will operate on event data instead of whole blocks. Whereas some game events can be matched manually afterwards, other data sets—like psychophysiological signals—contain no unambiguous handles for time-synchronizing data post hoc, and data will be practically useless to the analysis if the timestamps do not correspond. Depending on the setup there are several methods for anchoring timestamps across devices, for example, sending markers across devices, synchronizing device clocks or using video cameras. The precision of synchronization needed is naturally dependent on the research question, the measurements, and choice of method.

- Utilize game logs whenever available.
- Consider using external logging to capture game data.
- Take advantage of the game's performance metrics when possible.
- Use the game's internal performance metrics to check external performance metrics.
- Be extra careful to calibrate and synchronize timestamps across data sources.

Checklist of Questions

The following is a checklist of elements that call for special attention when using a digital game as a stimulus. It is not exhaustive but considers the key questions typically addressed in the beginning of an experiment. For each question, respectively, we address the parts of the experiment work flow that are most influenced by the decision. These pointers do not imply there is no influence to other parts of the work as well, but merely single out the work tasks that call for extra critical attention.

Checklist question	Why is this important?	Main influence on:				
		GAME CHOICE	EVENT CODING	PARTICIPANT SELECTION	PROCEDURE	ANALYSIS
What tasks does the game play require?	Match research questions and tasks required by the game.	✓	✓		✓	
Is the task represented as game action that is separate from other task types?	Very complex and overlapping events may not allow distinguishing one event from another.	✓	✓		✓	
How does task difficulty influence play? Can task difficulty be balanced?	The difficulty level should be suitable for all participants whether by choosing it properly for the target group, selective recruitment of participants, or by adjusting it case by case.	✓		✓	✓	
What game events repeat themselves?	Frequently repeating game events provide larger sample size for event-based analysis and is necessary for within-subject methods (such as psychophysiology).		✓	✓	✓	✓
Do repeating events occur in a similar context, or does context change?	Adding poorly comparable events only introduces more noise, which blurs results.		✓			✓
How similar as a stimulus is the game across participants?	An identical stimulus across participants is often desirable, but not always necessary.	✓		✓		✓
How much does the player's skill level influence gameplay?	Different backgrounds can result in both factually and subjectively disparate experiences across participants.	✓		✓		✓
What methods of data collection are available?	The research question may be addressed through various different combinations of event coding and data collection.	✓	✓		✓	✓
Does the game provide logs or is external recording needed? Are there developer tools or mod kits that can be customized for data acquisition?	Game logs are extremely useful, if available. The smaller the events you want to examine, the more extensive data logging is required and the higher are the demands for temporal acuity.	✓	✓			✓
How reliably can events be decoded from, e.g., video recordings, keylogs, etc.?	Manually coding can be laborious and may also affect data precision.		✓			✓

Table 1. Checklist

STUDY EXAMPLE AND CONSIDERATIONS

In this section we present an example study to illustrate the use of a game as a stimulus in a psychophysiological experiment. By detailing the rationale behind the choices we made regarding choice of stimulus, event logging, data analysis, etc., we demonstrate how the previously discussed theoretical considerations may be applied in practice. The example is not intended as a canonical solution; the aim of presenting this work is solely to provide the reader with a better estimate of the actual process and the preparatory work required for using games as a stimulus. Indeed, several alternatives exist besides those presented here. Our research unit conducted a commissioned study to examine the benefits of a health drink. The drink is designed to enhance performance during long term performances that call for intense concentration and heavy physical activity. The experiment was conducted to empirically assess whether the test substance would measurably affect performance and concentration, emotional reactions, alertness and stress reactions.

The Choice of Game

To test the effects of a health drink, an activity was needed that would require intense concentration, alertness, and the ability to cope with elevated stress levels over an extended period of time. Some form of built-in performance metric was preferable, as it was considered as the best internally consistent way to assess the task performance. A realistic racing game fills out all these criteria. Playing a challenging racing game consists of several cognitive tasks: fine motor controls and quick reflexes are mandatory, and attention and the ability to quickly change focus are also needed. Longer races require maintaining constant concentration and steady performance throughout the race—the key variables to examine the effects of the test drink.

The game chosen for the experiment was *GTR 2 – FIA GT Racing Game* developed and published by SimBin. *GTR 2* is a realistic sports

car racing simulator for the PC platform (<http://www.gtr-game.com>). The game is of excellent quality: it has received multiple awards and scores 90/100 on Metacritic. The following sections will detail how we handled the decisions discussed in previous sections, including how we planned for data collection and analysis, our considerations regarding task choice and game settings, and a detailed description of the experiment procedure.

Planning data collection

GTR 2 provides an extensive array of different metrics that can be used to evaluate player performance, which was crucial for this study. For the test, we utilized the *MoTeC i2 Pro* data acquisition system (<http://www.motec.com/i2/i2overview/>), which is fully compatible with *GTR 2* and also used by real world racing teams. Very few commercially available games provide this much performance data of the game play in an easily accessible way. These metrics logs were combined with self-report questionnaires and psychophysiological measurements. Altogether, these data sources enabled us to thoroughly investigate the players' emotional and physiological state during playing, and to evaluate the test drink's effect on performance and experience. As everything was logged by the stock game and *MoTeC i2 Pro*, no custom made solutions were necessary. We settled for using the computer's clock to synchronize the game logs and psychophysiology as its precision was sufficient though not optimal.

Event coding, data segmentation, and analysis

The high amount of repetition and the relatively low number of random factors in racing games make them good candidates for stimuli in general, and ideal for the type of study we were conducting. Each playing session consists of series of repeating laps, which are clearly demarcated by start and end events. This allowed us to make comparisons between laps and, for example, to monitor the improvement over time. Had we been interested in studying the reactions to various

gaming events, instead of overall levels between conditions, it would have been possible to utilize the exceptionally detailed log files provided by the *MoTeC i2 Pro* system.

The repetition of similar events in a very predictable manner—while typical for racing games—is not prevalent in the vast majority of games. Since we wanted to use the change in performance as a dependent variable, the relative lack of random factors was also of crucial importance. A substantial amount of randomness would make comparisons difficult. In other type of experiments where performance as such is not under scrutiny, randomness might not be as prohibitive. For example, if one were to study reaction times using a digital game, random factors would be acceptable as long as key events repeat often enough.

Difficulty and ensuring similarity

Racing in *GTR 2* is quite demanding. While the difficulty level can be adjusted to suit the skill level of the player, it is still very likely that players will make a number of mistakes that are reflected on the overall lap time. Hypothetically then, if the health drink increases the participants' capability to concentrate over extended periods of time, they should make less mistakes and perform measurably better.

For studying effects on performance, a highly engaging activity was desirable, as an extreme setting was more likely to bring out the differences between conditions. As an activity, playing games is engaging and strongly focuses the players' concentration on the game and playing in a natural manner. A good racing game pushes the participants to the sector where they are really doing their best and trying to perform as well as they can. This is especially true for any sports game that has a built-in competition structure. Therefore a racing game was quite appropriate for this particular experiment. The participants were also motivated to perform as well as they could by rewarding the top three fastest drivers of all participants. In effect, they were not only

racing against the computer, but against other participants, and for a considerable reward.

We decided to control the difficulty level so that all participants used the same settings. In general, this gave an advantage to experienced players. Since the situation was framed as competition, players' emotions would likely relate to their skill level, as responses would vary according to the level of performance. In this case, we chose to prioritize task similarity, to increase the comparability of tasks among subjects. If the studied effects had been something other than performance (say, whether the test drink affected emotional states), then the choice would have been to rather control performance by evening out skill differences with appropriate difficulty settings to suit each player's skill level.

Experiment Procedure Considerations

The experimental procedure must be adjusted to accommodate the unique features of digital games. Incorporating a training phase to get participants acquainted with the game and the controls is often needed. If performance is measured, training sessions can also be used to even out minor skill differences between participants beforehand. As with all stimuli, randomizing playing order helps avoiding systematic errors.

Circuits in racing games are of different length and a lap can take considerably longer on one circuit than on another. In the example study, we chose four different circuits of roughly equal length. Within each circuit, laps form the repeating events that are analyzed using lap times as a central performance metric. Confounding effects on performance (such as learning effect, in which players learn and play better at the end of the experiment than in the beginning) were mitigated by employing a within-subject design, randomizing the playing order of various race circuits, and incorporating a training session into pre-ex-

periment procedures.

To enforce similar starting conditions for the race across all participants, in-game practice and qualifying sessions provided in-game were skipped and participants started the race from the back of the grid. The race length was adjusted to 25 minutes, difficulty level to novice and opponent strength to 90%. This configuration was estimated prior to the experiments as providing a suitable average challenge level across the recruited participants. All participants drove the same car, with identical car and game settings. Automatic gears were used to avoid amplifying the skill level differences between subjects. *GTR 2* offers numerous settings for adjusting both game play and the car. We decided to control all of these and not let participants adjust anything. By enforcing certain settings we aimed at maximizing stimulus similarity across the participants and simplifying analysis by cutting down the number of variables. While this makes the experience less ecologically valid (McMahan 2011), we were not investigating the experience per se but were using the game to create a high-performance challenge. In this case, the tradeoff in ecological validity is both acceptable and necessary in order to control the further advantage more experienced players would have gained, had they been allowed to play with their preferred settings.

Conclusions

Games have already proved useful beyond their function as entertainment. Among others, they serve as a great resource for research by providing realistic, familiar, and yet relatively complex and diverse stimuli for experiments. However, the same features that make games promising stimuli also make them particularly challenging to use in controlled experiments. Many of these challenges can be overcome by taking into account the special nature of digital games when designing the test setup, procedure, and data analysis. Nevertheless, the use of games calls for methodological balancing acts such as making complex

decisions regarding benefits and tradeoffs of practical decisions, and anticipating the effects of potential confounding factors. The added complexity to the experimental setting calls for particular care whenever games are used as stimulus. High attention to detail is also recommended when analyzing, communicating, and interpreting study results.

This work is primarily based on practical experience and documented know-how on experiment design accumulated in our lab over the last 10 years. We identify the following four key steps in the process of preparing a study using digital games as stimuli: (1) matching and regulating task type, (2) determining data segmentation and event coding, (3) ensuring compatibility between participants and (4) planning and conducting data collection. Each of these factors has potential effects on experiment validity and reliability that should be considered carefully when designing and conducting the study. The ideas presented here are based on a very rigorous type of study design but that does not limit its utility for less controlled experiments. On the contrary, scholars preparing studies with more flexible design will find the checklist useful for deciding which elements they will want to control, even if they decide to leave some other variables open.

Currently in game research—and also in other fields using games as a stimulus—the multitude of procedures makes it difficult to draw conclusions from research conducted by others. If the studies use vastly different procedures or very dissimilar levels of stimulus control, results cannot be reasonably compared. This not only slows down the accumulation of knowledge, but may confuse readers less familiar with games and the pitfalls involved in using games as a stimulus. The present work takes steps towards a more systematic and better documented procedure for how to conduct studies using games. The discussion presented in this paper is primarily directed as a practical guide for planning and conducting experiments. Nonetheless, the information provided here also offers material for readers wishing to interpret or

evaluate the works of others.

Endnotes

¹ Digital games means all games played on digital devices, from game consoles to desktop computers and modern mobile devices.

² Ecological validity refers to how closely various aspects of an experimental setup such as stimulus, task, setting etc. correspond to real life context.

³ <http://www.gamespot.com/>, <http://www.gamezone.com/>, <http://www.ign.com/>, <http://www.metacritic.com/>, <http://www.gamerankings.com/>

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Should I Stay or Should I Go? A Study of Pickup Groups in *Left 4 Dead 2*

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INTRODUCTION

Trawling down memory lane, recalling the games that we used to play in childhood can be a bittersweet experience. For some of us memories of careless joy and happy days are blended with episodes of being excluded from play activities, chosen last to a team or leaving a game in a tantrum. Those who share such memories know that sometimes a game is not “just a game.” Events that happen during an instance of play are affected by the shared history of the participants and can potentially shape future relations and identities. At the same time, we can recall how some games seemed to facilitate an exclusionary atmosphere while others did not seem to have this problem. The same child can be brutally excluded from a game of football only to hours later pass smoothly into a session of hide and seek. The nature of a game session is likely to be constituted between the identity of the partici-

pants in the broader social context and the identity as a player in a rule governed game system. Who you are outside the game and who you become in the game will shape the social life of the encounter.

Today many play activities take place in digital online environments. Some of these online games enforce a very specific social structure: pickup groups (PUGs). PUGs are groups where the participants are randomly grouped together in teams and are expected to conduct collaborative tasks. Due to the virtual nature of these encounters the participants have no previous knowledge about whom they are collaborating with. The players are deprived of (or freed from) attributes like age, gender, ethnicity, class, social status and appearance as social resources (or stigma). They have no previous history with the other participants that can form a backdrop for their interactions. If the identities of the individual players are to somehow structure the activity they must be brought to life and accentuated by the participants through their actions, intentionally or not. From a historical perspective this is a new form of playground. In this article we investigate what it means for a play activity to take place in a social setting that for the participants is cut off from other settings outside the game session. What are the mechanisms for inclusion and exclusion in these situations? How are identities and social positions in and outside of the game session negotiated? What role does the particular design of the game play in structuring these activities?

In order to address these questions we have conducted an autoethnographic study of pickup groups (PUGs) in the game *Left 4 Dead 2* (Valve 2009) (*L4D2* hereafter). We have looked at how participants enter and leave these groups, how they negotiate their performances, present themselves, burst out in anger and make excuses. Our aim with the study was to contribute a deeper understanding of how these new social arenas are constituted by its' participants and the role game design plays in structuring these encounters.

Pickup groups

PUGs fill the need for always having people to play together with in team-based games, even when no friends are available. Although PUGs in online games have existed since the earliest online First Person Shooters (FPS) such as *Quake* (id Software 1996) and *Counter-Strike* (Valve 1999), the types of demands on members of a PUG has evolved during recent years. The introduction of functional roles in *Team Fortress* (Valve 1999), *Return to Castle Wolfenstein: Enemy Territory* (Splash Damage 2003), the *Battlefield* (DICE 2002) series, and *Defense of the Ancients* (Eul 2003) has made it important that players maintain a suitable role composition for their team.

In the games mentioned above it is rare that any game information is passed between game sessions, and this can be put in contrast with games with persistent worlds, such as *World of Warcraft* (Blizzard 2004) and similar massively multiplayer online games (MMOGs). In these games the players can often, over time, build an online identity in the community on the servers where they play. This will mean that when doing a more collaborative task, such as an instance or group quest, their actions are related to their more stable identity on the server or in the community that they play. However as discussed by Eklund and Johansson (2010), even in games with persistent worlds there seems to be a recent trend towards making it easier to group people together by allowing teams to form over different servers, so-called 'cross realm instancing.'

PUGs constitute a new kind of social phenomenon. They are activity systems where players have to establish functional interaction patterns without using some of the social resources that are available to them in everyday life (Goffman 1961). In theory, such encounters are likely to display interaction patterns that facilitate communication and collaboration over social barriers. People who might not have collaborated in any other situation can find themselves working together. Typically,

age is such an attribute that might be overcome as children and adults participate in the same game space (Linderoth and Olsson 2010).

Two analytical strands

Early accounts in the field of computer-mediated communication (CMC) expected that the anonymity of online communication would bring along boundary breaching social encounters. This idea turned out to be more complex since studies showed that the loss of a clear social identity rather leads to anti-normative behavior and in some cases to even stronger social categorizations (Postmes, Spears and Lea 1998). Later studies in this tradition have tried, on experimental grounds, to map the effects of anonymity, self-categorization and sense of belonging etc., as factors influencing communication and perception of others (see for example Carr, Vitak and McLaughlin 2013). While this research tradition might be applicable to the aspect of anonymity in PUGs it fails to provide analytical tools for dealing with the fact these meetings happen within games. To meet inside a game environment is not completely comparable to other forms of online encounters. PUGs are not only structured by social mechanisms they are also shaped by the materiality of the game's design. In order to understand the activity that emerges in a PUG one must study the interplay of social rules and game rules. That is the relation between social bonding in PUGs and the way these groups are designed into the game system.

Thus, in the study reported here, the gaming activity was interpreted with both concepts from micro-sociology as well as with concepts from the field of game design. In comparison to some of the early CMC studies, we also study online interactions outside of experimental settings. In our view, it is an empirical question if and how a certain feature in a game structures the gaming experience. This suggests that naturally occurring game activities would be the preferred unit of analysis. However, in order to understand if and how the materiality

of a game system shapes the players' experience, interpretations of data should be made against an understanding of game mechanisms. Such an approach requires that the researcher supplement theories about their object of interest with knowledge about formal properties of games. In our case Goffman's ideas about the relation between a situated activity and the wider world (1961, 1986) is complemented with the gameplay design patterns approach (Björk and Holopainen 2005a; 2005b; Holopainen and Björk 2008).

The game and the wider world - Goffman in game studies

Goffman's (1961; 1986) theory has, in the literature on gaming, shown to be a powerful way of conceptualizing how games are local activity systems (Fine 1983; Hendricks 2006; Waskul 2006; Copier 2007; Calleja 2007; Consalvo 2009). According to this theory, we make sense of the world around us in accordance with the nature of the immediate situation at hand. Metaphorically, social episodes are seen as surrounded by a membrane (Goffman 1961) or a frame (Goffman 1986).

A framework is the more or less shared definition that participants in an activity have of the situation. It is the unspoken answer that participants give to the question: *What is going on here?* (Goffman 1961). The meaning of a spoken sentence, an object, an action or an event is dependent on which frame is currently established. Social encounters thus gain an organizational structure, i.e. rules that regulate who can participate, how labor is divided among participants, the position of leadership, and other social roles. Frames are something that the participants in an activity uphold and negotiate through their interaction. Analytically, one can observe how framing and negotiations of frames take place by paying close attention to how people talk and interact. If person A bumps into person B when walking on a sidewalk, we gain a lot of information about how person A "framed" the occurrence by observing the subsequent interaction (Goffman 1981). If person A re-

sponds with “Oh I am so sorry” or “Look out you fool!” this will give us information about how A defined the situation.

The membrane or frame is constituted by transformation rules, i.e. social conventions for how things from the wider world affect the specific activity. To use Goffman’s own example, if a chess player accidentally knocks over a chess piece over both players will make an effort in restoring the game board. Accidentally knocking over a game piece does not transform the situation at hand; the interaction membrane allows this event to occur without the game falling apart. The players thus take actions to make the event that occurred *irrelevant* (Goffman 1961). However, if a player were caught deliberately trying to hide one of the opponent’s pieces while s/he looked away it would be another matter. The game would fall apart and the activity of accusation would arise.

The fact that participants uphold the social rules does not mean that any framework can emerge, or that social structures and discourses are of no importance. It is in the broader cultural context that participants find the resources for generating a certain activity:

“We cannot say the worlds are created on the spot, because, whether we refer to a game of cards or to teamwork during surgery, use is usually made of traditional equipment having a social history of its own in the wider society and a wide consensus of understanding regarding the meanings that are to be generated from it”

(Goffman 1961, 27-28)

According to Goffman, how encounters are organized depends significantly on how they are cut off from other potential forms of interaction: “An encounter provides a world for its participants, but the character and stability of this world is intimately related to its selective

relationship to the wider one.” (1961, 80).

Gameplay design patterns meet Goffman

In the essay *Role Distance* (1961) Goffman points out that mechanical operations can provide the basis for how an activity is structured. Goffman uses the example of a merry-go-round and discusses the roles of the operator, the merry-go-round riders and the audience looking at the activity. Each run of the merry-go-round becomes a distinguishable social unit, an instance that is structured by the materiality of the movement of the ride. Yet, this activity is organic in the sense that the participants can engage differently during the activity (1961, 96–99). Goffman illustrates this by pointing out that when the ride passes the audience, children can wave and smile to their parents but as soon as they are out of sight they get a bored expression on their face. The material structure of the ride blends with social rules and cultural conventions. In our view, this example illustrates a fruitful way of approaching the activity of playing. The materiality of the game technology and its built-in rules will structure the activity. Still, just as in the merry-go-round example, participants will not be victims to the system but able to shape their way of engaging with the game and other participants in the game. The activity will be constituted by both game mechanics and social mechanics.

Compared to a merry-go-round, the ways that a game will structure an activity is likely to be more complex and not always as evident. In our view the study of social life during gameplay has to take into account that the game has agency in structuring the interaction patterns that emerge. It is here that the game scholar needs to be knowledgeable in the field of game design and able to use concepts that describe system features of games as a part of her/his analysis. We used *gameplay design patterns* (Björk and Holopainen 2005a; 2005b; Holopainen and Björk 2008) as a conceptual framework in our study, specifically *The gameplay design pattern collection* (Björk 2012) that provides over

300 detailed descriptions of different gameplay characteristics. These design patterns make it possible to analyze and see, how different rules interact or counteract and also provides a language for talking about system features in games (see also Zagal et al. 2005 for a similar approach to systematically describe game features). Gameplay design patterns can be used in many various ways, i.e. they do not constitute a dominant theory or method. In this work, they are primarily used to offer a more specific language to denote gameplay mechanics, which arguably are a vital part of the materiality of game design.

ETHNOGRAPHY IN GAME ENVIRONMENTS

The employed methodology in the study is a form of autoethnography. The authors have a vast experience of online games and have played the game *L4D2* (as well as the first *Left 4 Dead* game) before the study was conducted. In this sense, the authors can be described as “complete-member researchers” (Ellis and Bochner 2000, 740). A difference between ethnography with participating observers and autoethnography lies in how to understand the involvement of the researcher and how to present the results. While some more traditional ethnographic accounts see a risk in the possibility that the researcher gets too emotionally involved in the field, i.e. “goes native” (for a discussion see Tedlock 2000, 455) autoethnography sees the emotions of the researcher, their subjectivity, as a resource to gain knowledge about the field (Ellis and Bochner 2000). Another difference is in how to present results, while traditional “fly on the wall” ethnography employs a passive voice, autoethnographies are, in some cases, autobiographies of the researchers (Ellis and Bochner 2000). In-game ethnography presupposes participating observers since it is hard to gain access to online game activities without taking part in them (see Mortensen 2002)—something that in our case, studying PUGs, was absolutely necessary. In our analysis, we have made use of our own subjectivity and experience but we use both passive voice and autobiographic accounts when presenting our results. This follows the

approaches taken in game ethnographies on online games, e.g. Taylor's *Play between worlds* (2006) and Sundén and Sveningsson's *Gender and sexuality in online game cultures* (2012). A difference between these ethnographies and our study is that L4D2 does not have a persistent game world outside of each game session. Thus, with a focus on PUGs we did not establish any stable relations with the people we played with. On one hand this meant that the trust issues that can emerge in virtual ethnographies (cf. Hine 2008) was not an issue, on the other hand we could not complement our observations with interviews with those we played with.

Doing online studies also poses a challenge in terms of research ethics. In accordance with Thelwall (2010), we treated the online environment as a public space. PUGs are open to anyone who owns the game and there are no special invitations needed or password protections. People participate in short sessions with a nickname that they can change anytime and no history is recorded of the communication. This, and our main focus on the activity, made us conclude that as long as we protected the nicknames of the players there was no risk of any harm or violation of integrity. Yet it could be argued that we at least should have attempted to gain informed consent. Here it should be stressed that there is a large difference between studying a PUG in a team-based shooter game and a MMOG or MUD. In PUGs it is almost impossible to gain informed consent from the people who participate since a player can enter a game session and leave after some seconds and the phase of the activity does not allow longer chats. Eynon, Fry and Schroeder (2008) point to the possibility of identifying oneself as a researcher with one's online nickname. In our case that would have ruined our ability to see how elements from the wider world were negotiated into PUGs since we ourselves would have opened up for a very specific relation between the game session and a larger context. In the following, all nicknames have been changed and no information about game servers is provided. The informants are

still complete strangers to the authors in almost all cases.

Design and data collection

During a period of eight months the authors did observations by participating in PUGs in *L4D2* games and following forums discussing the game. The authors took written and recorded audio memos of their observations as well as logging chats and collecting screenshots. The quotes presented later are edited versions of these observations; this is partly due to clarity reasons and partly unavoidable since full notes could not be made while playing. In total, the authors spent approximately 200 play hours in the game with the aim of collecting data on PUGs. Yet, as complete-member researchers it is not obvious when research starts and stops, and the total amount of play hours that the researchers have spent in *L4D2* is significantly higher.

Nearly all observations were conducted in team vs. team mode, i.e. two teams competing against each other, on the Steam platform. The reason for choosing team vs. team as the primary mode is due to four factors. First, it is the mode where, in our experience, many players allocate a lot of their game time after becoming proficient at playing. Second, it allowed the study of more players at the same time, and inter-team communication. Third, playing against other humans typically puts greater demands on collaboration, and was thought more likely to provide clearer cases of excuses, negotiations of identity and vote kicking. Finally, in this mode the team takes turns being “infected.” Playing on the infected side is different from being a survivor, which is the only team available in other game modes. Thus, versus mode offered us the possibility to do comparative observations regarding how game design structured the activity.

PUGs in *Left 4 Dead 2*

The following sections go through the various observations in our study, with an initial game description for those unfamiliar with the

game. References to the most salient gameplay design patterns are made throughout the text, both as a way to stress observations about the gameplay design and to indicate how these were used as part of the research process. Since the study is based on the notes of three different researchers, we mention in the text before each excerpt which researcher it is who speaks.

The game - basic design

In *L4D2* four characters are grouped together into a team of survivors whose goal is to travel to safety in an apocalyptic world where nearly everyone else has become homicidal due to an infection. The basic mode of the game is a campaign-driven set of levels where players take the role of the survivors trying to reach safe rooms (a design pattern called *Traverse*, see Björk 2012) and gameplay typically swaps between players trying to use *Stealth* (Björk 2012) to avoid detection and *Combat* (Björk 2012) when this fails. At the start of the campaigns the players learn why they must again travel through the dangerous apocalyptic world, typically something has gone wrong with their rescue from a previous campaign, a helicopter has crashed, a car cannot drive on a blocked highway etc.

The other main mode in the game is team vs. team. Here one of the teams gets to take the roles of special infected that, together with the other infected, try to kill the survivors and stop them from reaching the safe room. This gives the teams *Asymmetrical Goals* (Björk 2012) but gameplay is further complicated by the fact that players on the "infected" team play as the special infected and have unique attacks (an example of *Orthogonal Differentiation*, players having different abilities, which also is found to a lesser degree in survivor teams due to having different weapons, see Björk 2012). To ensure balance this mode is played in a mirror fashion, i.e. first one team plays the survivors and the other the special infected, and the roles are reversed in the next round. Scores are dependent on how close the survivors get to the

safe room, if they survive a level and actually get into the room they also gets a score bonus.

In the game, the support for collaboration and managing PUGs exist on many levels in the game design. To support the necessary coordination, players of both established groups (people that know each other from before) as well as PUGs typically make use of various forms of voice chat systems that are either built into the game, the gaming platform or third party systems such as Ventrilo, Skype, etc. Lobbies allow members of PUGs to introduce themselves to each other and discuss initial strategies. Voting systems allow group decisions on which level and difficulty to play, but also make it possible to kick people out of the game. Pre-recorded sound messages can quickly be sent to other players through a key press and mouse action, and these messages are in some cases context-sensitive to what the avatar is looking at.

The 'brittle' frame - patterns for coming and going

The dynamics of an activity is, according to Goffman (1961; 1984), tied to the boundary of how the activity is sealed off from a wider context. Some elements emerging or entering the activity will be become integrated in the activity, other things will transform the activity and some things will destroy the activity making it fall apart. For example, an academic lecture can handle that members of the audience come and go but will break apart if there is a fire alarm. Someone bursting out in laughter at a funeral is a threat to the activity. While it might be handled as an awkward moment, the activity of collective sorrow might become transformed into a fight. A date will fall apart if one of the participants leaves the scene. Some games tend to have a rather rigid frame. It is dictated explicitly in the rules who is in the game and who is not, if a fan runs into a court where a sport takes place or a player is injured the game will make a pause. The unwelcome participant will have to be removed and the injured player looked after and sometimes substituted. The players will take actions that make these

events irrelevant to the ongoing activity, putting brackets around the event, and in most cases it is possible to pick up the game again (Goffman 1961). There are some gameplay design patterns that explicitly govern how participants can enter and leave a game activity. In *L4D2*, the *Drop-In/Drop-Out* pattern (Björk 2012) allows players to come and go without disturbing the game. Since the game also supports AI Players, i.e. the game adds AIs that take over characters when player leaves, the game is not as sensitive for dropouts as a MMO-instance. Players can come and go in both teams during team vs. team gameplay but if all players in one team leave then the server shuts down since human players are required in both teams. This design also makes it possible for players to drop into an ongoing campaign. This works smoothly in many cases and players come and go without this even being mentioned or noticed by the other participants sometimes. As Staffan experienced it is even possible to mistake a bot for another player:

I embarrassed myself again while playing tonight but I don't think anybody else noticed it. I had been playing for some time on a co-op server where people kept joining and leaving but the cooperation still worked well enough. So when I got pounced by a hunter and was rescued I typed a quick "thxs" before realizing it was a bot that helped me. It doesn't bother me that much if anybody else noticed since it's something most people do one time or another but it bothered me since one should keep track of who's a bot and who's not since they play differently.

As a social activity, *L4D2* and other games with similar designs can be said to have unique properties in that they can handle participants coming and going. In terms of Goffman's (1961) membrane metaphor, these games are resilient to such a fundamental change as completely switching participants. It is hard to think of this happening offline in board meetings, dinner parties and other face-to-face activi-

ties. Yet we can see this in team sports where players can be substituted in order to fill the position of forward, mid-fielder etc.

In some cases, we observed how the differences between human and AI players made the game pause. If one of the teams was not filled with human players in between chapters we observed how players employed a 'soft rule' (see Juul 2005) of waiting for that team to fill up. Generally, human players are considered superior to have in the team and thus it is seen as unfair if one team has fewer humans than the other team. Another reason for waiting for teams to fill up is that it minimizes the risk of having a whole team without human players, a game state that would immediately end the game in versus mode. As Jonas noted, this is a fragile balance.

Camilla and I were playing as infected and the other team, who were behind us with almost 200 points, lacked one player. When the chapter started they didn't leave the safe room but stood for minutes and waited for a fourth player. The other players in our team got frustrated by this downtime and urged them to start. One player in their team, Blinx234, agreed, and wanted them to start but the other two didn't go. Eventually the two other players in our team got bored and dropped out. Blinx234 said: Go before they all drop, and that made them start.

This example illustrates how players can negotiate the rules even in a digital game where technology upholds the rules. This negotiation of frame is done in relation to the risk of having the whole game fall apart, i.e. if everybody in the opposing team leaves.

The observations above show how the game activity in *L4D2* is stable, on the one hand, since it allows players to come and go. On the other hand, if people start to leave, the activity totally falls apart. Unlike many other social activities, there are no smooth transitions between

different frames: you are either in the game or you are out of the game. The boundary between the game and the wider world can thus metaphorically be described as brittle. It is resilient to things that would transform and fundamentally alter other situated activity systems but once the game starts to fall apart the break is complete and there is no way to pick up the game state.

Symbiotic Player Relations

Looking at gameplay specifically, *L4D2* encourages players to help each other in different ways. Infected can attack from many directions so watching different directions is often a good tactic, as is pointing out to others where weapons and tools are. However, player cooperation is primarily promoted through the attacks by the special infected - many of these incapacitate a survivor until the others have rescued him/her. This game thus utilizes the pattern of *Helplessness* (Björk 2012), a design where a player loses all form of agency over the game state (Bergström, Björk and Lundgren 2010). Tied to this *Helplessness* is also the pattern of *Symbiotic Player Relations* (Björk 2012). Players are, when playing on the side of the survivors, completely dependent upon each other, one player's performance in the game is in a very concrete manner tied to the performances of the rest of the team. In our experience, this gameplay pattern can create emotional pressure on the players. The phenomenon of rage, a player bursting out in anger, yelling and screaming and often dropping out from the game (rage-quitting) stems from situations of not being able to fully control one's own performance. An excerpt from Staffan's field diary illustrates this:

While playing the atrium finale of the Dead Center campaign we had yet another experience of playing with a player that thought he knew how to play and everyone that disagreed with him were idiots. When we didn't automatically follow his instructions he began ranting and then tried to vote kick the rest of the team.

Disgusted he left the game but funnily enough he reappeared some minutes later on the opposing team. Apparently he soon concluded they were idiots as well since he soon tried to vote kick people there before leaving the game again. Needless to say, he didn't make the experience better for our team in either case.

A re-occurring observation is that players in versus mode matches often tend to explicitly blame teammates when their team is losing. Regardless of whether they are correct or not, there are many potential reasons for this: moving slowly, falling behind, rushing ahead, not helping teammates, or generally being unsuccessful. The language in the text chat typically becomes harsh when players start to blame other players. Posts on the official *Left 4 Dead* forum also ties the emotional pressure to this kind of game design and shows an awareness of the Symbiotic Player Relation in the game design. A player discussing rage quitting points out:

In co-op games, L4D especially, your success is tied SO CLOSELY to that of your teammates that invariably half the time you're [sic] going to lose simply because of unskilled teammates, which will naturally get people to leave. Point being that the "Rage quitter epidemic" shouldn't have really been much of a surprise to anybody. Sure wasn't to me.

Another player on the forums also expressed how the design of the game affects the atmosphere in the game. According to this player there is more annoying communication in *L4D2* compared to the game *Team Fortress 2*:

-if someone annoys me in TF2, I can comfortably ignore them and focus on the other ten guys. Each obnoxious type is a quarter of the team and I'm going to rely on them closely to watch my back. Not worth it.

In this study we saw how *Symbiotic Player Relations* was a design pattern that gave players a ground for negotiating their own identity as skilled or un-skilled players in relation to the performance of others. By negotiating who is and who is not fulfilling their role as a competent gamer the more sustainable identity that the players have outside the game is introduced and put at stake.

Positions in a system - expectations and negotiations

Goffman (1961) pointed out that in an activity there will be roles, specific identities tied to the expectations on the participants. In order for a lecture to happen, someone must take the role of a lecturer while others take on the role of the audience. A game like *L4D2* positions the participants as players. Jonas reflects upon this:

Again I found myself with players who did not use my nickname. When playing as an infected I was called "Boomer" or "Spitter" etc. depending on the kind of infected I was currently playing. One could expect this to be tied to the functionality of the different infected just like in an MMO instance where I have been addressed with my class "rogue go there, hunter trap the walker etc." However I have encountered this on the survivor side as well, being named as one of the characters Nick, Ellis, Coach or Rochelle. Always makes me feel so unimportant, just like I might as well be replaced by a bot.

Tied to this role of the player is the expectation that you are supposed to be skilled at playing the game. Even though players' opinions about what constitutes a skilled performance vary, the main reason we saw for trying to kick someone out was the perception that a certain player lacked skill. The presence of both *Symbiotic Player Relations* and *Orthogonal Differentiation* between players makes *Role Fulfillment* (Björk 2012) very important for both experiences of success and failure. To fail to protect teammates is something very visible; it is not like in

other team-based games only affecting the score of the team, but also another players' agency.

Once gameplay has started two new roles will emerge: that of potential winners and that of potential losers. The score between the two teams becomes a structuring factor in what kind of roles the players can engage in. A lot of negotiation between the players is focused around these positions. Camilla writes in the field diary:

Tonight in one match we were behind the whole time. The other team was poor winners and provoked us to rage. I especially find it frustrating when they spam the laughter emote after you have failed an attack. The low score almost branded me and I wanted to communicate to the other players that I am not as bad as the score suggests. In the end I left quietly.

The urge to show the other participants that the performance here and now is not representative for who you are and your gaming skills, is a common theme in players' interactions. Immediately after an unsuccessful attack one can sometimes read the comment from the failing player simply saying: "lag", thus blaming the Internet connection for the event that just occurred. Other excuses are to blame bots on one's team or lay the blame on teammates. The accusation of other players being noobs (slang term for an unskilled, inexperienced player) is, according to our study, part of everyday interaction in L4D2. It is strategically used towards teammates in order to avoid having to take on the role of the loser. Here our observations seem to be in complete coherence with Goffman's theory:

"Often, during an encounter, a participant will sense that a discrepancy has arisen between the image of himself that is part of the official definition of the situation and the image of himself that seems to have just been expressed by minor untoward events

in the interaction. He then senses that the participants in the encounter are having to suppress awareness of the new version of him, with consequent tension.” (Goffman 1961, 51)

The unpleasant emotion of becoming stigmatized as a bad player is thus something that much of the interaction in *L4D2* evolves around. Players tend to take precautions and interact in ways so that this can be avoided, something that can be done with very small means of communication.

Communication patterns - a little information says a lot about who you are

One striking thing about playing *L4D2* is that although coordination is needed, there is often little communication during actual gameplay. This is due to the fast-paced nature of the game; writing longer pieces of text opens up opportunities for opponents to attack while one is defenseless.

Even though the game supports multiple communication channels (text messages, voice chats and predefined context sensitive comments accessible through a pie menu) in our experience this function is seldom used. There are many possible reasons for this, both technical and social in nature. Players may not have the proper technology like headsets or microphones, may not be quick typists or may not be familiar with the pie menu functionality.

An observation we made was that, even if the communication was sparse, it took rather little to affect the atmosphere of a game. A simple, “thanks” after rescuing someone, or “sorry” could emotionally mean a lot. When playing as survivors the interaction between the avatars is also a form of communication, i.e. one can assume something about other players from the way they are playing, if they wait for each other and share the resources one finds in the game.

I noticed that I generally don't really like final battles; I tend to quit a game before they start. But sometimes I get this feeling for another player that can make me follow the game into the last level. Like when I played today and a player had given me a can of pills when I needed it. It just felt like I couldn't be the one who abandoned the team then. It felt like this player in a sense believed in me and I couldn't let him down by just dropping.

As Camilla notes here, it takes very small actions to gain a sense of another player. That is, by just being polite, players can establish a relationship that is not part of the game, a frame of sportsmanship. Sometimes politeness is used strategically in order to uphold the activity. When players have established a relationship that goes beyond the instrumental position they have to each other in team, they are more likely to feel committed to the game. We even saw a case where a player had invented a concept for trying to be polite so that people would stay; he called it "anti-quit talk." Players who excused themselves were not as likely to be kicked out either. Humor and self-criticism were also forms of communication that established relations between players that went beyond their position in the game system. In the excerpt above, the more stable attachment to the other player is what keeps Camilla in the game.

The fact that just a small amount of communication introduces the person behind the avatar is also something that can become a problem when players want to keep distance to other team members. In the excerpt below, Jonas deliberately avoids engaging with another player.

Again some young male voice tried to get verbal communication going in the voice chat. I did not answer. He tried to take a leadership role, telling other players what to do. He had a clear picture on how to play a certain level and thus played completely predictably. For me, part of the pleasure of the game comes from

avoiding obvious strategies and being a bit creative in trying to outsmart the other team. On the first level in Swamp he went into the house where you always get caught and started to yell at me for passing it. Clearly I found his strategy inferior and thought that if I had gone inside we would have gotten even more stuck, giving the other team the possibility to spawn close. He kept on yelling in the voice chat so I turned off voice communication. Being silent makes it easy both to drop out and to suggest vote kicks. I don't think I have ever suggested a vote kick against anyone whom I have started to voice chat with.

As both the excerpts above suggest, it takes rather small means for players to establish a relation that is something 'more' than just positions in a game system. This relationship is, on the one hand, something that will give players a more solid relation and is thus an element that makes the 'blame game' less likely to emerge. On the other hand, as Jonas' excerpt shows, this more stable relation might be something that a player wants to avoid in order to be able to quit or vote kick. We also observed how stable relationships turned out to become an emotional dilemma: forming a stable in-game relation during a game session with someone, only to find out that when the wider world is introduced that the persons you play with have doubtful values.

Misperception of others' identity - Dealing with racism, misogyny and homophobia

As stated above, players in our study created more stable social activities by tuning down the importance of skill. If you have appreciated someone's joke you are more likely to show deference to this player's failures and low achievement. We found that this relief of pressure to perform made the game more fun (see Goffman 1961). Sharing a fun game with other players turned out to be one of the most boundary maintaining situations, something that in most cases was a positive experience. Yet, a stable framework could also cause problems when

we found out that we had misperceived whom we were sharing the fun with. Jonas and Camilla had the following experience.

Tonight we found two other players speaking our language in the voice chat. They seemed really fun and we engaged in a conversation with them. None of us had played the level we played before but even though we did not find our way or good spots to attack, the other two players kindly instructed us. After an hour we added each other to our friend lists on Steam. At the final level, the climactic last fight before the rescue, everything was good and our team was winning. In a skilled move one of the other players was able to charge the black character Coach over the edge. When doing this he screamed out in the voice chat: "Did you see that Nigger fly!" and started to laugh. We felt gutted and wanted to leave but the commitment to the game was in this case so strong that we sat through it.

This experience was truly a surprise for these authors. The brittle, boundary-maintaining frame of the game kept the racist comment contained, i.e. it passed through the activity since the role-fulfillment was not threatened. As Goffman pointed out, some things will destroy the activity while others will pass through it. Playing in PUGs can thus sometimes mean that one has to deal with racism, misogyny and homophobia. While we in most cases left, the experience reported in the excerpt above shows how the brittle game frame also makes it possible to conserve problematic values. Jonas had a somewhat similar game experience:

Camilla and I were playing with another player who seemed pleasant. There was nothing special about him, I guess I understood him as nice due to the fact that he just made a couple of chat comments and that he didn't start blaming and accusing other players. After having played some levels with him, I saw a

really offensive personal tag in a safe room [players can mark a safe room with a personal tag, a poster-like picture they upload to the game. Often these are explicit in nature]. The picture was a portrait of Hitler with the text “Tolerance is gay.” I asked Camilla if she thought that it was our team mate who had posted it but learnt that it had been there when the other team was in the safe room. It must have been someone in their team who put it up there or it belonged to the server we played on. The moments while I was unsure about if it came from our team mate or not were really tense. Two thoughts went through my mind. First, it was an awakening about how extremely little I actually knew about this other person and how stupid it was of me to perceive him as “nice.” Second, I imagined how awkward it would feel to kick someone who had nice manners after finding out he was a Nazi.

Again, the local identity of the player as someone that upholds functional game interaction, and values from the ‘wider world’ collided.

DISCUSSION: GAME IDENTITIES AND THE WIDER WORLD

Our study showed that when players communicate with each other, even if it is very sparse communication, they make a social agreement that seems to make kicking and rage quitting more unlikely. They present themselves as something more than just a position in the system. Goffman’s metaphorical boundary between the game activity and the wider world thus becomes more solid, i.e. less likely to fall apart, when players show more of themselves than their local ‘player identity.’ Humor, self-criticism, politeness, etc. are social elements which give players a relationship outside the game-relevant domain and yet these observations indicate that they are crucial for the game experience. This means that elements like politeness can be strategically used in a meta-game where it is important to take measures so the activity

does not fall apart, for instance through *anti-quit talk*.

These results point to the fact that even though PUGs are online activities, previous insights in the CMC field about flaming and anti-normative behavior might not always be easily transferable to game environments. Using Goffman (1961) as an interpretative framework make us interpret this as *identity work of the players*. The players put their identity at stake when they enter a PUG, who they can be will be tied to the skill they exhibit during a very short strip of interaction. Establishing a relation that goes beyond this meritocratic situation is a way of relieving the game session of the pressure of performing. By introducing the “wider world” in the game session the stakes are lowered. An unskilled performance will not create the same tension since the thing that just occurred is not representative of the whole person behind the avatar. From this perspective it is not so much the politeness as such that makes a game session seem friendlier. It is the fact that introducing the “wider world” in the game activity makes the activity become less skill-based since players become more considerate and start to show each other deference. Your local identity is not threatened by the fact that you made a mess of things since you can be something more than a bad player in the eyes of the other participants.

Since a game becomes more pleasurable if it is not on the verge of constantly falling apart, our observations partly explain why people tend to dislike PUGs and prefer to play with friends. Having a stable relation outside the game context relieves the players from the pressure of performing. It makes gaming less of a skill-based activity where we tend to show deference to the unskilled player—after all she or he is funny, nice, polite etc. It is here we find one function of guilds and clans in gaming. This conclusion would thus explain the socio-psychological mechanics of why online gamers prefer to play with friends rather than in PUGs (see Eklund & Johansson 2010).

From a design perspective this suggests that it is important to give PUG-players an ability to negotiate their identity when starting to loose, especially when the pattern of *Symbiotic Player Relations* is employed. In a game with leveling and statistics tied to the avatar there is always a possibility to blame uneven conditions as the main reason for losing. In a game with static avatars, like *L4D2*, it might be an idea to give players some way out of the position of the loser, some design that makes it possible to blame conditions outside one's own agency.

The results discussed above have to do with how positive perceptions of other player's identities in the "wider world" comes to life in game sessions and sometimes can save a session that would otherwise fall apart. Our study also showed a somewhat reversed version of this structure. Negative perceptions of other player's out-of-game identities were not discussed as long as it did not disturb the pattern of *Role-fulfillment*. While humor and generosity could save a bad game from breaking, racism and misogyny did not necessarily make a stable game vulnerable. These observations suggest a somewhat rough formula to the understanding of the social mechanisms for gameplay; positive views of other players out-of-game identity can save a problematic game session from falling apart, negative views of other players out-of-game identity does not make a smooth game session vulnerable or make it fall apart. While there might be an aftermath, such as players blocking each other or not playing again with the same players, the on-going game will not break. Clearly this formula will have to be investigated further and given the different social statuses games have in the wider world, one can expect large variations. Even a high stake football match can be subject to this structure. When soccer-player Giorgos Katidis in March 2013 took off his shirt and made a Nazi-salute to celebrate a goal, he was later banned for life from the Greek national team. Yet the on-going game was played to the end and the referee's booking had to do with the violation of taking off the shirt during gameplay, not the display of unacceptable values (101 great

goals 2013). If games in general, and especially PUGs are social arenas where exhibitions of misogyny, racism, homophobia and other forms of intolerance are more likely to 'pass' than they would in other activities, then this is a worthy topic for further research. Some autoethnographic accounts in this study suggest that this might be the case.

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In Defence of a Magic Circle: The Social, Mental and Cultural Boundaries of Play

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INTRODUCTION

Magic circle continues to be a hotly debated term in game studies. The term is intuitively accepted, useful in describing the difference between play and non-play; a handy metaphor that acts as intellectual shorthand for a more complex set of social relations. However, if it is not clear what ‘magic circle’ is shorthand for, then the term can muddy thinking. For example, when taken too literally, it can cloud our understanding of how play is bounded.

The metaphor of magic circle stands for a border that delimits an instance of playing. However, it is only one of many formulations of a border that surrounds and envelopes play, a border that has numerous ethical, legal and practical implications, a border that functions as a design aid, and a border that is relevant for an understanding of what play is. In order to come up with useful theoretical tools, the personal mindset of the participant and the socially negotiated and upheld contract that yields a site of play, need to be separated. Though these psychological and sociological objects are interwoven, it makes sense to separate them for purposes of analysis (for example Montola et al. 2009, 257-278; Stenros 2010). The psychological border set up by adopting a playful mindset and the border set up socially through negotiation often coincide, but they are two different things. In addition, residue of these two, as well as established forms of rule-structured playing create game spaces, sites and artefacts that are culturally recognized as arenas of play – even when they are empty and unused. When playing an existing game the social negotiation often means accepting

a predefined set of rules. Confusing the three (mindset, social contract and game space) leads to muddled conceptions of playfulness, play and games.

In the following I shall review the history of the magic circle and its criticism; explore different formulations of the social, mental and cultural borders of play; and, finally, formulate a synthesis view of the boundedness of play.

THE TWO MAGIC CIRCLES

The concept of magic circle is traced back to Johan Huizinga (1938), who wrote:

All play moves and has its being within a play-ground marked off beforehand either materially or ideally, deliberately or as a matter of course. Just as there is no formal difference between play and ritual, so the "consecrated spot" cannot be formally distinguished from the play-ground. 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 play-grounds, i.e. forbidden spots, isolated, hedged round, hallowed, within which special rules obtain. All are temporary worlds within ordinary world, dedicated to the performance of an act apart.

(Huizinga 1938, 10)

For Huizinga, magic circle is a space created for playing, a material or conceptual temporary world dedicated to the act apart. However, though the concept of the magic circle is usually attributed to Huizinga, and the above passage does capture the idea behind how the concept is used even today, he did not dwell on the subject for long. Indeed, the term 'magic circle' only appears six times in (the English translation of) *Homo Ludens*, and only three times in the chapter game scholars usually refer to: in the passage quoted above, once in the

metaphoric meaning it has since acquired in game studies (Ibid, 11) and once as an example of a sacred space (as opposed to playful space, though Huizinga stresses that formally such a distinction cannot be made, Ibid, 20). However, in the context of the whole book it is not just an example or a metaphor among many, but a core feature of the examples given (as pointed out by Calleja 2012, see Huizinga 1938, 77, 210, 212).¹

In the book *Rules of Play*, Katie Salen and Eric Zimmerman (2004, 93-99) developed and defined the concept of the magic circle as it is understood in game studies today. Though the term and the central idea are adapted from Huizinga, the works of Apter (1991) and Sniderman (1999) also contributed to the framing. Zimmerman (2012) later clarified his view of the evolution of the term:

To be perfectly honest, Katie [Salen] and I more or less invented the concept, inheriting its use from my work with Frank [Lantz in the 1990s], cobbling together ideas from Huizinga and Caillois [1958], clarifying key elements that were important for our book, and reframing it in terms of semiotics and design – two disciplines that certainly lie outside the realm of Huizinga's own scholarly work.

(Zimmerman 2012)

This is important, as there are critics who question Salen & Zimmerman based on what Huizinga wrote, and vice versa (e.g. Egenfeldt-Nielsen et al. 2008, 24-25). The two terms are connected, but the formulations – and especially the ontological contexts of the formulations – are different. Salen & Zimmerman's (2004) *magic circle of gameplay* is entered voluntarily, it is self-sufficient, set apart from ordinary life in locality and duration, and it has rules that differ from ordinary life. These features it shares with Huizinga's conception. However, for Salen & Zimmerman's formulation the possible devel-

opment of culture from play is not relevant, nor the alignment of play and ritual. They describe the magic circle as shorthand for “the idea of a special place in time and space created by a game,” (Ibid, 95) and go on to explain why they feel that it is a fitting metaphor; the circle is both finite and infinite, while the magic is in the transformation of meaning within the circle. In their formulation, the boundaries of play are fuzzy and permeable, but the borders of games are more formal (Ibid, 94-95). The magic circle is entered as play begins, or it is generated with that initiation (Ibid, 95). While within the magic circle, a temporary world is created where meaning is handled differently and rules of the game have authority (Ibid, 96). While in the circle, the players adopt a *lusory attitude* (Ibid, 97; see Suits 1978). The temporary world of the game is an open system and a closed system depending on whether games are framed as rules (closed system), play (open or closed system) or culture (open system) (Salen & Zimmerman, 2004, 96-97). Salen & Zimmerman also provide examples of the blurring of the boundaries from live action roleplay and what later would be called pervasive games, when actions are indexical or the activity is not formally recognized as play (Ibid, 574-579).

Criticism of the Magic Circle

This conceptualization of magic circle has faced strong criticism, mostly because many scholars feel that the division between play and ordinary life is ultimately invalid. T.L. Taylor (2006, 151-155), writing in her book *Play Between Worlds* about exploring online game cultures, questions whether or not the division between game and life needs to be as strong as her reading of Salen & Zimmerman makes it out to be (see also Castronova 2005, 147-160). She sees the discussion about the division between game and life mirroring the discussion about the separateness of online and offline, and calls for non-dichotomous models. Her criticism is irrelevant if virtual worlds are not considered games but spaces where, among other things, play happens. Yet, even as she points this limitation out, she wonders whether or not this is

actually a problem with the definition of games.

Thomas Malaby (2007; 2009, 79-106) is on the same track, but words his criticism much more harshly. He questions if a clear division between play and ordinary everyday life exists at all.² He also does not target just the magic circle, but play itself as long as it is understood inherently as separate from ordinary life, *safe* and free of consequences, and *pleasurable* (cf. Sutton-Smith & Kelly-Byrne 1984). This criticism is based on the work of virtual world ethnographers like Taylor and Malaby's own ethnography in Greece amongst *backgammon* gamblers. "[A]ny game can have important consequences not only materially but also socially and culturally," Malaby writes (2007, 107), and continues that this finding was very relevant also in non-gambling contexts when status and relationships are on the table in place of money. However, he does consider games "relatively separate," pointing out that the degree of separation is highly dependent on cultural context. He underlines (Ibid, 111) that games are socially constructed to be "separable to some degree from everyday experience."

Malaby's criticism is also reminiscent of what Marinka Copier (2005) wrote a few years earlier, when she drew attention to magic circle as a metaphor; Huizinga's circle was a sacred space whereas Salen & Zimmerman use a picture of a chalk circle to recontextualize the metaphor as child's play:

The visualization and metaphorical way of speaking of the magic circle as a chalk, or even, rusty circle is misleading. It suggests we can easily separate play and non-play, in which the play space becomes a magical wonderland. However, I argue that the space of play is not a given space but is being constructed in negotiation between player(s) and the producer(s) of the game but also among players themselves.

(Copier, 2005, 8)

Sybillie Lammes (2006) has also criticised the magic circle metaphor; she sees it as a simplification of the relationship between the game and the world. Propelled by Bruno Latour's work on actor-network theory, she has proposed moving to the term *magic node*. Jesper Juul (2008) has advocated the term *puzzle piece* to underline how games interface with the world around them, and Edward Castronova (2005, 147) has proposed that *membrane* would be a better term for the barrier that separates synthetic (that is, online) worlds from the Earth. Others who have voiced this kind of criticism include Mia Consalvo (2009, 411), who has argued that the magic circle upholds a structuralist conceptualization of games and that it emphasizes form at the cost of function. Especially the context of play is lost, and often context is key in deepening the understanding of instances of play.

Much of the criticism of Salen & Zimmerman's magic circle seems to stem from their ill-worded explanation behind the choice of the term (2004, 95): "The fact that the magic circle is just that – a circle – is an important feature of this concept. As a closed circle, the space it circumscribes is enclosed and separate from the real world." The usage of the words *enclosed* and *separate* here seems unfortunate, as their larger description of the concept is hardly that closed. It is almost as if this passage has turned the concept of magic circle into a straw man. For example, Malaby's demand that the nature of games as socially constructed is not really in conflict with what Salen & Zimmerman wrote.

It is hard to find a scholar who has insisted on a strict border between play and non-play. Perhaps the most severe proponent of a clear division was Roger Caillois. He devoted a whole chapter in *Man, Play and Games* (1958, 43-55) to describing the corruption of games: if play ceases to be free, separate, uncertain, unproductive, regulated or fictive, he no longer sees it as play. A player who cannot properly stay aloof and separate play from non-play is corrupted. Upholding this

normative border was extremely important to Caillois: cheaters and professionals destroy play, and in general the corruption of play leads, he felt, to alienation, superstition, violence, alcoholism and drugs(!). Yet even Caillois does not claim that there is a strict division between play and non-play; on the contrary; he claims that there *should* be a division.

Daniel Pargman and Peter Jakobsson (2008) also attack the “strong-boundary hypothesis” of Salen & Zimmerman’s magic circle, based on interviews and observations of hardcore digital gamers in their homes. Their findings make it difficult to conceive of a clear, closed-off border between play and everyday life. Their separationist reading of Salen & Zimmerman’s model is unfair, yet their criticism hits home when it moves from the ‘circle’ part to the ‘magic’ part. Their interviewees rarely experience any kind of magic or enchantment when playing digital games. Quite the opposite; it is common to play and watch television, or to play for a short time while waiting for the pasta to cook. Though Salen & Zimmerman mostly conceive of the ‘magic’ to refer to the transformation of meaning within play, the connection to sacred is very much present in Huizinga’s original work. Thus, it is more a criticism of the idealization of play than of the magic circle as a separate semiotic domain. Based on Pargman and Jakobsson’s work, it seems clear that there are many instances of digital game playing that are better characterized as mundane than as magical. This is actually in line with Huizinga’s (1938, 20) thinking that there is no formal difference between ritual and play, sacred and playful.

Michael Liebe (2008) and Gordon Calleja doubt the existence of magic circle specifically in digital games, since “the majority of actions possible are programmed into the game system and cannot be changed” (Calleja, 2012). There are three problems with this criticism: first, the interpretation of magic circle is quite narrow. For Liebe and

Calleja only the agreement on constitutive rules (what is possible) is relevant, leaving out interpretation of rules, extra-ludic motivations or consequences, player-created goals, etc. Secondly, the difference to traditional games is not as severe as presented here. There are numerous “rules” in sports that an athlete cannot ignore (like the weight of the equipment, law of gravity) (see Montola 2012, 32-47), and – as Calleja points out – digital games also have social rules. Thirdly, this view casts digital games in a narrow light: only the events displayed on a screen (or even just the events within a field depicted on a screen) are within the magic circle (and thus the game). The player and the controller in front of the screen are not considered.

Zimmerman (2012) addresses some of these criticisms in a popular article, and rejects the strong boundary hypothesis attributed to him and Salen. Zimmerman asserts that the core idea of a magic circle is that “games are a context from which meaning can emerge.”³ Indeed, Jesper Juul (2008, 59) has pointed out that many of the critics of the magic circle (he cites Copier, Malaby, Pargman & Jakobsson) “claim to counter Huizinga, Salen and Zimmerman by stressing the exact social nature of the magic circle that Huizinga, Salen and Zimmerman also stress.” Zimmerman (2012) also claims that the concept he and Salen put forward was mainly meant as a tool for design, and thus it should be evaluated based on its utility.

Despite the criticism, magic circle continues to be used.⁴ It seems to be a useful, powerful metaphor, though it has not been exactly clear what it is a metaphor *for*. Some of the problems seem to be connected to the idea of games as pre-existing artefacts that players enter into, others to the concept of the magic circle as necessarily having a material form. A particularly lucid new formulation for magic circle has been offered by Markus Montola, who conceives of

the magic circle as a metaphor and a ritualistic contract. The

function of the isolating contractual barrier is to forbid the players from bringing external motivations and personal histories into the world of game and to forbid taking game events into the realm of ordinary life. While all human activities are equally real, the events taking place within the contract are given special social meanings.

(Montola et al. 2009, 11)

This formulation takes a further step away from addressing the relation between play and culture and instead underlines the social nature of the play contract. Conceptions of such a social barrier between play and non-play are quite common, and numerous interesting formulations have been proposed without the term magic circle attached. We shall next review some of these formulations of social boundaries.

Social Borders

The boundedness of play has been postulated not just in game studies, but also at least in philosophy, sociology, psychology, performance studies, library and information studies and legal studies. Metaphors that have been used to encapsulate play or the border around it include: world, frame, bubble, screen, membrane, reality, zone, environment and net. Note that some of these metaphors highlight the border, others the delimited space, though most refer to both.

Philosopher Kurt Riezler (1941) makes two distinctions: a social division between ordinary life and what he calls *playworld*, and a mental division between serious and playful attitudes.⁵ Playful and serious are opposites in his thinking, and there is a clear separation: “Though man’s mood can move things to and fro over the borderline between play and seriousness, he can not move the borderline itself, which demarcates attitudes, not things.” Riezler sees this playworld as separate from the ordinary, something you enter voluntarily:

An area of playing is isolated by our sovereign whim or by man-made agreement. Things within this area mean what we order them to mean. They are cut off from their meanings in the so-called real world or ordinary life. No chains of causes and effects, means and ends, are supposed to connect the isolated area of play with the real world or ordinary life. If there still are such chains they are disregarded.

(Riezler 1941, 511)

In the real world everything is connected in chains of cause and effect, but in the playworld the chains of causes and effects have limits. However, the game can have goals that are connected to the real world, as in gambling or professional sports. Note especially that Riezler also considers the playworld to be a social construct, a “man-made agreement.” He introduces the playworld with these words:

I begin with the most simple case. We play games such as chess or bridge. They have rules the players agree to observe. These rules are not the rules of the “real” world or of “ordinary” life. Chess has its king and queen, knights and pawns, its space, its geometry, its laws of motion, its demands, and its goal. The queen is not a real queen, nor is she a piece of wood or ivory. She is an entity in the game defined by the movements the game allows her. The game is the context within which the queen is what she is. This context is not the context of the real world or of ordinary life. The game is a little cosmos of its own. (Riezler 1941, 505)

This is the exact quote that sociologist Erving Goffman (1961, 27) cites before summing it up with the oft-quoted line: “Games, then, are world-building activities.” But before discussing Goffman in detail, let us consider Gregory Bateson’s conception of *frame*.

In the same essay where Bateson (1955) discusses metacommunication

and the signal “this is play,” he also introduces psychological frames. These frames delimit what are meaningful actions and as such they are metacommunications. Bateson discussed the frames as psychological, but he also considers how they work in communication as messages – basically saying that they are also social. Though Bateson’s formulation of frame is ultimately a little unclear – perhaps due to its function as a tool in psychotherapy – it has been hugely influential. The idea that there could be a metacommunicative frame that declares “this is play” has been picked up by numerous scholars.

For example, in their discussion of the idealization of play, Sutton-Smith and Kelly-Byrne (1984, 317-318) come to the conclusion that one of the few things that can be said about play is that it is always a Batesonian framed event. They go on to point out that it is essential for the participants to keep in mind that they are playing, “otherwise the activity will break down into anxiety or violence as indeed it often does.” They also list numerous cues that can be used in keeping the playfulness of the frame at the forefront of everyone’s minds: certain types of actions (e.g. exaggeration, repetition), objects, physical scenes, vocalizations (e.g. registers for iconic sounds for cars or babies), characters, and attitudes.

The most well-known extrapolations of Bateson’s frame comes from Goffman (1961, 20): “games place a ‘frame’ around a spate of immediate events, determining the type of ‘sense’ that will be accorded everything within the frame.” Frame is thus social, shared and provides meaning in an *encounter*, a social situation (whereas Bateson’s frames are more akin to mental representations).⁶ An example of how sense is made in a game context is provided by *the rules of irrelevance*: during gaming, the participants forswear interest in the value of the game equipment. For example a chess set can be made of cardboard, wood or gold, yet during the game it is treated in the same way. Similarly the players’ background or social status should not influence the

playing of the game (Ibid, 19-26). However, certain characteristics of the player do influence the game (Ibid, 29-31) (couples do not play bridge together, age might determine the order of turns, social status might be translated to a 'better' character in an RPG). This incorporation of external elements is guided by what Goffman (Ibid, 33) calls *transformation rules*: these rules tell us what modifications take place as external patterns of properties, which are given expression within the game.

Where the rules of irrelevance tell what is left out of the game frame, Goffman uses the Riezler quote to tease out what is kept in the frame. Games are world-building activities, as they set an "engine of meaning," which makes it possible for events, roles and identities to emerge that would not be understandable or meaningful in any other frame (like *grounding out to third*, *atari* or *lawful-good half-elf warrior*). However, since Goffman's interests do not just lie in games, he uses them as a stepping stone to say something about the social world. Unlike Riezler, who conceived of an ordinary life outside playworlds, Goffman sees everyday life as similar to games: only in the context of the street do terms like pedestrian or motorist become meaningful (Ibid, 26-29).

Goffman (Ibid, 65-66) introduces the metaphor of an *interaction membrane* as the boundary around an encounter. The border around play is permeable; as the wider world passes through more than just application of the transformation rules takes place. Yes, some elements are ignored and repressed, others are transformed, but it is also possible for the external elements to endanger the transformation rules and thus the encounter itself. It is possible for play to be collapsed by external events.

Peter L. Berger and Thomas Luckmann have tackled the delimiting of play from non-play in their foundational text *The Social Construction of Reality* (1966). They postulate a paramount ultimate reality that can

enclose “other realities” which are “finite provinces of meaning” (also Schutz 1945, 551-560; James 1890):

Compared to the reality of everyday life, other realities appear as finite provinces of meaning, enclaves within the paramount reality marked by circumscribed meanings and modes of experience. The paramount reality envelops them on all sides, as it were, and consciousness always returns to the paramount reality as from excursion. This is evident from the illustration already given, as in the reality of dreams or that of theoretical thought. Similar “commutations” take place between the world of everyday life and the world of play, both the playing of children and, even more sharply, of adults.

(Berger & Luckmann 1966, 25)

Berger and Luckmann, like Riezler, Bateson and Goffman, postulate a structure constituted by *meaning*. These other realities are commuted to and from, and play and games are by no means the only finite provinces of meaning of this type; art, theatre, religion and even dreams offer similar enclaves.

Goffman further developed the theory on encounters; in *Frame Analysis* he again begins by discussing Bateson’s frames, and their application of it to games (1974, 7, 40-43). However, he discards most of the terms he introduced earlier, like encounter and membrane, and instead introduces terms such as framing and keying.

Instead of everyday life, Goffman discusses primary frame as the basis for our interpretation (Ibid, 21-39). Things that we say ‘really’ or ‘actually’ occur, occur in the primary frame (Ibid, 47); this activity is meaningful in its own right (Ibid, 560). The primary frame is itself also a construct, as culture, religion and cosmology influences it for social groups (Ibid, 27) – and Goffman makes a distinction between natural and social primary frameworks (Ibid, 21-22).⁷ The

primary framework is not enough to make sense of what is going on; a transformation of meaning takes place. This is referred to as keying, and examples include make-believe, contests, ceremonials, technical redos, or copies (48-78). Once an activity has been keyed, it can be further transformed by rekeying. Furthermore, keying is not the only way that activity can be transformed. The other possibility is though *fabrication*, which Goffman defines (Ibid, 83) as “the intentional effort of one or more individuals to manage activity so that a party of one or more others will be induced to have a false belief about what is going on.”⁸

During play numerous frames are present, and the participant has multiple roles he adopts. Goffman (1961, 51) uses the example of a bowler who takes a bad shot, and when he turns back to face his fellow players, he makes a facial expression that signals that the shot was not representative of his skills. An ideal player would not need to send such a signal, but the human participant does so. It is not part of the system of the game, but of the social encounter. Indeed, good sportsmanship is not about playing the game, but about navigating the social frame around it.⁹

The conceptualizations of delimited spaces within everyday life capable of transforming social reality are abundant. For example in the realm of psychodrama, Jacob L. Moreno (1965) has proposed the concept of *surplus reality*, based on Marx’s conception of surplus value. Surplus reality is a kind of alternative reality, a shared social space, where a group can act out or rehearse painful situations or relations from a participant’s life. Andrew Letcher (2001) has added the concept of *temporary tribal zones* into the pot. Writing in the context of religious studies, Letcher makes observations about a temporary spatial arrangement. Building on Mikhail Bakhtin’s (1965) carnivalesque and Hakim Bey’s (1985) *temporary autonomous zones*, Letcher proposes a temporary transformed space through the rules and conventions of a neo-tribe.

The transformation is so strong that it creates an illusion of autonomy, though does not actually achieve it.

J. Tuomas Harviainen and Andreas Lieberoth (2012) have compared rituals and games in the context of library and information sciences.¹⁰ They build on the works of Huizinga, Letcher and Bateson, and discuss a *local information environment*, which both of these cultural forms share. It determines what parts of the real world are allowed to affect the participant's behaviour. According to them, the separation of the real world and the game or ritual is made possible, from an informational angle, by three key features: "resignification of elements within the situation, increased attention to shared intentionality, and the fact that during such activities, access to information outside of the activity is limited."

The resignification is very similar to Goffman's rules of transformation. However, notice that for Harviainen and Lieberoth (as well as for Riezler and Bateson) the border between play and non-play is not just social, but has also a strong psychological element in attention to shared intentionality. Next, we shall move on to considering the border as personal and mental instead of social.

Mental Border

Similar to the sociologists cited above, Mihaly Csikszentmihalyi (1975) does not see games as exceptional. There is an important division, one that Riezler also made, of playfulness and play. Playfulness (a mindset), or *flow*, can take place not just in play and games (social setting), but also in work. However, it is interesting to note that Csikszentmihalyi's characteristics of flow are not dissimilar to those of the magic circle; in fact one of them, *centering of attention on limited stimulus field*, seems familiar in this context (Ibid, 80-82).¹¹ In Csikszentmihalyi's discussion of the experience of rock climbers, he writes that in contrast to

normative everyday life, the action of rock climbing is narrow, simplified and internally coherent. [...] The physical and mental requirements involved in staying on the rock act as a screen for the stimuli of ordinary life – a screen maintained by the intense and focused concentration.

(Csikszentmihalyi 1975, 81)

Csikszentmihalyi also discussed the limitation of the stimulus field in relation to doctors performing surgery, and points out (Ibid, 131) how it is important for the surgeon “to adopt a neutral attitude toward the future of the patient’s life.” The playful activity, flow, is circumscribed from the experience of the normative everyday life.

For Michael J. Apter (1991) play is a phenomenological state. He discussed two mindsets or metamotivational states: *telic* and *paratelic*. Telic is a serious mindset, an activity is engaged in for a purpose. Paratelic is a playful mindset, with the activity in itself as the goal (or a goal is adopted in the service of the activity). In constructing a structural-phenomenology of play, Apter also talks about a border. He sees it as a *psychological bubble* and terms it *protective frame*.¹² The paratelic state is characterized by freedom and it being voluntary: there is a feeling of being able to turn off the television, to be able to walk out of the game, or packing away gardening tools.

In play, we seem to create a small and manageable private world which we may, of course, share with others; and this world is one in which, temporarily at least, nothing outside has any significance, and into which the outside world of real problems cannot properly impinge. If the ‘real world’ does enter in some way, it is transformed and sterilised in the process so that it is no longer truly itself, and can do no harm.

(Apter 1991, 14)

There is a private world, but it is not cut off from the real world. Like Goffman's interaction membrane, when properties from non-play world enter, they are transformed. Another important feature is that when a person is in a paratelic mindset, when she is within this psychological bubble, she feels secure and unthreatened:

[I]n the play-state you experience a protective frame which stands between you and the 'real' world and its problems, creating an enchanted zone in which, in the end, you are confident that no harm can come. Although this frame is psychological, interestingly it often has a perceptible physical representation: the proscenium arch of the theatre, the railings around the park, the boundary line on the cricket pitch, and so on. But such a frame may also be abstract, such as the rules governing the game being played. In the end, whether one is experiencing what one is doing as being within a protective frame or not, is a matter of one's own phenomenology.

(Apter 1991, 15)

The major difference, then, between the psychological formulations, and the social formulations, is that in the former the border and its construction are conceived of mainly as phenomenological and personal – even if it can take physical and other culturally recognized forms. This helps in explaining why different people have differing interpretations of playful situations – or even as to what counts as playful – as the protective psychological bubble is not uniform and shared, but personal. Considering these in relation to danger is especially illuminating: it does not matter if a situation is objectively speaking dangerous or not, the personal experience and perception of it (and the person experiencing and perceiving) is what influences the presence or absence of the bubble. This helps in explaining and understanding deep play and dark play (Schechner 1988, 12-14; Geertz 1973, 432-433; Sutton-Smith & Kelly-Byrne 1984, 314-316; Csiksz-

entmihalyi 1975, 74-101).

Compare this to Bernard Suits' (1978) concept of *lusory attitude*. He sees it as one of the building blocks of games, even a requirement for the constitution of a game. A player with a lusory attitude accepts the rules of the game just because they make possible such activity as the game (Ibid, 41). Suits' formulation is interesting as he marries the social and the personal: games require rules, which – though they can be personal – are usually socially shared. But in order for the game to be possible, all the participants must accept the rules. This is a personal choice. The player can have ulterior motives (like being near someone else who plays the game, making money as a player), but they still need to adapt an attitude where they take the rules seriously in order for the game to take place (Ibid, 142-146).

The attitude Suits discusses is not directly comparable to Apter's bubble or Csikszentmihalyi's screen; it seems more like something that can help in achieving that phenomenological state. It is an attitude one can choose to have, not something one strives for. Yet it does underline how the player is knowingly fostering a playful approach, even if she may not be able to switch from a telic to a paratelic or autotelic mindset on a whim. Humans not only play, but they are aware that they play. Suits also notes:

It is true, of course, that some things do change with a change of attitude. If playing – rather than playing games – is activity which is always and only undertaken for its own sake, then 'professional player' is a contradiction in terms. On such a view we would be obliged to say that a professional athlete was not playing, but we would not be obliged to deny that he was playing a game.

(Suits 1978, 144)

The borders as postulated in psychology tend to be phenomenological and personal. These mental metaphors – though they describe a border around play – are ultimately different from the social construct of the magic circle. Like between playfulness and the act of playing, there is a connection between the psychological bubble and the magic circle, and that relation is not as clear as one might hope.

Accepting a lusory attitude, accepting the rules of a game or playing is a social process, yet often the rules are not created on the spot, at least not from scratch. The next section discusses the culturally recognized games and their boundaries.

Cultural Border

Huizinga's formulation of the magic circle is something that is in place as play begins. Salen & Zimmerman see it as something that is either already in place or is generated as gameplay begins. While play may generate its own space, the playing of a game can be seen as entering a pre-existing space.

There is a long history of conceiving of games as their rules, going back to at least John von Neumann and Oskar Morgenstern (1944, 49), who write: "The rules of the game [...] are absolute commands. If they are ever infringed, then the whole transaction by definition ceases to be the game described by those rules." A player can adopt different strategies, but the closed formal system of rules does not change (cf. Suits 1978, 41; Crawford 1982; Makedon 1984; Salen & Zimmerman 2004, 81; Juul 2005, 36; Myers 2009). Rules are constitutive. They not only regulate the activity of play, but enable it.¹³

Games establish a correspondence with an external referent system, such as the world around them; as they simulate and model something they are representational (Myers 2009; Gee 2008). Furthermore, they take cultural forms (such as images, artifacts and abstractions), and

become semiotic domains (Gee 2007, 17-43; also Riezler 1941, 505), structures of interrelated sign systems. In relation to videogames Ian Bogost (2007, 241; also Gee 2007, 81-87) has argued that games are particular, embedded with specific cultural meaning: “The abstract processes that underlie a game may confer general lessons about strategy, mastery, and interconnectedness, but they also remain coupled to a specific topic.”

In a discussion of the syntax rules of games, operational gaming researchers Vadim Marshev and A.K. Popov (1983) define *game space*:

In the course of the game, we must somehow allocate the pieces [real or virtual] in space. Usually, this allocation is well defined by the rules, and the exact places and order of the allocation is described in the rules for the initial step and for the process of playing. Thus, not only is the set of places for pieces set, but so too is the relation between them. Let us name the set of places “the game space” and the set of places, together with the structure of this space, the “scheme of the game space.”

(Marshev & Popov 1983, 54)

When a game exists as a cultural artefact, for example as a designed, ready-to-play game, possibly with a physical arena attached, then initiating play is a step into the game space. The formal boundaries of the game have been set by the designer or by tradition. The same concept has later been discussed in game studies as *space of possibility* (Salen & Zimmerman 2004, 67; see also Walz 2010, 92-119; Juul 2005, 164-167). Marshev and Popov further outline the role of the player:

Here we are defining the right to have a certain amount of pieces of different types with the positions taken by these pieces, the duty of the player to make a sequence of moves, the obligation to fight in order to reach personal goals in the game, and the right to

have various sorts of information about the game. As usual, the access to information is implicitly defined for each player within the context of the game.

(Marshhev & Popov 1983, 54, emphases in original)

Accepting the player position within the game (cf. a lusory attitude) the player produces and reproduces the game, its boundaries and its space. In *The Magic Circle: Principles of Gaming & Simulation* Jan H. G. Klabbers argues that games have a dual nature as social systems¹⁴ (2006, 38-46), and that a system is always in place as gaming begins.

[G]ames are social systems, and moreover they represent social systems – real or imagined. They are also models of social systems. It is crucial to keep that dual position in mind. Even if a game involves one actor, that actor will always enter the magic circle with a social system, real or imagined, in mind. A player does not enter social vacuum.

(Klabbers 2006, 81-82, emphases in original)

It is worth noting that Klabbers' conception of the magic circle is mostly based on Huizinga's formulation, although he uses it primarily in the context of formal games and simulations, not spontaneous play. He conflates the magic circle as a social contract and the game as a formalized artifact of a social contract or cultural negotiation.

However, though games are recursive and reproduce their form through time, they do contain the possibility for emergent change (Malaby 2007, 104). The extent to which the rules are established before play commences is quite relevant. An established sport with official rules in a specific custom-built arena and a spontaneous bout of social play on a rainy street are both play, but only one of these is a pre-existing cultural artefact, and only one of these has a predefined game space.¹⁵ Yet, as Montola's (2012, 40) discussion of the ball in

basketball as a materially encoded representation of formal rules show, the material (or virtual) pieces or sites used in playing a game are not the game space, but manifestations of the rules.

Another interesting thing to note about the borders of play as cultural entities is that they are often recognized by other cultural systems, such as legal systems. As Greg Lastowka (2009), a scholar of law, has pointed out, violence is legally accepted in a boxing ring,¹⁶ and subjecting oneself to an “unreasonable risk of harm” is inherent to *American football* (Ibid, 386). Building on Huizinga, Lastowka notes that games are not just separate from the everyday, but they are ordered separate spheres that have their own jurisdictions and special rules; courts, for example, do not review the rulings of game referees (though they do uphold contract law) (Ibid, 385, 390-391). Games are not the only social sphere where there are special rules (compare dormitories, religious communities), but games can have rules that are in stark contrast with state rules. Often play where there is a very high psychological, physical or monetary risk involved (i.e. deep play) is legislated as in *boxing*, gambling and *bungee jumping* (Ibid, 388-389).

The fact that many state legal systems recognize games as happening in a different jurisdiction, of course, says very little about the border around play. Legal systems are social constructs just as games are, and there is no reason why one construct would not recognize another. However, what it does show is that on a cultural level that border is – at least up to a point – recognized and respected. Interestingly, Lastowka’s main argument addresses the legality of real-money trade in virtual worlds: he believes virtual worlds are games and thus courts should not interfere in the upkeep of the rules in these separate spheres of jurisdiction (Ibid, 392-394). If virtual worlds are games, then that assessment makes sense. But, again, if they are sites where play takes place, but where also non-play happens, then the situation is more complex. Yet the end user license agreements of MMOGs have

explicit contractual statements that require the user to only use them for 'play,' whatever a legal duty to play might mean (Reynolds and de Zwart 2010).

SAFETY AND THE BORDERS OF PLAY

The border that surrounds play is most visible when it is questioned, threatened or played with. Transgressive play draws attention to the border – and even questions if any border exists. Yet without limits, it is impossible to push oneself past them. According to Juul (2008, 64) “the magic circle is best understood as *the boundary that players negotiate.*”

Bad, dangerous, transgressive and harmful play seemingly challenges the idea of play as separate. Especially gambling has been used as proof that play is inseparable from everyday life and that play can have grievous repercussions for ordinary life. However, psychologists have no problem incorporating “bad play” within a framework of separate play. Performance scholar Richard Schechner has some ideas about that as well. For him the idea that play is dangerous is absolutely central:

A coherent theory of play would assert that play and ritual are complementary, ethologically based behaviours which in humans continue undiminished throughout life; play creates its own (permeable) boundaries and realms; multiple realities that are slippery, porous, and full of creative lying and deceit; that play is dangerous and, because it is, players need to feel secure in order to begin playing; that the perils of playing are often masked or disguised by saying that play is fun, voluntary, a leisure activity, or ephemeral – when in fact the fun of playing, when there is fun, is in playing with fire, going in over one's head, inverting accepted procedures and hierarchies; that play is performative involving players, directors, spectators, and commentators in a quadrilateral exchange that, because each kind of participant often has her or his

own passionately pursued goal, is frequently at cross-purpose.
(Schechner 1988, 5)

Schechner also recognizes that play sets itself apart in its own realm, behind a porous border – and he discusses both the mental and the social aspects of it. Later in the same article he describes playing as a creative destabilizing action that neither declares its existence nor intention:

I do not reject Bateson's play frame entirely – there are situations where the message "this is play" is very important. But there are other kinds of playing, like dark play, wherein the play-frame is absent, broken, porous or twisted. [...] [T]he Batesonian play frame is a rationalist attempt to stabilize and localize playing, to contain it safely within defnable borders. But if one needs a metaphor to localize and (temporarily) stabilize playing, "frame" is the wrong one – it's too stiff, too impermeable, too "on/off," "insidel/outside." "Net" is better: a porous, flexible, gatherer: a three-dimensional, dynamic flow-through container.

(Schechner 1988, 16)

As an example of play that is not socially shared, metacommunicated, he points out dark play. He even goes so far as to suggest that the person engaging in dark play may not even be sure that she is playing; it is possible that the action becomes (dark) play in hindsight, in the retelling, reframing and narrativization of the event (Schechner 1988, 14; see also Denzin 1982, 13-14).

However, Schechner also points out that the players need to feel secure in order to begin play (also, Weisler & McCall 1976). Trust is a key element. Indeed, the idea that play and games are safe is deeply ingrained in the discourse of game studies and especially game design. It ties into the idea that play is separate from everyday life and actions

taken during play bear few consequences beyond the play session (see e.g. Caillois 1958; Rodriguez 2006). The typical way of framing that is by saying that games are a safe platform to practise. Game designer Chris Crawford has expressed this argument nicely:

Therefore, a game is an artifice for providing the psychological experiences of conflict and danger while excluding their physical realizations. In short, a game is a safe way to experience reality. More accurately, the results of a game are always less harsh than the situations the game models.

(Crawford 1982, 12)

Similarly another game designer Bernie DeKoven (2002, 12-13) considers trust among players and a feeling of safety (not risking more than we are willing to risk) as integral elements in establishing the intention of playing well together. This general argument has also received specific formulations. For example, in regards to role-playing games expert hobbyist Toni Sihvonen has written about what he calls the role-playing contract:

After the player makes a decision regarding the discontinuation of self in the beginning of immersion, it is no longer justified to draw conclusions on the player from the actions of the character. It is difficult to fully establish the role-playing contract – familiar faces and memorable characters leave their mark on players. The core of the contract is in trust. When a player trusts the contract, he dares to immerse even in activities the player would consider awkward or strange.

(Sihvonen 1997, 7, translated from Finnish by the author)

Basically the contract states that the participants should not make judgements about the player based on the character, or vice versa. There is a disconnect between the player and the character. Though

people do make such assumptions, the social contract makes it possible for role-players to take on roles that are very dissimilar from themselves (cf. Goffman 1974, 194-195, 275-284). What is interesting about Sihvonen's formulation is that it explicates the contractual nature of the border that is drawn between play and non-play; Crawford takes that contract as given.

What all these formulations have in common is, again, the idea that trust is built socially. Malaby (2007, 110) has called games *artifactual* to underline that they are not only manmade, but specifically socially constructed to be separate (to a varying degree) from everyday life.

It is also interesting to note that there are numerous games that take advantage of playing around with the borders of play. Either the borders are blurred and expanded, as in pervasive games (Montola et al. 2009), or the playing happens knowingly on the border, as what Cindy Poremba (2007) calls *brink play*. Though the metaphors are different, the phenomenon is the same: both use, as Poremba puts it, "the contested space at the boundary of games and life." For many players the central draw of pervasive games is that they create an ambiguous zone between play and non-play – and inhabiting this not-knowing is quite pleasurable for some players (Montola et al. 2009; McGonigal 2006).

According to Poremba, (2007) brink games¹⁷ knowingly play with the metacommunicative statement "this is play." Players who engage in brink play¹⁸ will be able to do things that in the normal social frame would not be acceptable, but are acceptable as they are "just playing" – but at the same time the possibility to be able to do those transgressive things for real is the reason they want to play. A game qualifies as brink play if a conflict between implicit social rules and implicit (or even explicit) game rules is integral to the playing (see also Consalvo 2005, 10).

Of course, it is also possible to use games to generate danger that spills outside its borders. Some sorts of dark and deep play do not so much use games as an alibi, but as an engine of strong emotional experiences. *Bleed* play (Montola 2010), where role-playing games are played in order for the player to experience some kind of shock, is an example of this.

The ambiguity produced by pervasive games and the winking at meta-communication in brink play presupposes a difference between play and non-play (or other play), or at least a friction between different frames or different sets of social rules. The rhetorics surrounding bleed play do this as well, though perhaps the social contract around such play is a little different to begin with.

Though it certainly can be questioned if the idea of play as relatively separate is a romantic notion in itself, at least this idea has been widely discussed and found useful in numerous fields of inquiry. Yet it is important to underline that play is not seen as exceptional in its delimited nature.

SYNTHESIS

Based on the review a synthesis of the boundaries of play is now constructed. There are three different boundaries of play: the 'protective frame' that surrounds a person in a playful state of mind (psychological bubble), the social contract that constitutes the action of playing (magic circle of play), and the spatial, temporal or ideal, rule-based cultural game space where play is expected to happen (arena). The clear analytic differentiation and articulation of these three boundaries is essential as otherwise the usefulness of the terms as tools is diminished.

The Apterian *psychological bubble* is personal, a phenomenological experience of safety in a playful (paratelic/autotelic) mindset. If a person is playful alone, she need not negotiate or metacommunicate with

others (though usually she does signal play unconsciously). There is a 'border' around her experience that guides her interpretation of the situation. A person needs to feel safe in order to be playful, though it is not necessary to actually be safe.

The *magic circle of play* is the social contract that is created through implicit or explicit social negotiation and metacommunication in the act of playing. This social contract can become societal as other social frameworks (law, economics) can recognize it. It is created when there is more than one person engaged in playful activity, though once established it is no longer necessary for everyone to constantly remain in a playful mindset. There is a connection between a playful mindset and play, but as a result of social negotiation and shared structuring of an encounter, it is possible to be in a telic mindset and still remain within the socially agreed borders. However, if enough participants slip into a telic mindset, then it can be questioned whether what is contained within the borders remains play even if it is still a game. The concept applies to the playing of single player games as well: though they can be played alone, they are socially recognized as domains of special meaning. However, the concept of a magic circle is more useful in relation to social play.

The *arena* of play is a temporal, spatial or conceptual site that is culturally recognized as a rule-governed structure for ludic action, or an inert game product. As the social negotiation of a magic circle becomes culturally established and the border physically represented, arenas emerge as residue of the playing (tennis courts, April Fool's Day). Alternatively a rule structure can be culturally coded as a game product, one with a designed game space. These sites are recognized as structures that foster play even when empty (and they can be constructed in ways that seek to foster playfulness), but they require use to be activated as the border of the magic circle remains social. As socially recognized cultural sites they have severed the need to be engaged in

with a playful mindset.

The difference between a socially constructed magic circle of play and a designed arena of game space can be unclear, as the cultural and social boundaries certainly imply and complement each other. The potential of the cultural is mediated by and actualized in the social. Yet keeping the two separate for analytic purposes is important. The magic circle does not travel with a game product, but is social, produced by the people present in the act of playing. It is not the line drawn on the ground, but the social contract attached to it. However, it does often align with the dormant possibility space provided by the rules of a ready-to-play game.

The players are rarely completely absorbed by the playing, which makes (meta)communication about play possible. It is possible to change the social contract during play – unless such changes are forbidden by the initial social contract (as in institutionalized games). Furthermore, the contract can be played with, which heightens its existence and its nature as a social construct.

The participants are supposed to treat the encounter within the borders of the social contract as disconnected from the external world and they are not supposed to bring external motivations or other carryovers from the non-play to the play, yet often they do. This can also be negotiated, or players can ignore it and pretend that they do not notice. As a contractual barrier is established, the events within the border are loaded with special significance. However, the border is porous and allows for traffic in and out, though passing through the border results in a re-signifying transformation – but it is also possible for the barrier to collapse due to pressure from the inside or out.

The events that take place while the contract is in effect are real, though their meanings may be altered. As the encounter is set up

through social negotiation and special signification, it is possible to have numerous overlapping social contracts and frames of signification. The participant is able to view and interpret the events that take place through these various frames. Though this formulation is written with play and games in mind, it may be useful for deciphering other social encounters as well.

CONCLUSIONS

The concept of the magic circle has been widely debated in game studies. However, it makes sense to talk about magic circles, as the one described by Huizinga and the one introduced by Salen & Zimmerman are different in their meaning. This article has concentrated on the formulations of Salen & Zimmerman, and after tackling its criticism still finds the concept a useful metaphor. In order to determine what it is a metaphor for, various takes on the social, mental and cultural boundaries of playfulness, playing and games were reviewed and discussed. Finally, a synthesis of these works was offered.

The idea of a magic circle of play is that as playing begins, a special space with a porous boundary is created through social negotiation. The formulation presented at the end of this article of the magic circle is different from Salen & Zimmerman's formulation mainly in its explicit basis as social contract and its focus on play (not just gameplay). It is also clearly separated from the mindset of the participant and the rules of a pre-existing arena.

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ENDNOTES

¹Huizinga's critics have mounted a convincing case that his concep-

tions of play and seriousness as well as play and everyday life are muddled: Ehrmann (1968, 32-33) questions the lack of definition for “reality” or “everyday life”, and how it is possible that reality exists prior to its component, play. Anchor (1978, 87) questions how Huizinga maintains both that play does not exclude seriousness, and that play and seriousness are two separate categories. Calleja (2012) points out that “[r]eality does not contain play; like any other socio-culture construction, play is an intractable manifestation of reality.” See also Rodriguez (2006) and Lammes (2006). This article, however, concentrates on the formulation of the magic circle forwarded by Salen & Zimmerman (2004) and thus sidesteps these ontological criticisms.

²Malaby’s criticism is aimed at digital games and game studies in the form that it emerged around the turn of the millennium. The permeability of the border surrounding play has been discussed by other scholars of games for a long while.

³Montola (2012, 30-31) has noted that the contexts discussed by Salen & Zimmerman are what Searle (1995) discusses as contexts if his formulation “X counts as Y in context C”. Montola (2012, 52-53) also points out that there is wide agreement on magic circle being about *transformation*, not *isolation*.

⁴The concept of magic circle has been used in analysis of games and play especially when borders of play are discussed (e.g. Montola et al. 2009; Poremba 2007).

⁵Note that Riezler (1941, 508) writes about adult play. As he sees it, in child’s play the real world and the play world have not yet separated.

⁶Note that the essay addresses “the kind of games that are played around a table” (Goffman, 1961, 8) as Goffman was mostly interested in face-to-face interaction. It is important to keep this delimitation in

mind though many of the concepts introduced there are applicable in a wider context of gaming.

⁷A more useful way of conceptualizing the construction of everyday life and primary frameworks is offered by John Searle (1995).

⁸In Bateson's terms, the difference between keying and fabrication is that in keying the frame is correctly meta-communicated to all actors and in fabrication some of the actors are intentionally misled.

⁹Though Goffman certainly does see play as taking place in a frame, the boundaries are far from clear. Frames within frames mean that there is a frame for the administration of a spectacle (such as rituals around a game) and then a frame for the game proper (Goffman 1974, 261-265; see also Fine 1983, 181-204). For example, he considers that all discussions about the rim of the frame between play and non-play lead to paradox; discussing the edge of the frame takes place in the framework (Goffman 1974, 249). The division between the social play in games and the sociability that surrounds them have been discussed also for example by Gee (2008, 24), Stenros et al. (2011) and Elias et al. (2012, 203-205).

¹⁰For a review and discussion on the magic circle as re-signifying and sorting information barrier, see Harviainen (2012).

¹¹This has been discussed in psychology sometimes as "selective inattention."

¹²Though conceptually Apter's protective frame is similar to and inspired by Bateson's and Goffman's frames (Kerr 1991, 34), it is important to note that it is personal and not necessarily social. In order to avoid confusion I'll refer to Apter's protective frame with his own metaphor, *psychological bubble*.

¹³For an analysis of constitutive and regulative rules in games, see Montola (2012, 32-47). Note also that Salen & Zimmerman (2004, 96) wrote: “The magic circle of a game is the boundary of the game space and within this boundary the rules of the game play out and have authority.” While this implies that magic circles are reserved for rule-based play, something that Staffen P. Walz has criticized (2010, 110), Salen & Zimmerman note that the framing of games as either ‘rules’, ‘play’ or ‘culture’ is relevant.

¹⁴This opens up a whole library of theory from social sciences, which is ignored in this article.

¹⁵There have been different ways to form categories on the continuum of play and gaming – such as Caillois’ (1958, 27-33) *paidia* and *ludus*, Shubik’s (1983, 17-19) rigid-rule and free-form – but an exact typology is not relevant for the discussion at hand.

¹⁶For an account of the development of modern *boxing* from *prizefighting*, and the role of courts and legislation in that, see Anderson (2001).

¹⁷Salen & Zimmerman (2004, 478-481) discuss the same subjects under the header of *forbidden play*, but I prefer the term *brink play*.

¹⁸Examples of *brink play* can be found in *spin the bottle*, *Twister*, *Pillow Time*, and the various kissing games (see Frasca 2007, 160-177; Sutton-Smith 1959).

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