Do non-player characters dream of electric sheep?

A thesis about players, NPCs, immersion and believability

Magnus Johansson
Do non-player characters dream of electric sheep?

A thesis about players, NPCs, immersion and believability

Magnus Johansson

Abstract

This is a thesis that deals with the norms and rules of players playing online games together. It is also a thesis about believability, the current capabilities of non-player characters (NPCs) and the attitudes amongst game developers towards dynamic and systemic games AI.

The primary theme of this thesis considers which means of communication and coordination in terms of norms and rules are present in groups of players and particularly in guilds and clans playing Massively Multi Online Games (MMOGs) and First Person Shooters (FPSs) respectively. Norms are largely related in the literature to sociology and reflected in game-related research that deals with group behaviour. The presence of norms in these types of groups has been overlooked in previous research even though guilds have been addressed to some extent (Taylor 2006; Jakobsson and Taylor 2003). When rules have been discussed in games research (Salen and Zimmerman 2004; Montola 2009), the actual use, meaning and interpretation behind these rules from a player perspective has been omitted. In this thesis rules and norms are interpreted from a guild and clan perspective as important means for coordination, used in order to keep the group together. The implicit rules (Salen and Zimmerman 2004) are further seen as implicit rules made explicit through guild and clan forums where these groups of players express how to preserve the shared game experience. The absence of rituals, norms and rules has also been studied in temporary groups of one MMOG,
with the explanation that existing relations with other players are maintained in these game sessions, but new relations are usually seen as too costly to invest in.

The second theme of the thesis is directed at believability and the state of current NPCs, how immersion is influenced by NPCs that do not act in believable ways and the effect of the experience of players. The second theme is also influenced by the first theme, whereby rules and norms are seen as valuable tools for creating believability in NPCs, directly targeting the social layer mentioned in (Lankoski and Björk, 2007) that this far has been a slightly overlooked aspect in previous research (Mateas 1999; Mateas and Stern, 2003; Loyall, 1997) only dealing with believability on an individual level.

The last section is directed at combining the results from the first section, how players play by the rules and norms of the group, and how this could foster believability in NPCs.

Finally, this thesis does not provide an answer to NPCs' hopes and dreams but it does provide methods for analysing them, and, it is hoped, a way to develop them further.

The contribution made by this thesis is relevant for:

- Game developers and game researchers with an interest in plausible social behaviour in that it bridges a gap where the social dimension of NPCs have been left out.
- Game researchers who are interested in player communities in that it provides insights and indications regarding the importance of player-created behavior-regulating mechanisms through the use of norms and rules.
- Game developers in understanding the need for sanctioning mechanisms in social games, since this influences the whole player community.

**Keywords**

Social norms, MMOGs, MORPGs, FPS, Clans, Guilds, Rules, NPCs, Games AI, Game design, Game evaluation tools, Immersion, Believability
INDEX

1 Acknowledgements ........................................................................................................ 1
2 Abbreviations .................................................................................................................. 2
3 Preface .......................................................................................................................... 3
4 Introduction ..................................................................................................................... 7
5 Research questions ......................................................................................................... 8
6 Articles ............................................................................................................................ 10
7 Limitations ....................................................................................................................... 12
8 Aim .................................................................................................................................. 13
9 Intended audience ............................................................................................................ 14
10 Background .................................................................................................................. 14
   10.1 Section introduction ................................................................................................. 14
   10.2 Games research ....................................................................................................... 15
      10.2.1 Philosophical aspects (C1) ................................................................................ 15
      10.2.2 Game-based learning and serious games (C2) ............................................... 17
      10.2.3 Design aspects (C3) ........................................................................................ 17
      10.2.4 Cultural/social aspects (C4) ............................................................................ 18
      10.2.5 Game worlds (C5) .......................................................................................... 19
      10.2.6 Technical/games AI aspects (C6) ................................................................... 20
   10.3 Multidisciplinary research ....................................................................................... 20
      10.3.1 Social sciences ................................................................................................. 21
      10.3.2 Anthropology and ethnography ....................................................................... 22
   10.4 Section summary ..................................................................................................... 22
11 Methods ......................................................................................................................... 23
   11.1 Section introduction ............................................................................................... 23
   11.2 Methods ................................................................................................................... 24
11.3 Overview of methods in relation to articles .................................................. 26
11.3.1 Observations ................................................................................................. 27
11.3.2 Interviews and questionnaires ...................................................................... 27
11.3.3 Web search ................................................................................................... 27
11.3.4 Content analysis ........................................................................................... 27
11.3.5 General analytical approach ......................................................................... 28
11.3.6 Design science ............................................................................................... 28
11.4 Section summary ............................................................................................... 28

12 Players .............................................................................................................. 31

12.1 Section introduction ......................................................................................... 31
12.2 Methods ............................................................................................................ 31
12.2.1 Observations ................................................................................................. 32
12.2.2 Web search ................................................................................................... 33
12.2.3 General analytical approach ......................................................................... 34
12.2.4 Content analysis ........................................................................................... 34
12.3 Players .............................................................................................................. 35
12.4 Groups ............................................................................................................. 37
12.5 Rules ................................................................................................................ 37
12.6 Norms ............................................................................................................... 39
12.6.1 Defining norms and evaluating norm breaches ............................................ 40
12.6.2 Sanctions ..................................................................................................... 41
12.7 Expectations ..................................................................................................... 43
12.8 Discussion of norms ....................................................................................... 44
12.9 Discussion of rules ........................................................................................... 45
12.10 Differences and similarities between rule sets of guilds and clans .............. 47
12.11 Summary of norms ....................................................................................... 48
12.12 Summary of rules ......................................................................................... 48
13 Social believable NPCs .................................................. 53

13.1 Section introduction .................................................. 53

13.2 Methods for the NPC section ....................................... 54
  13.2.1 Design science ................................................... 54
  13.2.2 Observations ..................................................... 57
  13.2.3 Interviews ......................................................... 57
  13.2.4 Content analysis ................................................ 58

13.3 NPCs ........................................................................... 58

13.4 Current state of NPCs ................................................ 59

13.5 NPCs in the view of academia ....................................... 60
  13.5.1 The multi-agent approach ....................................... 60
  13.5.2 BDI ........................................................................ 62
  13.5.3 NPCs and emotions .............................................. 63
  13.5.4 The model social game agent ................................... 63

13.6 Attitudes towards believable agents and the MSGA .......... 65

13.7 Believable NPCs ........................................................ 66

13.8 Immersion .................................................................... 71

13.9 Tools for evaluating social believable NPCs .................. 73

13.10 Prerequisites for analysing socially plausible behaviour .. 74

13.11 Section summary ....................................................... 75

14 Conclusion ..................................................................... 79

14.1 Conclusions regarding method ...................................... 80

14.2 Conclusions regarding players ....................................... 80

14.3 Conclusions regarding believable NPCs ......................... 83

14.4 Finally, do non-player characters dream of electric sheep? 87

14.5 Section summary ........................................................ 87
15 Contributions ........................................................................... 88
16 Future work .............................................................................. 89
  17.1 Articles in this thesis ................................................................. 91
    17.1.1 Articles related to players ......................................................... 91
    17.1.2 Articles related to NPCs ............................................................. 91
  17.2 Journal articles ......................................................................... 92
    17.2.1 Articles related to players .......................................................... 92
  17.3 Conference articles ................................................................. 92
    17.3.1 Articles related to NPCs ............................................................. 92
    17.3.2 Articles related to players .......................................................... 92
  17.4 Licentiate thesis ....................................................................... 93
18 References ................................................................................. 94
19 Games ....................................................................................... 103
20 Introduction to the articles in this thesis ..................................... 107
  20.1 Articles and methods ................................................................. 107
  20.2 Connections between articles ..................................................... 107
  20.3 Players section ......................................................................... 109
    1 Demystifying guilds: MMORPG-playing and norms (Verhagen and
    Johansson, 2009) ........................................................................ 109
    2 ‘If you obey all the rules, you miss all the fun’ a study on the rules of guilds
    and clans (Johansson, in press) ....................................................... 109
    3 Social Play? A study of social interaction in temporary group formation
    (PUG) in World of Warcraft (Eklund, L. Johansson, M) .................. 109
  20.4 Believable NPCs Section ............................................................ 110
    4 Model of social believable NPCs for teacher training using second life
    (Johansson et al., 2011) ............................................................... 110
    5 Complexity at the cost of control in game design? (Johansson et al., 2012) 110
6 Analyzing AI in NPCs – An analysis of twelve games (Johansson et al., in press) ......................................................... 110

20.5 Section summary ............................................................................................................................................. 111

Players, articles 1-3 ............................................................................................................................................... 113

Demystifying guilds: MMORPG-playing and norms ................................................................. 115

‘If you obey all the rules, you miss all the fun’ – a study on the rules of guilds and clans in online games ......................................................................................... 137

Social Play? A study of social interaction in temporary group formation (PUG) in World of Warcraft ........................................................................................................... 165

Believable NPCs, articles 4-6 ............................................................................................................................ 187

Model of social believable NPCs for teacher training ................................................................. 189

Complexity at the cost of control in game design? ................................................................. 199

Analyzing AI in NPCs – An analysis of twelve games ........................................................................ 221

TABLES

Table 1 Articles and research questions ......................................................................................... 10
Table 2 Relation between articles and games research subareas ................................................. 15
Table 3 Research questions and methods ...................................................................................... 23
Table 4 Articles and methods ................................................................................................................ 26
Table 5 Articles and research questions related to the players section 12 .................................. 31
Table 6 Articles and research questions related to the social believable NPCs section 13 ................................................................................................................................. 54
Table 7 Articles and methods ................................................................................................................ 107

FIGURES

Figure 1 Carley and Newell Fractionation Matrix (1994) ............................................................ 69
Figure 2 Social believable NPCs ............................................................................................................. 70
1 Acknowledgements

During the past five years while I have been conducting these studies, I have had much help from so many people that I will probably fail to mention someone – please forgive me.

First I would like to thank Harko Verhagen for your guidance, patience and knowledge. It has been a true pleasure and honour to have you supervising my work. A big thank you to Robert Ramberg, my assistant supervisor, for always giving valuable feedback, critical comments and helpful advice on articles. Also, many thanks to Annika Waern and Jonas Linderoth for giving valuable advice during the pre-seminars for my licentiate thesis and doctoral thesis.

I would like to thank Fatima and Lina, my former roommates, for discussions, cooperation and conferences attended; it was a real pleasure getting to know you both. Björn and Henrik, my fellow PhD colleagues; needless to say, it was really nice hanging out with you guys doing research, travelling to conferences and stuff, and the same applies to Fredrik for endless discussions relating to things in general that had little, no or some importance, but were still meaningful at the time.

All colleagues at the now extinct K2-lab, who contributed to a friendly atmosphere in the corridor that made these five years fly past.

My loving family, for always being there and always believing in me.

Friends; what would anyone be without friends? Mine are some of the most patient and best.

Ingrid, for your unyielding support and faith in me when I’ve been struggling with everything, and yes I mean everything.

Last but not least, music, everything from Beethoven’s Ninth to Meshuggah, Stanley Brothers, Ola Belle Reed, Die Antwoord, Mastodon and Red Fang has echoed in my headphones when I was writing this thesis. If I’m lucky I will be a PhD without the need for a hearing aid…
2 Abbreviations

AI – Artificial Intelligence
BF – Big Five
EULA – End-User Licence Agreement
FPS – First-Person Shooter
GBL – Game-Based Learning
HCI – Human-Computer Interaction
MM – Mind Module
MMOG – Massively Multi-Online Games
MMORPG – Massively Multi-Online Role-Playing Games
MUD – Multi-User Dungeon
NORMAS – Normative Multi-Agent Systems
PUG – Pick-Up Group
RPG – Role-Playing Games
TOS – Terms of Service
NPC – Non-Player Character
PK – Player Killing
MRL – Motivated Reinforcement Learning
MSA – Model Social Agent
MSGA – Model Social Game Agent
3 Preface

In this third section I give a brief background to the rationale underlying some parts of the thesis work. The fourth section constitutes a more traditional introduction for any who may wish to skip the first.

The title ‘Do non-player characters dream of electric sheep?’ derives from Philip K. Dick’s novel *Do Androids Dream of Electric Sheep?* (1968), which has of course inspired many other articles, e.g. ‘Do avatars dream of electric steak?’ (Ensslin, 2011). Perhaps this is a spoiler, but the original publication is a fantastic story of a dystopian future that elaborates on agency, responsibility and those fragile things that being human is all about. This is not a thesis about androids and certainly not about steak, but it is about how to make non-player characters (NPCs) as believable as possible and that accounts for the title. I will not provide you with an answer to the hopes and dreams of NPCs, since I did not have a Voight-Kampff machine at my disposal at the time this research was done. I employed the next best thing, however, through the creation of a method for evaluating NPC complexity and believability.

This thesis was meant to conceptualize, implement and evaluate a model social game agent (MSGA) inspired by the theories of Carley and Newell’s (1994) theory on the model social agent (MSA) and lead to an implementation of the MSGA (Johansson et al, 2011). Some plans are over-ambitious, too complex and do not lead to an expected outcome, however, and this was the case with the MSGA: it is still under construction and the

---

1 A very advanced form of lie detector that measures contractions of the iris muscle and the presence of invisible airborne particles emitted from the body. The VK is used primarily by Blade Runners to determine if a suspect is truly human by measuring the degree of his/her empathic response through carefully worded questions and statements.

—Description from the original 1982 Blade Runner press kit.
effect has been a slightly altered direction for this thesis. The new aspect is an exploration of groups of players that uses existing theories from sociology, social psychology and group psychology, and introduces a method for analysing games and the believability of certain aspects of games AI.

I am a PhD student in the Department of Computer and Systems Sciences at Stockholm University and have played computer games since the age of five. It could perhaps be argued that I am a digital native (Prensky, 2001) as I grew up surrounded by computers and games consoles, but I actually did not take an interest in computers per se until 1995. The importance of this thesis is not that I as a researcher have developed extraordinary skills in playing games but rather a basic understanding of games and an interest in the social aspects of games.

The research describes how players cooperate and play games and also suggests how to measure the believability of NPC behaviour in games.
PART ONE – INTRODUCTION
4 Introduction

Whether we view games as a basic condition for the evolution of culture (Huizinga, 1938) or not, they still have a significant role in the everyday life of people all around the world. Our interpretation of the word *play* and the act of *playing* have so many diverse meanings and applications to the activities we all participate in, ranging from conversations and playing with words to knowing the social code of a certain situation. Whether we are playing a game or an instrument or a language game (Searle, 1969) they all add meanings to the *game* and the activity of *playing*, as noted by Huizinga in his seminal work *Homo Ludens* (1938). The lack of seriousness in the act of playing games separates them from the seriousness of life, and this is perhaps the reason why we engage in playful activities arranged round games with rules that provide meaning to actions permissible within the game sphere, a sphere that sometimes misleadingly has been called the ‘magic circle’ (Huizinga 1938), accompanied by all the philosophical arguments about whether the magic circle is impermeable or not (Castronova, 2006; Poremba, 2007). Another aspect of games is what they produce, if they are meaningful, productive or only a waste of time. In the history of game research (mainly dating back to Huizinga and Callois) the lack of productiveness raised controversy about the game of bridge (Callois 2001) which had astonishing similarities to current debates about teenagers playing MMOGs and the effects of potential problematic use of computer games (Linderoth and Bennerstedt, 2007).

This thesis is not directly focused on what makes a game a game but rather on why players play games together and the strategies groups of players need to employ in order to survive as a group. The absence of game definitions is an indication that this is a thesis that reflects the curiosity of players and the development of believable characters in games. The articles are focused on two seemingly different areas of research, players and believable NPCs, but there is a hidden rationale. The first articles (articles 1 to 3) presented deal with groups of players, the rules they make and to what extent norms are present in groups. The presence of norms and rules is important for players and for the second focus of this thesis; NPCs and believable characters, and in essence what makes a believable character
believable. Further, the NPC and believable character section is directed at inspiring new solutions to create believable characters in games, and therefore has no focus on players or on measuring the attitudes amongst players towards existing NPC implementations.

By understanding both players and the essence of cooperation and social mechanisms and the opposition against an opponent in the activity of playing a game, we should be able to develop better games. In addition this would help understanding the behaviours which the opposition (NPCs) should be capable of displaying. This understanding will ultimately lead to an awareness of the complexity of cooperation and the complexity of believability. In order to find answers to what cooperation means for players, and how norms and rules are part of the everyday life of guild and clan members, the next section introduces the research questions.

5 Research questions

As mentioned in the introduction this thesis has two main themes focused on describing both players and NPCs and, by doing so, understanding which social mechanisms are important for groups of players, mechanisms that NPCs are currently lacking. The thesis aims at exploring the two following highly thematic questions:

T1. Which social mechanisms are present and necessary for groups of players in online games?
T2. What are the possibilities for creating NPCs that act plausibly in social situations, and which traits are the most important for socially plausible behaviour in NPCs?

These two questions are directed at providing a deeper understanding of the social climate and social mechanisms that are present in groups of players in online games, and how NPC design could benefit from this understanding. This is done through the presentation of six articles which investigate these themes in detail. The first three articles answer questions directed at highlighting certain aspects of the mechanisms behind groups in online games that are related to thematic question T1. Articles 4, 5 and 6 in
combination with the sections on believability and immersion describe the complexity of believability and attempt to answer thematic question T2. T1 and T2 are too broad to be answered in one article and thus the following more detailed questions are posited (Q1 to Q8):

**Questions specifically for the player section:**

**Q 1:** How are stable groups in online games coordinated and kept together?

**Q 2:** How are groups in online games structured?

**Q 3:** What is the meaning of rules and norms for groupings of players in online games?

**Q 4:** How do the rules of groups playing online games relate to theories on rules?

**Questions specifically for the believable NPCs section:**

**Q 5:** Which theoretical model on social behaviour would enhance the social believability of the NPC?

**Q 6:** What are the attitudes amongst game developers towards socially believable NPCs?

**Q 7:** What aspects of believability are essential for creating an NPC with plausible believability regarding behaviour?

**Q 8:** How do NPCs compare with human social behaviour?

The connection between the research question(s) and the articles can be seen in Table 1. In cases where there is an overlap between articles, or when one publication is a continuation of another (as can be seen in articles 1, 2 and 3) this overlap is also reflected in the questions pertaining to that publication. The research questions in this thesis are divided to cover the two main players and believable NPCs.
Table 1 Articles and research questions

<table>
<thead>
<tr>
<th>Players</th>
<th>Article 1</th>
<th>Article 2</th>
<th>Article 3</th>
<th>Article 4</th>
<th>Article 5</th>
<th>Article 6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Q 1 X</td>
<td>Q 2 X</td>
<td>Q 3 X</td>
<td>Q 4</td>
<td>Q 5</td>
<td>Q 6</td>
</tr>
<tr>
<td>Believable NPCs</td>
<td>Article 4</td>
<td>Article 5</td>
<td>Article 6</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

These questions serve as an indication of the aim of this thesis, or at least the focus on groups of players and believable NPCs. Since I have already mentioned the hidden rationale behind these choices, some clarification about how the articles are related is needed.

6 Articles

As mentioned in the previous section there is a progression through the articles in this thesis where some questions are part of more than one article. To get a better understanding for this progression and the connections between articles what follows is a brief description of the articles in this thesis. The first three articles are related to the player section and articles 4 to 6 are related to the believable NPCs section.

**Article 1 ‘Demystifying guilds: MMORPG-playing and norms’**

(Verhagen and Johansson, 2009)

Article 1 is targeted at answering research questions Q1 to Q3. The data collection was done through participant observation during three months as a passive member of a guild, with unrestricted access to the guild’s forum. The data consist of rich accounts, with forum threads of special interest, personal accounts and reflections during an eventful period. The data were then structured and analysed by means of the general analytical approach (described in more detail in the method section).
Article 2 “If you obey all the rules, you miss all the fun” a study on the rules of guilds and clans (to be published)

Article 2 is a continuation of article 1. Research question Q3 adduced interesting reasons as to why and how a group manages to keep together, even though the specific guild in article 1 went through a split two weeks into the data collecting activities; fortunately I was allowed access to the guild forum of one of the new guilds created from the split.

Norms and rules became a natural focus for article 2, where the data were collected through a web search with specific keywords such as ‘guild’, ‘clan’ and ‘rules’ to find player constellations with a rule set to guide their players. The rule sets in the article were chosen from a convenience sample, and in addition had a coherent structure. The final data set contained 30 rule sets from 20 guilds and 10 clans. The data were then analysed to create analytical categories. These categories were then compared with existing theories on groups.

Article 3 ‘Social play? A study of social interaction in temporary group formation (PUG) in World of Warcraft’ (Eklund and Johansson 2010)

Article 3 is a continuation of article 1 and 2 but with a focus on groups that can be assumed to have less regard for norms or rules than guild or clan members. The data in this article were collated through participant observation in pick-up groups (PUGs) in World of Warcraft (Blizzard Entertainment 2005), where the 24 dungeons played were recorded. During these play sessions field notes were taken and the chat channel used during every session was also recorded. The data were then analysed as in article 1, existing literature being used to interpret and elaborate further on the data.

Article 4 ‘Model of social believable NPCs for teacher training using second life’ (Johansson et al, 2011)

Article 4 introduces the conceptual model of the model social game agent (MSGA), sets out to explore research question Q5 and details the requirements for the design of the MSGA. These requirements were chosen to reflect both norms and the use of rules (the focus of article 1 and 2) in the selection of a theoretical model on social behaviour that would be used as inspiration for the conceptual model. The theoretical model that was chosen to inform the design process of the conceptual model was the social fractionation matrix by Carley and Newell (1994).
Article 5 ‘Complexity at the cost of control in game design?’ (Johansson et al, 2012)

Article 5 introduces the conceptual model developed from the requirements presented in article 4, the model social game agent (MSGA). Where article 4 was directed at the two first steps in design science article 5 sets out to evaluate game designers views on dynamic and believable characters in games and the MSGA, and in so doing answering research questions Q6 and Q7. This article consists of 5 semi-structured interviews that lasted between 1 hour to 2 hours, and 15 surveys covering the same topics as the interviews. After transcribing the interviews they were analyzed using content analysis to categorize the data, since the answers primarily in the interviews dealt with additional and related questions than the ones central for the interviews.

Article 6 ‘Analyzing AI in NPCs – An analysis of twelve games’ (to be published)

Article 5 served as an external evaluation of the conceptual model, finding answers to research questions Q6 and Q7, and article 6 is a continuation of this evaluation but with the same theory as in article 4, the social fractionation matrix (Carley and Newell, 1994). This article consists of observations made in 12 different games released between 1996 and 2011. The observations lasted from three to five hours and tested the occurrence of NPC behaviour matching the values of the social fractionation matrix.

To address the connection between articles and research questions further, elaboration on the intended audience and the limitations of the research is needed.

7 Limitations

There are of course limitations in this thesis and some of them were not as obvious at the time when the articles were written as they are now. The most obvious limitation is that I have chosen to perceive definitions of games from a peripheral perspective. Definitions are important for the study of games but not for the study of players playing games. These players agree that they are playing a game regardless of existing definitions, and that
makes them peripheral in a thesis looking at groups of players and the mechanisms behind these groups.

Another limitation is that individual players are not directly targeted in the questions in the player section. The reason is that the reflections of individual players were not seen as important for the relatively distanced/indirect way of observing groups of players employed in this thesis, and can also be seen in the more specifically in the way that the aim is structured. A related limitation in the NPC section of this thesis is that players have not been part of the scope, since what has been considered central is the knowledge of game designers.

A limitation that is important for the NPC section is that all NPCs have been evaluated from a black box perspective, meaning that the behaviour of NPCs has been taken at face value. Viewing NPCs from a glass box perspective would have been interesting, but it would have shed an entirely different light on NPCs.

Another related limitation is that game developers have not been interviewed about how they create NPC behaviour or about the design process behind NPCs.

8 Aim

The first aim of this thesis is to suggest new ways for NPCs to evolve into being more believable, socially believable, and more dynamic and to contribute to the immersive properties of the game experience. This is made possible through the second aim that is directed at understanding groups of players, how they cooperate and what means of coordination within the group is necessary for the cooperation to work. A third aim is directed at creating tools to evaluate the immersive and behavioural properties of NPCs in games.
9 Intended audience

I was once asked the question: ‘Whom are you serving?’ when presenting a draft of this thesis, a legitimate question that took me some time to answer. The answer is that I serve the development of games for an audience of interested players, but the intended audience of this thesis is rather academia and the game industry. My intention is to continue a tradition within games research that has a focus on games AI and NPCs that also triggers the interest of the game-developing industry.

The next section will present the background for this thesis and the basic components by which my work has been influenced.

10 Background

10.1 Section introduction

Games research as a separate field has evolved from classical and seminal works by authors such as the Dutch historian Johan Huizinga and the French sociologist Roger Callois. Huizinga and Callois are the two first authors to be cited in this thesis thanks to their influence on the field as a whole. Other influential authors and contributors to the field of games research constitute a growing list, including new contributors to the different subareas that are important parts of games research. In my studies some of these subareas have been central in my arguments and others have been more peripheral but still important to me as a student for understand the ‘culture’ within this field.

In an attempt to position my work within games research I will give the reader an outline of how I interpret these different subareas as parts of a larger whole, and also give some indications of other research areas that have been essential for my understanding of players and believable NPCs. The first section targets games research, and is followed by a section on the multidisciplinary research that has been an essential factor in this thesis
10.2 Games research

Games research is essentially multidisciplinary, and the contributions made to this area have many sources of origin. People from different disciplines find interesting research questions that they pursue according to their research traditions. This thesis is an attempt at structuring these subareas and albeit other classifications are possible my interpretation of the most distinctive areas of games research is influenced by the academic background of earlier authors and can be divided into the following categories:

C1. Philosophical aspects
C2. Game-based learning and serious games
C3. Design aspects
C4. Cultural/social aspects
C5. Game worlds
C6. Technical/games AI aspects

These subareas are of course a simplification of games research since in its nature lie an inherent cross-disciplinary spirit to the overall field. There is a connection between all these subareas and the articles in this thesis, even though the relevance of some areas has been less central to my research. The connection between games research subareas and the articles they have informed can be seen in Table 2.

Table 2 Relation between articles and games research subareas

<table>
<thead>
<tr>
<th>Players</th>
<th>Article 1</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Article 2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Article 3</td>
<td>X</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Believable NPCs</td>
<td>Article 4</td>
<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Article 5</td>
<td></td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Article 6</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10.2.1 Philosophical aspects (C1)

Philosophical aspects is the first subarea to appear in the list, mainly because all fields of study need definitions to rely on, and philosophical discussions when applied to different areas of study serve to come up with minimal but
yet precise definitions. General or specific definitions of what constitutes a
game have been left out, since my focus has been on players and non-player
characters (NPCs) in games, and also on evaluation of game design. Since
most of the definitions of games, point out rules to be a central part, but does
not define rules at any level of detail, the definitions in themselves did not
contribute or alter my approach towards player-created rules. Needless to
say I have a keen interest in the definitions provided by Huizinga (1938),
Callois (2001), Tavinor (2009), Suits (2005) and others but they have not
been essential to the questions that have guided my research. They do
however provide a view on the diverse but yet similar qualities that are
common to most definitions, such as rules.

Rules are part of most definitions on games, but are usually mentioned in a
general way that states that games are rule-bound, and part of participating in
a game is to accept the rules and adopt a lusory attitude (Suits, 2005). Other
possibilities than participating and following the rules result in being a
spoilsport or a cheat (Consalvo, 2007), and those aspects of transgressions
against rules are highly central in this thesis, but not from the general
perspective as provided by the philosophical sources mentioned in this
section. The discussions in the literature in this area of research do not
discuss the actual use of rules by players, their interpretation or their
meaning, but only the existence of rules. Since the players playing online
games are both aware that they are in fact playing a game and that they are
bound by certain rules that they either follow or break, other literature has
been helpful for the rule discussions in this thesis. The most useful sources
relating to rules and cheating can be found in Salen and Zimmerman's Rules
of Play - Game Design Fundamentals (2004) and Consalvo’s Cheating -
discuss rules on three levels and rules that are present in all games, but they
do not make a connection with rules outside the game, the rules that groups
of players create. Consalvo (2007) addresses these issues more directly and
discusses the ‘gaming capital’ in ways similar to Smith’s use of ‘common
goods’ (2007) that in essence can be summed up as the enjoyment of playing
a game. Consalvo further explores the history of cheating and the activities
of companies to create anti-cheat software, leaving much of the focus on
player activities targeted at regulating the gaming space. Articles 1 and 2
have a more pronounced focus on the activities in which groups of players
engage, to communicate the rules of the game.
10.2.2 Game-based learning and serious games (C2)

Game-based learning (GBL) and serious games (SG) can be seen as two subgenres of games research that arguably more or less point towards the same kind of focus that emanates from pedagogy and studies about learning. SG and GBL are concerned with games with other main goals than those normally targeted in any traditional definition of what constitutes a game. Definitions of SG and GBL also include emphasis on other traits that should be catered for, such as learning, simulation and games that are specifically designed to address some kind of learning outcome. The literature in this subfield is also growing and some of the more frequently cited authors are Gee (2008), Prensky (2001), Ritterfeld et al (2009), Zyda (2005) and possibly McGonigal (2011). One of the latest trends in this field is to look at the possibilities of using games for education, since games have qualities that are immersive and inspiring. The main argument lies in the attractiveness of inspiration and immersion and that if regular schoolwork could be imbued with these qualities, learning could be much more efficient (McGonigal, 2011; Gee, 2008). Even though pedagogy has not been essential for the articles in this thesis, they do provide an interesting perspective on games and education with a focus on the immersive properties of games. The work of Zyda (2005), Prensky (2001) and Ritterfeld, however, was useful for creating a basic understanding for the field in article 4, which has a focus on learning and simulating human behaviour.

10.2.3 Design aspects (C3)

Design aspects in games research is one of the areas that have been discussed in many different ways. Most of the articles I have come across share the same spirit as Raph Koster’s book on game design (2005), but there are of course exceptions to this rule such as Ernest Adams (2010), who presents hands-on approaches and the dos and don’ts of game design, and Rollings and Adams (2003). Other sources of interest are the 400-list (Barwood and Falstein, 2006), an ongoing project that addresses design wisdom from some of the most well-known game designers (2006), and Järvinen’s thesis (2009) on game elements and their relations. Salen and Zimmerman’s Rules of play (2004) is considered one of the standard books for all researchers and scholars interested in almost everything there is to know about games. What can be said about game design is that in a way
most literature conveys the culture of games but from a slightly different perspective from that of most research in game studies.

The literature in this section has been useful for understanding the domain of game design, since game design is indirectly a central theme of this thesis. It may sound paradoxical to talk about design as being indirectly central, but since most of the work in articles 4, 5 and 6 deals with the design and evaluation of games AI, literature on game design and how NPCs are designed is essential.

10.2.4 Cultural/social aspects (C4)

The cultural and social aspects of games and game worlds are covered almost exclusively by books that are written from an ethnographic or anthropological perspective. Social interaction is a necessity for culture, whereby culture is seen in a bigger context, one which research traditions such as anthropology have techniques for studying in order to develop a unique understanding over time.

The literature presented in this section, albeit highly interesting, usually describes a certain game setting in an explorative way. Perhaps one of the most popular books on the culture of games is T.L. Taylor’s *Play Between Worlds* (2006), primarily an ethnographic study in *Everquest* (Sony Online Entertainment, 1999) and Stephen Meadows’s *I, Avatar* (2007) an ethnographic study situated in *Second Life* (Linden Lab, 2003), but one of my personal favourites, since its methods are so precise, is Tom Boellstorff’s *Becoming of Age in Second Life* (2008). Salen and Zimmerman (2004) have written books which look at the cultural aspects of games while also being part of standard literature on game design, and in that sense their contribution to the field of games research is more encompassing than most other sources.

Another focus of cultural and social aspects of games is on cheating, rules and conventions. Mia Consalvo’s book *Cheating* (2007) describes the act of cheating and the history of cheating, dating back to the first ‘Easter egg’ in a digital game. *The Ethics of Computer Games* (Sicart, 2009) and *The State of Play* (Balkin and Noveck, 2006) are other publications that deal with both the ethical issues in games both from within and from a designer perspective. One of the aspects in these books is a focus on the opportunities for players to exhibit behaviour that disrupts the gaming experience for other players. In online games, ‘griefing’ and cheating have become aspects that are part of
the everyday life for players and have also been described in depth (Lin and Sun, 2005; Smith, 2004; Taylor, 2003; Dumitrica, 2011), perhaps owing to the relative anonymity that these games provide (Curtis, 1992). These sources have indicated a need for further inquiry regarding player communities, and additionally they have left room for further discussions about user-created rules, and the interpretation and meaning of rules in games. The publications in this segment have primarily informed the articles written under section 12 ‘Players’ (articles 1, 2 and 3). The gaps these articles fill in relation to this segment of literature deal with the rules which players believe are important. The only references above that relate to this subject are Dumitrica (2011) and to some degree Consalvo (2007). Articles 1, 2 and 3 in combination describe the rules and norms of groups or communities of players from a perspective that thus far has been peripheral.

10.2.5 Game worlds (C5)

In recent years many contributions to this field have been made and, perhaps in parallel with the many definitions of games, there are many words for the same phenomenon. Richard Bartle (2003) describes almost the entire history of online worlds with a discussion of their most prominent characteristics, and also chooses to call online worlds virtual worlds, a definition that does not exclude online worlds without gaming content, such as Second Life (Linden Research, 2003) and Sims online (MAXIS, 2002). Another publication entirely focusing on online worlds is Edward Castronova’s Synthetic worlds (2006). Whereas Bartle is more concerned with the nuts and bolts of online worlds, Castronova is more focused on the economy of online worlds and the ‘semi-porous’ membrane of the magic circle, which in a way stands between the real world and the online world. He speculates about the similarities between the real world and online worlds:

These places, while being physically different from the Earth, are socially not different from it. All the standard patterns of human social, economic, and psychological functioning seem to translate directly into the new space (Castronova, 2006, p.29).

Castronova’s view on online worlds is perhaps the reason for his calling them synthetic worlds. Other publications that in part could be related to this line of research are: T.L Taylor’s book Play Between Worlds (2006), Stephen Meadows’s I, Avatar (2007) and Tom Boellstorff’s Becoming of Age in Second Life (2008) as mentioned above, because they have a more strict
focus on the effects of the social aspects of game worlds than the game worlds themselves. These publications all serve as an introduction to a specific game world, with a relevance derived from the culture of the players playing a specific game. Further, the discussions on rules and deviant behaviour are discussed from a perspective that describes personal accounts of how these acts are perceived by the player community. These books, albeit useful for a cultural understanding of the games, leave much room for studies about the mechanisms used by groups of players to create a more tolerable atmosphere within the group and why rules are crucial for so many clans and guilds.

10.2.6 Technical/games AI aspects (C6)

There are indeed many books on how to design and construct games, books on game engines and books on games AI with a very strict technical focus, but they have not been essential for my research. One book that is central for the understanding of any more ambitions development project concerning games is Gregory’s Game Engine Architecture (2009) that gives deep insights into the complexity of game engines. It also describes all levels of the architecture of game engines to point out possible problems with technology that encompasses all possible aspects of media in one final product. This is perhaps one of the most correct explanations of what a digital game is, an artefact that encompasses all possible aspects of media. This book served to create an understanding of the highly complex technical foundations of games.

Another publication with a focus on games AI is AI Game Programming Wisdoms (Rabin, 2002), that despite its age provides valuable insights into some of the important aspects of games AI. The chapter by Lidén ‘Artificial Stupidity: The art of Intentional Mistakes’ (Rabin, 2002) indicates some of the issues that need to be taken into account in creating believable opponents in games, but more from a performance perspective than from an emotive/human perspective. The literature in this section has been used as inspiration mainly for articles 4, 5 and 6.

10.3 Multidisciplinary research

This thesis does not exclusively build on the theories as presented in the games research section. Indeed, most publications in game research have a totally different origin, and the authors come from different background and
research areas such as sociology, philosophy and sometimes computer and systems sciences. This thesis is no exception to that rule since it rests on contributions from sociology, human-computer interaction (HCI), normative multi-agent system research, social psychology, group psychology and games research. The reason for this multidisciplinary approach is that, quite simply, game worlds and games are complex, and in order to understand and analyse players and identify the tools needed to understand human behaviour at large, the multidisciplinary approach is a useful one. In addition, for understanding and analysing games as artefacts knowledge from cultural studies, HCI and computer and systems sciences is essential.

10.3.1 Social sciences

Perhaps not surprisingly, sociology has been a major contributor to the discussions on norms and rules in my work. Some of the theories on, for example, strong and weak ties in groups (Granovetter, 1973), that is typically referred to as cohesion in social psychology and group psychology, was of importance for the understanding of the social structure of article 1. Gibbs's (1965) norm typology and Tuomela’s (1995) theories further helped this understanding so the social norms of guilds could be mapped to existing theories on norms in society.

Parson’s general theory was used once (Johansson and Verhagen, 2010b) in order to describe the interaction of guilds in a more general sense, but the problem with Parson’s general theory is simply that it is too general and could be used to describe almost any social institution.

The nuts and bolts of sociology (Elster, 2007) was perhaps the best possible introduction to sociology, and Posner’s book on laws and norms (2000) further helped in describing some of the aspects related to rules created by guilds and clans (article 2) and pick-up groups (article 3). These two articles were also related to some of the sources in the games research section (Consalvo, 2007; Lin and Sun, 2005; Foo and Koivisto, 2004).

Social Psychology (Baron et al., 2006) was important for understanding the social interaction in guilds (article 1) in combination with theories from group psychology (Svedberg, 2003). Theories from social psychology in combination with theories from group psychology have been essential for creating a basic understanding of the group and how different groups are structured, and the theories from Baron et al. deepened this basic understanding.
10.3.2 Anthropology and ethnography

Anthropology and ethnography share a common history that in a sense goes back to Malinowski’s trip to the Trobriand Islands. Malinowski was perhaps the first anthropologist to refine the methods that today constitute the broad definition of ethnographic methods. In my research Agar’s book *The Professional Stranger* (1996), has been a constant source of inspiration, since participant observation is one of the methods that I have returned to more than once. From a computer and systems sciences perspective, it would have been easy to misinterpret and misuse participant observation, but Agar indicates some of the pitfalls in a way that makes it easy to validate and relate to other studies that build on ethnographies, such as *Coming of Age in Second Life* (Boellstorff, 2008). Uimonen’s anthropological study of a school in Africa (2012) further exemplifies the strengths and inherent possibilities of anthropology, and also introduces the concept of digital anthropology. Digital anthropology can be considered a fairly new concept within anthropology, with some adjustments to the ethnographic methods used as discussed in (Boellstorff et al, 2012) an interesting book on methods from a researcher perspective since it more or less describes the methods that I have been using for almost five years for gathering information from game worlds in different studies.

10.4 Section summary

This section has described the literature and sources that have informed and influenced my research. One of the conclusions that can be drawn from the above-mentioned literature is that this thesis has been influenced by various fields of research, and this is perhaps indicative of the relative novelty of games research and also the many possibilities that are inherent in such a multidisciplinary field. Another observation that it is important to point out is that the methods mentioned (observations, interviews, questionnaires and the development of a conceptual model) as being multidisciplinary relate to all articles in this thesis. The biggest difference between the player section and the believable NPCs section is that in the latter design science has been used as a framework to direct the use of different methods according to the different stages. Articles 1, 3 and 6 are all examples of studies where different types of observations have been central, drawing inspiration from ethnography. Further, the multidisciplinary approach with a focus on social psychology and group psychology used in article 1, 2 and 3 was essential for
describing groups from a perspective that has been neglected in games research.

The next section (section 11) is perhaps a natural continuation of this section (section 10) since the methods I have used were highly influenced by the sources mentioned in the background section. The next section (section 11) will introduce the methods used in the articles of this thesis in more detail and also deepen the connection between the literature and methods.

11 Methods

11.1 Section introduction

This section describes the reasons for the selection of the methods used to answer the research questions (Table 3). There is always a connection between questions and the methods used for answering them, and in this case the questions have been more explorative and qualitative. This section describes the methods in Table 3 from a general perspective, leaving room for a more detailed account in the player (section 12) and social believable NPCs (section 13) section respectively.

<table>
<thead>
<tr>
<th></th>
<th>Observations</th>
<th>Interviews</th>
<th>Web search</th>
<th>Content analysis</th>
<th>General analytical approach</th>
<th>Design Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q 1</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Q 2</td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 3</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q 4</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Q 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Q 6</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Q 7</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Q 8</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11.2 Methods

With a background in computer and systems sciences I naturally prefer to use qualitative methods. This thesis is more qualitative than it is quantitative, since it aims for an exploration of the social atmosphere of players; it is more ethnographic in nature than it is inspired by phenomenology, since the aim is to understand the mechanisms and structures of groups and not individual players’ sense-making of being in a group. The reasons are partly explained in the introduction (section 4) and in the limitations (section 7) of this thesis. My intention has not been to make sense of individual players’ attitudes and feelings towards their participation in groups; neither have I been interested in understanding how often a certain phenomenon appears, e.g. if griefing for instance frequently occurs in games or not (it probably does not). I have been interested in what happens when phenomena appear and the reactions from groups of players.

The methods employed in this thesis comprise a mixed approach (not to be confused with a mixed-methods approach), meaning that many different methods have been used but only from a qualitative perspective. The reasons for choosing different methods are many, but one of the most obvious is that some types of questions work better with certain methods. Another reason for choosing different methods or a combination of methods was to triangulate the results, similarly to ethnography that relies on observations in combination with field notes and interviews. This strategy was used in article 3, where observations, field notes, recordings and chat logs were part of the data. The reason for using different methods and data sources is that they help create a rich and valid interpretation of the data, if all sources point towards the same direction, but are also important for giving nuanced accounts of the object of study.

The methods used in this thesis draw inspiration from computer and systems science with an emphasis on human-computer interaction (HCI), and in addition the many fields of research that are the foundation of games research, such as the common use in ethnography of observations and interviews. This chapter will be divided into sections regarding the different methods, but first a brief discussion on the choice between quantitative or qualitative methods is necessary.

From one perspective games and videogames in particular are a novel field of research; on the other hand games have been around for as long as we
know and the first ideas on formalizing and analyzing games date back to ancient Greece (Huizinga, 1938; Callois, 2001). Perhaps it is unfair to call games research as a whole a novel enterprise but videogames have a very brief history dating back to the late 1950s or early 1960s (depending whether we count Higinbotham’s ‘Tennis for two’ (1958) as the first videogame).

Novel fields of research such as videogames are explored, and in my view, this is the role of qualitative studies: to explore and contextualize a field of inquiry. My work was inspired by the following quote:

Qualitative research properly seeks answers to questions by examining various social settings and the individuals who inhabit these settings. Qualitative researchers, then, are most interested in how humans arrange themselves and their settings and how inhabitants of these settings make sense of their surroundings through symbols, rituals, social structures, social roles and so forth (Berg, 2004, p.8).

I was curious about the rituals, social structures and social roles of players, and that led me towards qualitative research methods at an early stage, something that is obvious given the thematic and overarching research questions that are at the core of this thesis:

T1. Which social mechanisms are present and necessary for groups of players in online games?

T2. What are the possibilities for creating NPCs that act plausibly in social situations, and which traits are the most important for socially plausible behaviour in NPCs?

Although these two thematic questions are exploratory, they are also significant for the two themes of this thesis, players and believable NPCs. The reason yet again is not to understand how often rules are being transgressed, or how many clans or guilds have rules about being a good ambassador for their group of players, but the existence and meaning of the rules they create. The attempts at trying to quantify my work in the same elegant manner as Ducheneaut and Moore (2004) at this stage have been arduous and many of the questions raised in this thesis simply cannot be answered by quantitative methods at this stage.
11.3 Overview of methods in relation to articles

In this thesis, six articles have been chosen, and even though there are some overlaps between the methods that have been used, Table 4 shows a graphical mapping of methods and articles. One important observation is that one publication does not have a data collection method (article 4), and the reason is that during the creation of the conceptual model of the MSGA most methods used focused on questions about how to conceptualize a believable NPC, and there were no obvious ways of measuring the outcome of such a purely mental exercise.

Table 4 Articles and methods

<table>
<thead>
<tr>
<th></th>
<th># Observations</th>
<th>Interviews and questionnaires</th>
<th>Web search</th>
<th>Content analysis</th>
<th>General analysis approach</th>
<th>Design science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Believable NPCs</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>X</td>
<td></td>
<td></td>
<td>(X)</td>
<td></td>
</tr>
</tbody>
</table>

As a reflection on the thematic questions of this thesis, different approaches have been used to answer them. The first theme dealing with players is focused on the methods commonly used in digital anthropology and ethnography: observations, field notes and interviews. Although observations and interviews have also been used in the second theme of this thesis on believable NPCs, observing NPCs is not the same thing as observing player behaviour. The difference between using participant observation as a method when playing with other players and observing NPCs is that players are directly influenced by one’s presence and performance, whereas most NPCs are not particularly bothered.

Since some of these methods recur in both the player (section 12) and the social believable NPCs (section 13) sections, what follows is a brief account on a general level. The more detailed descriptions of the methods in Table 4 follow.
11.3.1 Observations

Observations have been used in articles 1, 3 and 6 but with variations on what has been observed and how. Participant observation has been used in articles 1 and 3, in article 1 as a passive member of a guild mainly focusing on the activities in the guild forum, and in article 3 as an active participant in pick-up groups in *World of Warcraft*. The observations made in article 6 are slightly different from those in articles 1 and 3, since the observations were done during play sessions in single player games when only the behaviour of NPCs was observed. The similarities between the observations in articles 1, 3 and 6 are that they have followed the ethnographic tradition, as I kept field notes while observing but have also recorded them using screen capturing software (Fraps) for purposes of analysis.

11.3.2 Interviews and questionnaires

Interviews and questionnaires were used exclusively in article 5. The interviews were semi-structured and the questionnaire was designed to cover the same areas as the interviews. The reason for using both interviews and questionnaires was that these two data collections reached two slightly different populations. The interviews were targeted at game designers working in triple A companies exclusively whereas the questionnaires were distributed during games research conferences. The respondents in the questionnaire study had various backgrounds, representatives of both the game industry and academia. Interviews were not used for triangulating any observations (as in ethnography) to create rapport.

11.3.3 Web search

A web search was only used for article 2 to find the rule sets of guilds and clans. Keywords containing combinations of the words guilds, clans and rules were used to find guild and clan sites containing the written rules of these groups of players. A first set of candidate rule sets was chosen through a convenience sample, where the rules were structured and coherent.

11.3.4 Content analysis

Content analysis was used in articles 2 and 5. This method is usually associated with the process of structuring and analysing data through the creation of analytic categories. In this thesis the analytic categories were inspired by the literature relevant to the two themes and informed the categorization of the data.
11.3.5 General analytical approach

The articles in this thesis all have an exploratory approach where the motivation of one specific method for analysis is hard to define. In all articles the data have been arranged in a way that can best be described as a jigsaw puzzle, wherein theories from literature studies have been applied in the particular domain of an article. The analysis has therefore been characterized by abductive reasoning, moving from theory towards empiricism in order to arrive at an explanatory hypothesis.

11.3.6 Design science

Design science even though not strictly a research method but rather a research approach has been influential for the second theme of this thesis. Design science was influential in that it provides the overarching framework necessary for gathering requirements, development and evaluation without an artifact being created. This approach has made it possible to reflect on research question 5, and in combination create the conceptual model that is central for article 4 and 5. Design science has been used in articles 4, 5 and 6.

11.4 Section summary

This section has described the methods that have been used on a general level and provided a rationale for the qualitative perspective employed. The specific questions that have been central for an understanding of the social settings of online games ‘and how inhabitants of these settings make sense of their surroundings’ (Berg, 2004, p.8) have further informed the qualitative perspective of this thesis.

The most important analytical methods discussed above that also illuminate the overall process of this thesis work are the general analytical approach and design science. They also exemplify the shift from empirical and explorative methods towards more elaborate research methods. The following two sections describe the two main themes, players and believable NPCs.
PART TWO – Players
12 Players

12.1 Section introduction

This section deals with players and groups of players of online games, the focus of articles 1, 2 and 3. Before that, a detailed description of the methods in this section is given, which relates to research questions Q1 to Q4. The following questions were central for the articles in this section and read as follows:

Q 1: How are stable groups in online games coordinated and kept together?
Q 2: How are groups in online games structured?
Q 3: What is the meaning of rules and norms for groupings of players in online games?
Q 4: How do the rules of groups playing online games relate to theories on rules?

The relation between questions for articles 1, 2 and 3 can be seen in Table 5. Since there is a close connection between these articles, an overlap can be seen whereby Q3 is covered by all three articles.

Table 5 Articles and research questions related to the players section 12

<table>
<thead>
<tr>
<th>Players</th>
<th>Q 1</th>
<th>Q 2</th>
<th>Q 3</th>
<th>Q 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article 1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Article 2</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Article 3</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

12.2 Methods

This subsection provides a more detailed account of the different methods relevant for studying players and answering research questions Q1 to Q4.
12.2.1 Observations

Traditionally when researchers mention participant observation as their method of choice there is always room for interpretation about what they mean exactly. From an ethnographic point of view, much that is called participant observation is not, since researchers are focusing on finding something in particular. According to Michael Agar (1996), it is important to make the first observations impartial in ethnography and participant observation in particular in order to narrow or find a focus, but that is typically not the case when most researchers claim to be performing some sort of observations. This in essence means that there are two main directions for observations:

- Informed/focused observations
- Uninformed observations

Informed/focused observations in computer games deal with measuring the effects of something that is actively sought after, as in measuring the social abilities in NPCs by interacting with them in certain ways, attacking them to see if they try to get help from other NPCs or if they are simply unaware of other agents in their surroundings. This kind of observation is useful when measuring cognitive traits in NPCs as in article 6, but in order to find behaviour that is interesting to analyse, this kind of observation should be preceded by uninformed observations on the same basic lines as in ethnography.

Uninformed observations were almost exclusively used in article 1 to find and inspire further questions, when the data were collected during actual gameplay and without an explicit focus. These observations were made possible through a helpful guild that allowed me to participate as a passive member, with access to their entire guild forum. In article 3 an informed approach was central, with a focus on the procedures and rituals of players in PUGs.

Since the interaction in computer games can be very rapid, two simple rules were followed to make both the analysis of the observations more objective and also prevent the observer from losing focus on either observing/participating, as discussed by (Dewalt and Dewalt, 2002). These rules that have been added to the ethnographic data-collecting activities in this thesis:
• **Team-up**, and do the observations in pairs. Let one researcher play the game, record the session, and let another researcher keep the field notes. Distributing responsibilities between two researchers means neither of them will be distracted from their task. The field notes in combination with video recordings are two separate sources of input for the analysis and will be the foci for discussion in relation to the game sessions.

• **Play sessions should be limited or at least focused**, because all games that have any level of immersive flow will sooner or later make even the most skilled researcher lose their focus on extracting data for analysis. Typically, one-hour sessions are useful, but the most important thing is to be aware of the level of focus on capturing in-game data.

During the data collection of article 3 the above-mentioned rules for participant observation were followed closely to keep track of the interaction. For triangulation purposes the game sessions were recorded with video capture software [Fraps] and in addition the messages that appeared in the chat log were monitored and recorded. The field notes in combination with the video and the chat log made it possible to analyse and go through the scenarios thoroughly and the initial data from the field notes was a constant reminder of the first interpretation of the interaction seen in the game. When a specific situation was encountered in the game session, the timestamp in the video capture software was written down in the field notes, and could then be revisited later to analyse the initial response and more closely follow the interaction in the scenario for validation purposes. Much in the spirit of digital anthropology (Uimonen, 2012), all data sources were considered as potentially beneficial in terms of the research questions, but one important aspect of all studies conducted in this thesis is that strictly speaking they are neither ethnography nor anthropology. The studies in this thesis are far too brief to build the deep understanding that emanates from ethnography and anthropology.

**12.2.2 Web search**

The internet has been an important source of data for one article in particular. Sometimes it is convenient to be able to collect large amounts of data in a short period of time, but it is also necessary to understand the drawbacks of this method and be aware of the impact which different sampling methods have on the data collected. In article 2 in this thesis, a
convenience sample was made out of a web search containing key words associated with the research question. The strength of this approach is that vast amounts of data can be collected over a short period of time without spending time and effort that are traditionally part of data collection. There are however a couple of drawbacks with this method. To start with, the data collected do not come in any uniform way and this means that additional methods are needed such as content analysis to structure and categorize the data. The main drawback however is that since sampling methods other than convenience samples or random samples are not possible, it is hard to judge whether the data are representative of all guilds and clans in this case. This in essence means that the data of article 2 are indicative of the results regarding the rules of guilds and clans, something that is not a problem since the article is explorative.

12.2.3 General analytical approach

The general analytical approach used in relation to the questions aimed at understanding groups of players structured the results from the observations in articles 1 and 3. The analytical component of this method is abductive reasoning whereby theories from literature studies are used as explanations and interpretations of the data from the observations. The reason for calling it here a general analytical approach is that the results of articles 1, 3, 4 and 6 have been interpreted and analysed through the lenses of different theories. The result of article 1, for example, was structured from categories taken from the social sciences describing group dynamics. The theories from the social sciences used in article 1 were social psychology (Baron et al., 2006) in combination with the theories on groups from group psychology (Svedberg, 2003). In article 6 the social fractionation matrix (Carley and Newell, 1994) was used as the theoretical basis for analysing the observations. The analysis has therefore been characterized by abductive reasoning, moving from theory towards empiricism in order to arrive at an explanatory hypothesis. This approach has been used in articles 1, 3, 4 and 6 where observations in games have been a central part of these articles with the exception of article 4. In article 4 the general analytical approach was directed at finding suitable models and theories supporting the first step in the creation of the conceptual model of a believable NPC.

12.2.4 Content analysis

Content analysis is usually associated with the process of structuring and analysing data through the creation of analytic categories. In the player
section the analytic categories have been inspired by research from sociology, group psychology and social psychology instead of the data being clustered into analytic categories, meaning that the categories were motivated by the data, and supported by theories from literature studies. One criticism regarding the application of analytical categories to a dataset is that one may not find what one is searching for, and even so it is dictated by the analytical categories chosen. In this case the data were analysed first by thematic analysis to find an organization between categories in the dataset with rich descriptions of the content. The data set was then analysed to find connections with existing theories, in order not to accept premature categorization of the data. Content analysis was central to the analysis of the data in article 2, where rule sets were compared and analysed from a social science perspective.

12.3 Players

Players of digital games come in all forms, and there is actually no way of knowing who is playing games and who is not. Even though demographics have been presented (Yee, 2006; Kerr, 2006), it has become increasingly hard to know because of the increasing popularity of casual games (Juul, 2010) such as Farmville (Zynga), WordFeud (hbwares) and similar games. The focus of this thesis is on games that are typically not considered casual games, MMOGs and FPSs. MMOGs are usually associated with a substantial time investment for the players compared with casual games that are designed to be played in short, sporadic sessions. This makes a big difference in terms of the need to belong to a designated group of players. Even though many of the casual games are highly social and may extend and tap into existing social ties over networks such as Facebook, this population of players has been left out of this thesis.

There are numerous ways to study players, and perhaps the most straightforward way to describe the studies in this thesis is to say that players have mostly been studied indirectly. The reason for a more indirect approach is that when we study games or players, players tend to express their individual reflections about their experiences or sometimes what they feel is the right answer to a question, regardless of what they actually think (Hawthorne effect). Although these experiences are interesting and are of importance, they were not required to answer the specific questions of this thesis. Even if a holistic view on games and players were possible, the
A more direct approach can be seen in Dumitrica’s two-year study, which was aimed at finding out if a ‘culture of cheating’ had been embedded in the structure of Neopets (Dumitrica, 2011, p.22). Other examples of more direct studies on players are those of Jonsson (2006, 2010), which are almost entirely performed in a classical ethnographical way, with observations and interviews in combination in order to understand the youth culture around gaming at a game café in Stockholm. One interpretation of the difference between the conclusions that can be drawn from these different perspectives is that, if one aims for a description of structures such as guilds the indirect approach may suffice whereas divining individual players attitudes towards playing and sense-making is impossible without actually interviewing or interacting with the players.

The most direct approach to studying players in this thesis was part of the data-collecting activity of article 1 where one guild was accommodating enough to let me be a passive member with access to their entire guild forum, resulting in valuable insights into the everyday drama of guilds. The study performed in 2009 could easily have been complemented with interviews, but the subjective views from the members of that guild during the six-month period that I followed their discussions on the forum would at best describe their frustration about contrasting views on their goals as a group. Articles 1 and 2 have on a higher level tried to answer questions about what means of organization is needed to survive as a group, and one important aspect of being in a group is to adhere to the rules.

These two articles have a slightly different focus: article 1 aims for an understanding of the structure and dynamics of guilds in MMOGs; article 2 became a natural continuation of article 1 since rules and norms seemed crucial for the cooperation in guilds. Article 2 has a more pronounced focus on the meaning of rules for guilds and clans. Whereas articles 1 and 2 have a focus on stable groups, article 3 is yet another natural continuation of articles 1 and 2 with a focus on temporary groups, wherein social norms are present but possibilities for sanctions are minimal.

Before discussing the rules of guilds and clans I will provide a brief discussion on the types of groups studied in this thesis.
12.4 Groups
There are many different ways of forming groups in MMOGs in particular, especially in terms of the lifespan of the group. Guilds are examples of more stable types of groups, even though they are known to have a high churn rate (Bartle, 2003) and may be disbanded at an early stage. Both guilds and clans are comparably more stable than for instance PUGs that also typically lack the adherence to rules and norms as seen in article 3. The big difference between these temporary formations of players (PUGs) compared with guilds and clans is that to keep the cooperation smooth in the more permanent groupings, there is a need for structure. This need becomes apparent when studying guilds and clans that while being groupings playing games from totally different genres share many common traits. Clans are typically groups associated with players that play FPS games and more competitive games. In clans there are strictly speaking not so many different opportunities for alternative types of groupings such as those present in MMOGs. The most common aspect of guilds and clans was that when the groups had formalized goals they ended up in a set of rules on their group forums.

12.5 Rules
Norms and rules shape everyday interaction in online games, the difference being that norms are not explicit or put in written form, but still communicate something important about games. There are however exceptions to this rule as seen in article 3, depending on the possibilities of sanctioning other players. The norm typology presented in article 1 discussed the meaning of norms in MMOGs and further identified a need for rules.

In game studies literature there are different interpretations and explanations of what can be seen as the rules of a game, or even factual rules and game mechanics (Järvinen, 2009). Many of these interpretations are focused on what it takes to win the game, or how to lose the game, but are usually not related to how to adhere to the spirit of the game (Smith, 2004). Sicart’s definition of rules is somewhat similar to that of Salen and Zimmerman in that ‘Rules have also operational values: they limit what players can do, and they also reward certain actions; they create the winning conditions and the limits and boundaries of games’ (Sicart, 2009, p.28). Salen and Zimmerman
address the issue of rules for (computer) games and game designers by defining the qualities of rules, where rules are seen to limit player action, are explicit and unambiguous, are shared by all players, are fixed, are binding, and are repeatable and in that sense draw on the same limitation of rules as Sicart. Further to this they identified three levels of rules in *Rules of Play* (2004) that describe the actual rules of the game, the rules of using the product and the implicit rules of playing the game, important aspects of games but with less focus on how rules are actually used and interpreted by players. Foo and Koivisto used Salen and Zimmerman’s three levels of rules in order to describe in-game behaviour, and in a sense their interpretation made the connection between the original rules defined by Salen and Zimmerman and the activity of playing, making the original rules more intuitive (Foo and Koivisto, 2004). The rules originally identified by Salen and Zimmerman were probably not created in order to describe the social side of online games, but focused more on the rules that need to exist for a game to be a game and be markedly different form another game, and that is the reason why Foo and Koivisto’s contribution is valuable. Foo and Koivisto’s (2004) interpretation of Salen and Zimmerman’s three levels of rules reads as follows:

1. **Constitutive rules**: the mathematical rules of the game, what is allowed by the code or is interpreted as the law of the code.
2. **Operational rules**: operational rules are the rules of play of a game, the rules that are most often written out. The Terms of Service (TOS) document can be considered as an example of operational rules in online worlds, and in some cases even the End User Licence Agreement (EULA).
3. **Implicit rules**: implicit rules are the rules that communicate the ‘spirit of the game’, what is considered fair play, and can for obvious reasons be broken since there is limited or no chance of preventing this.

Constitutive rules have been used to describe rules that support and create institutional facts, and thus they have a slightly different meaning from that of the constitutional rules as defined by Salen and Zimmerman (Searle, 1969). Searle’s view on constitutive rules is, contrary to Salen and Zimmerman, that they produce ‘institutional facts’, that is, they define meaning (Searle, 1969). The other category of rules according to Searle is regulative rules that define what is allowed and disallowed. These constitutive rules differ from Salen and Zimmerman’s constitutive rules in that they do not limit the players (as game rules do by definition, according
to them) but actually give them possibilities by creating meaning. The same goes for regulative rules that express what is allowed rather than only what is disallowed.

Montola (2009) also suggests a set of rules that were originally created to deal with table-top role-playing games, but these rules have a clear-cut definition of the rules of the game as something that also rests on the prior knowledge of the players called ‘exogenous rules’.

12.6 Norms

The need for one true definition in different research fields can be problematic, as in the case of game studies, and indeed researchers focusing on the concept of norms have problems with definitions also, and usually describe norms with concepts such as ‘collective action’ and ‘tragedy of the commons’ to analyse cooperation issues. The problem of collective action (and the closely related ‘free rider’ problem) in essence expresses that individuals may get benefits from the collective of which they are part without contributing to it, as seen in articles 1, 2 and 3. Here the problem is not that individuals get benefits but rather that individuals, following their own preferences, do not always produce well-being for all. In addition the focus of article 1 has been on social norms, defined as an injunction to act or abstain from acting. The working mechanism is the use of informal sanctions aimed at norm violators.

In sociology, norms are seen as one way to explain why prisoner dilemma types of problems are solved in ways that are contrary to the analytical solutions proposed by game theory. Game theory (and prisoner’s dilemma as the prime example of a game-theoretical analysis of a social dilemma) builds upon rational individuals following their own preferences, including the norms at stake within the decision situation. Other norms may exist that are outside the direct situation, such as, ‘it pays to be a nice person in the long run’ which makes ‘real’ humans choose differently from the theoretical rational actors.

Using norms in the study of game worlds needs further distinctions, however, and my studies (mainly articles 1, 2 and 3), norms deal with observable behaviour (Elster, 2007). Norms will also be interpreted as utterances about what one should or should not do. An ‘oughtness’ in terms
of a hidden contract, something that one feels is the moral thing to do, even though the use of ‘moral’ in this case is misleading, since morals are not norms in some definitions. In addition to norms being an ‘oughtness’ they also need to be shared by more than one individual:

*A norm is a statement made by a number of members of a group, not necessarily by all of them, that the members ought to behave in a certain way in certain circumstances* (Homans, 1961, p.46).

Norms need to be agreed upon, at least to some extent, and they need to be shared by more than one individual.

**12.6.1 Defining norms and evaluating norm breaches**

The use of norms is not only dependent on the distinctions made in the previous section but also on a definition of norms, since there are many different definitions. The definition of norms that has been central to my work in this thesis is the following:

*Norms are statements about the appropriateness of an individual’s act which may result in a sanction being issued by another individual or an individual belonging to a specific class of individuals* (article 1).

This definition is limited and excludes the evaluation of whether or not a sanction will occur, and if the evaluation is internal or external, but it still gives us a working definition that serves as a starting-point for a discussion on the norms present in everyday interaction in online games.

There are different possibilities for evaluation and the typology presented in article 1 deals with external evaluation. An internal evaluation is possible but it all depends on the context, the norm being breached, and the possible sanctions in that norm system.

The internal evaluation when a norm has been breached is difficult to monitor since it revolves around personal reflections on a certain act. Still, internal evaluations have consequences for the norm system if we focus on the possible sanctions. Shame and guilt as described by Posner and Rasmussen (1999) are examples of an internal evaluation of acts that may run against the norms of a norm system.
The typology presented in article 1 deals with sanctioning as something beyond the individual breaking a rule or breaching a norm, and is dealt with exclusively through external evaluation. The individual committing the act is not part of the evaluation and does not reflect on the impact of her/his actions. This could be considered one of the limitations of the typology in article 1 that needs to be addressed further.

12.6.2 Sanctions

This section is a further elaboration of the role of sanctions partially reported in articles 1, 2 and 3. By studying the whole spectra of possible sanctions (Posner and Rasmussen, 1999) it is possible to understand what sanctions the methods used in this thesis address. Shame and guilt for instance would require interviews of players and do not directly deal with how groups impose sanctions on individual players, and are therefore peripheral to this thesis. Further, the arguments about sanctions in articles 1, 2 and 3 are somewhat limited since most cases of sanctions in guilds and clans lack a coherent method of evaluation. Further, the lack of sanctioning systems, or rather the lack of impact of sanctions as seen in article 3, exemplifies the complexity of a norm system and all the above-mentioned components.

In article 1 different sanctions and levels of ostracism regarding a single player were identified, including the following examples:

- DKP\(^2\)-penalties
- Exclusion from a raid-group
- Degradation: when an officer or player with a higher rank than ‘private’ or a regular player loses his/her rank
- Exclusion: being excluded from the guild
- Guild split: ostracism of a group of players

What can be seen is that not all sanctions from the real world are applicable to situations in game worlds. The following comparison of the sanctions identified in article 1 and the six different sanctions identified by (Posner and Rasmussen, 1999) is done to further the understanding of sanctions in online games and indicate possible sanctions that were not part of article 1. The sanctions proposed by Posner and Rasmussen are:

\(^2\) Dragon Killing Points, a kind of currency which is earned by participating in raids.
- **Automatic sanctions**

Typically automatic sanctions deal with actions such as driving on the wrong side of the road, where we know that something bad can happen if we do not comply with this norm (Posner and Rasmusen, 1999). Translated into an online world, a player attracting the attention of a powerful NPC that without a doubt would kill the player could serve as an example. On the other hand this is a typical sanction that would not be part of the social context unless the above-mentioned NPC would also kill a whole group of players, whereupon more than one of these sanctions would follow.

- **Guilt**

Guilt is when a person feels bad about violating rules or norms, perhaps owing to her/his upbringing (Posner and Rasmusen, 1999) and deals with acts without any external evaluation. A player grieving other players or stealing the loot from a killed NPC would perhaps feel guilty, but in articles 1,2 and 3 no such indications of guilt amongst players/griefers have been found.

- **Shame**

Shame is when a person feels that his/her actions have shamed him/her in his/her own eyes or in the eyes of other people, and is closely related to guilt but with an external evaluation (Posner and Rasmusen, 1999). A player stealing from the guild bank and being caught doing so would amongst other things feel ashamed. Shame can be said to be the same thing as guilt with the big difference of an external evaluation being made to evaluate the seriousness of the act. Shame will probably reflect badly on the reputation of the player as well, and reputation is perhaps a better way to describe the potential loss associated with the sanction imposed on the player.

- **Informal sanctions**

In Posner and Rasmusen’s example, turning up for a job interview in casual clothing would be an act that could lead to informal sanctions, since this behaviour could convey information about the violator that s/he does not want to share (Posner and Rasmusen, 1999). Repeatedly revealing to other players that one is an ‘unreliable transaction partner’ who does not care about the norms of the group will result in informal sanctions. Being ostracized from the raiding group is an example where players are
sanctioned informally when they do not show up prepared for a raid or do not pay attention to the rules of the group.

- **Bilateral costly sanctions**

Bilateral costly sanctions are sanctions carried out by a designated punisher, and only involve the punisher and the violator (Posner and Rasmusen, 1999). This type of sanction introduces the second-order free-rider problem where the cost of sanctioning may be costly for the designated punisher (Hechter and Opp, 2001).

A situation where bilateral costly sanctions can occur in online games is when a player with a special status such as guild master or preferably officer imposes sanctions on a member of the guild or raid group. A player with a higher rank than private could be punished for not carrying out the punishment by being degraded and this would be an example of the second-order free-rider problem, which would affect the maintenance of the norm and the expectations of the group.

- **Multilateral costly sanction**

Multilateral costly sanctions are sanctions where the cost of sanctioning affects many people. In Posner and Rasmusen’s examples these sanctions often occur in combination with the above-mentioned sanctions (1999). In online games a guild split or more than one player being excluded from the guild are examples of multilateral costly sanctions.

### 12.7 Expectations

Expectations are important for the survival of norms. If a group believes in a certain norm and the norm is important for the group they have reason to expect sanctions when a breach occurs. There are numerous factors that need to be considered in terms of expectations such as the cost of sanctioning, the severity of the violation, and the norm being violated. As seen in the online games where violations of norms are evaluated on an ad hoc basis, some of the violations still result in the violator being sanctioned.
12.8 Discussion of norms

Norms should be regarded as a composite of many components (sanctions, expectations, evaluation, cost of sanctioning), but the norm is hard to understand without reflection about the expectations of the group that shares the norm. Furthermore, a norm may be differentiated from other norms depending on the severity of the sanctions and the expectations of the group. In Posner and Rasmusen the relation between norms and sanctions is distinct:

Creating a norm requires promulgation of the norm and creation of sanctions for its violation (1999, p. 377).

The sanction must be made visible in order for norms to be a particularly effective device for social control (Posner and Rasmusen, 1999). Therefore the focus on norms and the types of norms that exist in guilds and clans must be analysed in combination with the sanctions which appear when someone breaches a norm. Throughout article 1 and 2 I have argued that sanctions are one of the most visible ways of strengthening the norms of a group, a view that is similar to Posner and Rasmusen’s (1999). Keeping the data collection method in mind, however, it is hard to distinguish the sanctions which are actually administered when breaches appear since most rules of guilds and clans seem to negotiate sanctions on an ad hoc basis. Another problem is that not all norms deal with visible behavior, as seen in article 3, even though such limitations to further studies would help studying the less visible behaviour. The reason why some norms are invisible is that some situations in games are fast-paced, and sometimes tools to support sanctioning in games are not present or they have little impact on the player being sanctioned.

Another reservation that should be taken into account is based on there being both internal and external evaluations of an act and different expectations regarding the outcome, and it is easy to presume that sanctions are administered publicly in some cases, as a means of strengthening the norm. In this case it would be more correct to say ‘sanctions are always visible’, but that argument would face the same problem as norms always being about observable behaviour. In order to cover aspects of evaluation the definition of norms should be changed to ‘Norms are statements about the appropriateness of an individual’s act which leads to an internal and/or external evaluation that may result in a sanction being issued by another
individual or an individual belonging to a specific class of individuals’. Incorporating evaluation in the definition as well does not change the results of this thesis, but is essential for the continuation of this work.

There are several reasons why norms are useful in terms of understanding groups of players. To start with, norms have some helpful traits that caught my attention at an early phase in this thesis while I was studying the dynamics of groups of players. Norms are implicit, dynamic, change over time and they are not enforced in the same strict manner as rules. Norms are elusive and perhaps this is the quality that makes them so attractive for creating a different type of NPC. Current NPCs are more or less state machines that react in response to some kind of stimulus, and if a new kind of NPC were modelled according to explicit rules instead of norms, the NPCs would perhaps end up displaying a different behaviour, but they would still be a type of state machine. Norms exist on a spectrum between implicit, and explicit, free and formalized, making them dynamic in a way that NPCs could benefit from. Further to this discussion, many attempts at creating NPCs using Multi-Agent System models have been made, but unfortunately these agents have shown a limited amount of autonomy and do not display the social aspects such as communication and cooperation that would be necessary for a believable NPC.

The different types of sanctions identified by (Posner and Rasmusen, 1999) should be further investigated to see how they complement the findings presented in articles 1 and 2. Intuitively they contribute finer-grained details about sanctions in online games to the typology presented in article 1 which are currently lacking and will be discussed under the section 16 ‘Future work’.

12.9 Discussion of rules

As seen in both article 1 and article 2, rules are present on the forum pages of the groups studied, and one interpretation is that these groups of players create institutional facts for themselves by making their rules explicit for their members. Even though the three levels of rules devised by Salen and Zimmerman (2004) can be applied directly in both MMOGs and FPSs, the number of guild and clan forums with rules created by players points towards a specific need for an additional rule category that none of the three levels of rules covers. This rule category would fix the blind spot in the
social aspects of game-playing as indicated in Foo and Koivisto (2004) and
in the process of creating meaning in a group, similarly to the views on
groups from group psychology (Svedberg, 2003) such as rules and policies
and shared goals.
Some of the rules discussed in article 2 are related to a particular game world
and would not find its counterpart in any other game, and would then be
related to pure game mechanics or something particularly related to that
game world, but there are many common traits between these games. These
rules are not defined by the game designer but by the players; they are
explicit and not implicit. In that sense they are more like the exogenous and
diegetic rules described by Montola (2009), yet they are not only about
creating meaning but also focus on how to keep a group together and give it
a cohesive identity.
Whereas article 1 paints a detailed picture of the interaction in one guild and
the need for rules, article 2 makes a stronger connection to the three levels of
rules and shows where they are used or interpreted by the guilds and clans.
The first level of rules - ‘constitutive rules’ - which it could be argued
encompass bugs and exploits are almost exclusively part of clan rules with
one exception. The inclusion of constitutive rules by clans in their rule sets
contrary to the guilds rule sets indicates a difference and the occurrence of
exploits in FPS games that do not need to be made explicit for guilds in
MMOGs.
The second level of rules - ‘operational rules’ - based on EULA and the TOS
documents, are used by many guilds and clans in their rule sets, with
verbatim definitions. Many clans and guilds use the definitions from these
documents to point out what is appropriate especially when it comes to
running scripts or altering code, but this is perhaps the only time these
documents are referred to, rendering them less meaningful for the players of
these games.
The third level of rules - ‘implicit rules’ - is in a way problematic and is
perhaps the sole reason for the player-created rules that seem to fill a need
for an interpretation of what is fair play. The rules created by players are
therefore to be considered implicit rules that need to be made explicit.
12.10 Differences and similarities between rule sets of guilds and clans

The meaning of being online has been discussed almost as long as the history of online games (Curtis, 1992; Chen et al, 2009). When we take a closer look at the type of interaction common in both FPS games and MMOGs, it is obvious that being online with many other players is something that influences the rules of both guilds and clans. The shared rules that concern these games specifically as online games focus on respect for other players and zero tolerance of discrimination and are an example of preventing harassment.

Many of the rule sets of the clans in article 2 have a much more explicit focus on instrumental play than the rule sets of most guilds, where the instrumentality is pronounced through rules that dictate strategies for winning over other teams. The raiding guilds tend to have more instrumental play focus than the other types of guilds but they do not come close to structuring the strategies and ‘instrumentality’ of clans.

Some of the differences between the two genres are related to game mechanics, where MMOGs are games typically referred to as games without a fixed ending, whereas the FPS genre is divided into separate matches. One difference that can be seen as a direct result of game mechanics is that players of MMOGs cannot change their name as easily between gaming sessions as they can in FPS games where scamming or identity deception is a topic mentioned frequently in the rules. Another difference owed to game mechanics is how resources are treated, whereby resources in FPS games are means to an end in that current match and in MMOGs are a commodity that can be stored for future need, leading to rules that address how the guild bank is structured.

The two genres also differ in the sanctioning of rule transgressions. In MMOG guilds, warnings are more often used to sanction unwanted behaviour than in FPS clans. A possible reason for this difference lies in motivation, game mechanics and the ‘intentionality’ behind a rule transgression, i.e. whether or not sanctioning will occur (Foo and Koivisto, 2004).
12.11 Summary of norms

The presence of norms in online games is related to visible behaviour and an ‘oughtness’ that must be shared by more than one individual. Although the discussion on norms in this section was directed at some central issues including expectations and different types of sanctions, the most visible norms can be seen in article 3 and in the absence of greetings between players in PUGs when forming temporary groups. For norms to be strengthened they need to be associated with a sanction, a sanction that may need to be visible for other players to communicate the norm further. Sanctions are further associated with a cost in that if the cost is high for the individual administering the sanction the sanction could be omitted for fear of repercussions.

Norms are effective devices for social control, but difficult to monitor in games because they share the characteristics of implicit rules (Salen and Zimmerman, 2004) in that they are not explicit. The implicit rules could arguably be interpreted as both implicit rules being made explicit and the most important rules being norms which are made explicit.

12.12 Summary of rules

Guilds and clans are indeed groups with shared goals and a demarcation line between who is in the group and who is on the outside of the group. Perhaps not surprisingly both the guilds and the clans in article 2 display aspects typical of the guild mentioned in article 1. The need for rules in organized groupings of players is obvious, whether the presence of rules is related to group psychology (Svedberg, 2003) and the need to direct the group towards a shared goal or the interaction in games and the three level of rules need to be made explicit in order to make sense of shared gaming experience or the possible norm/rule breeches that are possible in these worlds.

Guilds and clans have different rules where game mechanics allow for instance friendly fire or ninja behaviour and these differences indicate a need for differentiation between intra-group grief play and inter-group grief play. The reason is that, generally speaking, clans talk about intra-group grief-play in their rules, where the effects of the griefing activities are targeted at the own group. Two examples discussed in article 2 are Team Kill and Team
Down. Since FPS games are targeted at winning over an opposing team, the inter-group grief-play is part of the game objectives.

MMOGs have rules about intra-group grief-play as well but they all fall under the category of ninja behaviour, or more specifically, ‘ninja looting’. There is however space for inter-group grief-play in most MMOGs if one is playing on a Player vs. Player server, since most MMOGs have a faction system where all players are part of one faction. Most guilds are similar to the clans in the sense that they have rules for coordinating the intra-group behaviour and not the inter-group behaviour.

In this section much attention has been paid to player-created rules, rules that are not directly part of Salen and Zimmerman’s rules, but could be argued to be closely related to Montola’s exogenous rules. Salen and Zimmerman’s ‘implicit rules’ cannot describe the need for additional player-created rules. Yet again we see a problem with definitions in the case of both norms and finding one true definition of games.

12.13 Section summary

This section has described the methods used to answer research questions Q1 to Q4 and has further described players of online games, with a focus on groups and how groups make sense of their shared efforts in groupings in online worlds. One subsection introduced different types of groups primarily concerned with the group constellations available in MMOGs and to some degree the clans most common in FPS games. The three levels of rules by Salen and Zimmerman were discussed in combination with Foo and Koivisto’s interpretation and use of these rules and also compared with the rules of guilds and clans in article 2 to find similarities and differences between the rules most frequently used by these two types of groups. The use of rules and the presence of norms were then investigated in temporary groups (PUGs) in article 3.

The next section (section 13) is directed at NPCs and how current methods for creating NPCs differ from the research aimed at creating believable characters. It also deals with immersion as an effect of believable characters.
PART THREE – Believable NPCs
13 Social believable NPCs

13.1 Section introduction

This chapter describes what NPCs actually are and how they are implemented, but it also describes a parallel movement within academia, a movement that tries to create an NPC that is less static, more believable and adds to the immersion and richness of the experience of playing games. This section also addresses social immersion and social plausible behaviour in NPCs, a neglected area of research. Articles 4, 5 and 6 have been structured around NPCs and social believability and the requirements for plausible behaviour. The first part of this section will however describe the research questions and how the methods have been used to answer the NPC-related questions. The following questions were central for the articles in this section:

Q 5: Which theoretical model on social behaviour would enhance the social believability of NPCs?

Q 6: What are the attitudes amongst game developers towards socially believable NPCs?

Q 7: What aspects of believability are essential for creating an NPC with plausible believability regarding behaviour?

Q 8: How do NPCs compare with human social behaviour?

The relation between the questions important for each article can be seen in Table 6. In order to discuss believable NPCs the following sections describe the relevant methods in depth, NPCs, their current state, NPCs in the view of academia and finally believability.
Table 6 Articles and research questions related to the social believable NPCs section 13

<table>
<thead>
<tr>
<th>Believable NPCs</th>
<th>Q 5</th>
<th>Q 6</th>
<th>Q 7</th>
<th>Q 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article 4</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Article 5</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Article 6</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

13.2 Methods for the NPC section

This subsection provides a more detailed account of the different methods relevant for studying NPCs and answering Q5 to Q8.

13.2.1 Design science

Design science has been the overarching methodological framework for the believable NPC section of this thesis. This approach has made it possible to reflect on Q5 and in combination create the conceptual model relevant to articles 4 and 5.

There are indeed many related methodological frameworks for designing science and it is sometimes hard to describe the differences between action research, design-based research and design science. The only real truth seems to be that practitioners from these disciplines acknowledge that there are in fact similarities with other disciplines, but that their discipline is highly unique in one sense or another. One of the similarities that can be found is that all of the above-mentioned methodological frameworks rely on different methods, and at times are more theory-driven or less theory-driven. Another similarity is that many of the sources discussing design-based research or action research do so in relation to many different domains where technology-enhanced learning (TEL) environments is one example (Wang and Hannafin, 2005; Hoadley, 2004). According to Wang and Hannafin, design-based research can be described as:

[...] a systematic but flexible methodology aimed to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories. (2005, p. 6)
One interpretation of Wang and Hannafin’s description of design-based research is that improving educational practices is one of the central aims, done through different steps that are similar to the other methodological frameworks. When Järvinen describes one of the characteristics of action research a related yet slightly different focus is presented:

*Action research produces knowledge to guide practice in modification.* (2007, p. 51)

There is a focus on how knowledge can guide practices in modification, yet the focus is not on educational practices but rather the outcome of educational practices, i.e. knowledge. Indeed there are similarities between action research and design science in that they both deal with knowledge, but the difference is that knowledge in design science is related to design knowledge according to Järvinen:

*Design science produces design knowledge (concepts, constructs, models and methods).* (2007. p.51)

This view is further emphasized by Van Aken:

*The mission of a design science is to develop knowledge for the design and realization of artefacts, i.e. to solve construction problems, or to be used in the improvement of the performance of existing entities, i.e. to solve improvement problems.* (2004, p. 224)

Design science is different from common design practices in that it does not need to provide a specific solution to a specific problem. In contrast it provides generalizable knowledge to a domain, and in so doing aims at communicating and producing knowledge of general interest (Johannesson and Perjons, 2012). Further design science as used in this thesis should not be confused with design research or design experiments, since the learning process is not essential as in (Collins et al., 2004; Edelson, 2002), but then again the knowledge of the domain-believable NPCs is. Design science should also not be confused with action research (Brydon-Miller et al., 2003) even though one similarity can be found in that the work on believable NPCs in this thesis is work in progress. The reason to separate design science in the scope of this thesis from action research is that action research is a single research strategy with a wholly different aim from that of design science. Where action research aims at modifying a given reality or developing a new
system, design science produces design knowledge (Järvinen, 2007; Van Aken, 2004; Johannesson and Perjons, 2012). In this thesis the production of new knowledge relating to socially believable NPCs and the development and evaluation of the conceptual model (article 4) have been central, and can therefore be characterized more by a problem-driven design science process than a theory-driven one.

The knowledge of general interest as addressed in this specific case is focused on the social climate of NPCs, a focus that has been overlooked and should be interesting for a community of local practices, such as game designers dealing with NPCs. Design science projects, further, are based on rigorous research methods, and in this thesis these methods have been influenced by the social sciences, relying on interviews, observations and content analysis.

Design science projects usually follow predefined steps, but since not all these projects have an artefact as a final product, some steps must of necessity be omitted. The design science-specific steps that are part of this thesis are:

1. Explicate problem
2. Outline artefact and define requirements
3. Design and develop artefact (partially omitted step)
4. Demonstrate artefact (partially omitted step)
5. Evaluate artefact

The first step, explicating the problem, was initiated in article 4 in answer to Q5, how to conceptualize a believable NPC, and decided which theory on human behaviour could be used. Carley and Newell’s social fractionation matrix (1994) was chosen at the beginning and the next step was to create a conceptual model.

The social fractionation matrix served as (step 2) the conceptual model of the MSGA (article 4). In design science the conceptual model would be referred to as a prescriptive model, since the aim is to provide a possible solution to a problem, or, as in this case, NPC design. The reason for partially omitting step 3 was that the design process of the MSGA was kept at a relatively high level and that the development of the MSGA was too time-consuming to be taken to the next step. Steps 4 and 5 were a central part of article 5, where the conceptual model and the requirements identified
in step 2 were demonstrated and evaluated through interviews and questionnaires, and in addition answered Q6 and Q7. Step 5 was initiated to further develop an evaluation tool for the MSGA. This tool was then tested through in-game observations in order to answer Q8.

13.2.2 Observations

Observing the behaviour of NPCs is fairly non-complex task compared with observing players. The reasons are that interaction with players is more complex and that participation during observations is usually necessary. When observing NPCs, observations are recorded and the game session can be paused or replayed to test whether the NPCs react in the same way every time. In article 6 observations were made in 12 games to evaluate the tool initiated in step 5. These play sessions followed the same rationale of uninformed observations followed by informed observations in cases where interesting behaviours were found in the first observations.

13.2.3 Interviews

There are numerous reasons to perform interviews, one being that in HCI they are used to derive interpretations and expert knowledge from respondents regarding their field of expertise. This was in fact the exact reason for choosing interviews in this thesis since the major part of the interviews was performed in order to get expert opinions from game designers on their view on dynamic/believable NPCs. Traditionally there are different views on how to arrive at functioning solutions to interesting problems between academia and the industry. By interviewing people with experience of the industry I wanted to test our assumption (article 5) about the functionality of the MSGA, functionality that can only be evaluated by people who have the knowledge and can see the effects of the components of the conceptual model.

The main reason players were omitted from the interviews in this thesis was because the explorative approach is directed at gathering information about the suitability and utility that believable NPCs would add and interviewing players would not have added any relevant information; it would at best reflect preferences regarding games AI.

All interviews were semi-structured, loosely following a script. Since game developers and designers are highly knowledgeable, it was important not to
limit their opportunities to comment, even though this made the transcription phase more cumbersome and also made a quantifiable result impossible.

The interviews were not used to create rapport in combination with observations as in ethnographic studies, they were exclusively used to get another perspective of games AI and evaluate the conceptual model to get input to the next iteration.

13.2.4 Content analysis

Content analysis is usually associated with the process of structuring and analysing data through the creation of analytic categories. In this section the analytic categories are based on research from categories C3 (design aspects) and C6 (technical/games AI aspects) mentioned in the background (section 10), and additional research dealing with immersion, believability and normative multi-agent systems, meaning the categories were based on the data and supported by theories from literature studies.

13.3 NPCs

Non-player characters (NPCs) are the ever-present inhabitants of online games so often visited by players. Games and game worlds in particular have to be populated to be interesting (Bartle, 2003) and one strategy is to create a computer-generated population of NPCs to make them come alive. NPCs typically play a role in the story of the world they populate, and their sole reason for being in that world is to create a value or a function for players. Amongst those functions or roles Bartle (2003, p.87) lists the following:

• Buy, sell and make stuff.
• Provide services.
• Guard places.
• Get killed for loot.
• Dispense quests (or clues for other NPCs’ quests).
• Supply background information (history, lore, cultural attitudes).
• Do stuff for players.
• Make the place look busy.

This means that from one perspective the goal of games AI is to support game designers in providing players with a compelling game experience that supports interactivity and player choices and adds to replay ability (Bailey
and Kutchabaw, 2008). The current way in which people play games might indicate either that players do not easily become immersed in the games they play or that they play games differently today:

As more and more people actually finish fewer and fewer games, the opportunity to extend the life of games becomes important.
(Consalvo, 2007, p. 62)

Interactivity has been singled out as one of the weakest aspects of current NPCs (Mateas and Stern, 2003), the conclusion must be that existing NPCs are too limited to replace the function and role of other players and that NPCs and games AI can have a positive influence on both the immersive properties of games and the replay ability of games.

### 13.4 Current state of NPCs

One thing that is important to keep in mind is that the traditional research concerning artificial intelligence has a different scope from that of the type of AI that is most common in digital games. In digital games AI is optimized for entertainment and increased immersion in the game world, not for the simulation of human performance or rationality (Bailey and Kutchabaw, 2008, p.1). When NPCs are perceived to be smart, there is actually an AI programmer or a team of programmers who have identified what makes players perceive a NPC to be smart, and that is the functionality which the NPC will end up with. What it comes down to is representation and how NPCs are perceived. Good games AI-programming is about creating the illusion of a believable counterpart in games and much attention is paid to making them smart enough; indeed this is one of the reasons why NPCs have been evaluated from a black box perspective (article 6). In the chapter “Artificial Stupidity: The Art of Intentional Mistakes” (Rabin, 2002 pp. 41-48) Lidén points out some of the aspects of AI-programming craftsmanship, and what can be done to create smart enough game agents, where ‘Everything should be made as simple as possible, but no simpler’ (ibid p.41).

The most common techniques for creating NPC behaviour rely on behaviour trees, dialogue trees and scripting that creates static responses to any stimuli in the surrounding environment, making most NPCs finite state machines, similarly to those in the interview study (article 5) and in (Bailey and Kutchabaw, 2008), but exceptions with more dynamic NPC behaviour exist,
as can be seen in *Fable* (Big Blue Box, 2004) *black and white* (Lionhead Studios, 2001) and *Façade* (Mateas and Stern, 2005) and indeed many other interesting games such as *Skyrim* (Bethesda Game Studios, 2011) and *L.A Noire* (Team Bondi, 2011).

### 13.5 NPCs in the view of academia

Academia has a growing interest in NPCs, and indeed there are game developers that develop different aspects of NPCs in new directions as well. *L.A Noire* (Team Bondi, 2011) is one example where the NPCs’ facial expressions add both immersion and believability, and the behavioural repertoire of the NPCs in *Skyrim* (Bethesda Game Studios, 2011) is an example of complex NPC behaviour as are the strategic elements of the NPCs in *Rage* (id Software, 2011). The question is which aspects of NPCs should be developed further and which should be prioritized? According to Ochs et al., the emotional aspects are some of the most important in terms of preserving the immersive quality of a virtual world (2008). In (Afonso and Prada, 2008) social relationships between NPCs are seen as the most important for improving the gaming experience of players. Merrick and Maher (2006) discuss the seemingly static representation and behavioural repertoire of NPCs in cases where the game world constantly changes (MMOGs), changes that should also be reflected in the NPCs in order to be believable, a view that is shared by Lankoski and Björk (2007). One view that is shared by all referenced sources in this section is that ‘Believability is a basic requirement for non-player characters of videogames’ (Gomez-Gauchía and Peinado, 2006, p.1).

#### 13.5.1 The multi-agent approach

One tradition in academia with a more pronounced research perspective aiming for more dynamic game agents (Barella et al., 2006) applied mixed strategies to create more complex agents as cost-efficiently as possible in terms of processing. Strategies for creating ‘smart’ or trustworthy characters (NPCs) in games, are seen in: finite state machines, fuzzy logic, decision trees, multi-agent systems (MAS), neural networks, case-based reasoning and other artificial intelligence (AI) strategies (Lee et al., 2008), where some of the techniques are already part of the building blocks of current NPCs, as seen in article 5. These strategies can all be implemented in different areas to create smart agents in games, but some of them are too expensive in terms of
processing to be implemented in a game world containing a massive number
of players, and some of them are outdated (Barella et al., 2006). Examples of
implementations of multi-agent systems for games and dynamic NPCs are
the JGOMAS system that is a multi-agent system and implementations of
Belief Desire Intention (BDI) agents.

The JGOMAS (game-oriented multi-agent system based on Jade) is a multi-
agent system (MAS) that rests on a hierarchy of different specialized internal
and external agents. One of the internal agents, the manager, is a special
agent responsible for coordination of the current game (game logic).
External agents are the agents (NPCs) a player meets in the game and the
roles that are used in this example are different types of troops such as:
medics, soldiers and field ops. These roles are predefined and the action
potential (actions the agents can perform) of these agents is programmed
with a finite state machine (Barella et al., 2006).

The first impression of the JGOMAS system is that it adds complexity to the
agents, but a big problem is that the agents have a limited level of autonomy.
Barella and colleagues describe agents as follows:

First they are at least to some extent capable of autonomous action
– deciding for themselves what they need to satisfy their design
objectives. Second, they are capable of interacting with other agents
– not simply by exchanging data, but by engage in analogues of the
kind of social activity that we all engage in every day of our lives,
cooperation, coordination, negotiation and the like. (Woolridge,
2002, p.13)

A closer look at the JGOMAS system shows that it fails to live up to the
definition on several counts. The autonomous action that each agent can
perform is similar to a finite state machine and the interaction aspect heavily
relies on the manager agent. The manager agent is a central node in
JGOMAS and is in charge of requests from other agents, synchronizes all
other agents, and coordinates and manages requests from the external agents
regarding interactions with the environment. This indicates that the
JGOMAS is indeed a multi-agent system but the external agents seem to be
just a tad smarter than the average NPC and no actual communication
between external agents exists. On the other hand, the JGOMAS system was
created to support a typical first-person shooter game called Capture the flag
and then the agents in the system only need a certain level of communication
to coordinate the strategies between agents in order to satisfy their design objectives.

Criticism of the JGOMAS system is primarily targeted at the external agents’ lack of autonomy, something that perhaps does not disturb the gaming experience if the JGOMAS system is implemented in a game. On the other hand, the definition of agents as used (Barella et al., 2006) suggests a vision that is much wider, where aspects such as communication and cooperation are entirely left out.

The question that we need to ask ourselves is how we create agents which can actually meet the requirements mentioned above.

### 13.5.2 BDI

Belief, Desire and Intention (BDI) strategies are another area of research that tries to develop a type of reasoning in agents that could add other traits to game agents than purely reflective actions. As recognized by Castronova (2006), Bartle (2003) and Davies et al., development of AI in games holds much promise for the future:

> AI has been neglected as a development priority, and has evolved to work within the confines or limited processor allocation. This has resulted in AI based on efficient reactive techniques rather than complex reasoning systems. (Davies et al., 2005, p.1)

BDI is claimed to introduce variability in agents' behaviour and involves memory and emotion as central parts of decision-making. As well as memory and emotions the BDI agent must have the ability to adapt and change plans. The BDI agent is characterized by its beliefs about the state of the environment and in the case of cooperation this is done by allocating tasks.

The aim of a normative multi-agent system is to provide the flexibility of reasoning mentioned in (Davies et al., 2005) and to solve the problem of autonomy in (Barella et al., 2006) but with a strategy that does not demand a special controller to coordinate all other agents. A conceptual model of an agent that does not need a special controller agent is the model that is described in article 4, the model social game agent.
13.5.3 NPCs and emotions

Although there are indeed examples of models and implementations of more complex NPC behaviour, such as the ones discussed in the NPC section, a major question is how to evaluate believability. The ‘motivated reinforcement learning’ mentioned in (Merrick and Maher, 2006) evolves and adapts the behaviour of NPCs, and in that sense contributes to their believability, but it is unclear how well it adapts to the context and the narrative of the game.

Other implementations more focused on emotional aspects use different theories for representing emotions, such as the OCC model by (Ortony et al., 1988) used in (Ochs et al., 2008), and the five-factor model used in (Afonso and Prada, 2008; Eladhari, 2010) and in the conceptual model of the MSGA (article 4). One question that appears in relation to the theories that represent the emotions in these implementations is why a particular theory was used, and the answer, at least in (MacNamee and Cunningham, 2003), is that the models are used in order to make the NPCs act in plausible ways; most models on human emotions are far too simple to realistically represent human emotions, but this simplicity is beneficial since an overly complex model would be too costly in terms of processing if implemented in a game. The reason for using the five-factor model in the MSGA was much the same, as the aim was to create believability and plausible reactions, not to model a human being.

13.5.4 The model social game agent

The model social game agent (MSGA) was initially a conceptual model meant to be implemented and tested through player tests, but unfortunately the implementation still has to be completed. As a model, the MSGA draws inspiration from many sources (Carley and Newell, 1994; Eladhari, 2010; Jager, 2000; Janssen and Jager, 2010) and the name model social game agent is derived from (Carley and Newell, 1994) whose model social agent (MSA) is a close approximation of an agent with near-human capabilities and further addresses the concerns of Bailey and Katchabaw:

[.] *there have been few, if any, attempts to unify psychosocial behaviour in NPCs so as to include emotions, personality, and individual social relationships.* (2008, p.1)
This suggests the absence of a more holistic approach necessary to create an NPC with emotions, personality, mood, memory, social relationships and decision-making. This absence was the initial inspiration for the MSGA - a MSA modified to be implemented in games.

The MSA is part of a matrix (the social fractionation matrix by Carley and Newell, 1994) that depicts the social and cognitive traits of different kinds of agents, whereby human agents are comparatively limited in terms of both knowledge and processing capabilities but the MSA is still capable of more complex reasoning.

The MSGA combines a decision module called the Consumat after a model created by Jager (2000), a mind module (Eladhari, 2010) for the affective aspects of the agent that is structured around the Big Five personality types as identified by Catell (1945). All these aspects of the MSGA in combination would make the agent more complex and believable, as discussed in article 4.

Games AI and non-player characters (NPC) typically lack many of the traits that are typical of human agents. Adams points out one aspect of game AI:

*Simulating human beings is the most difficult and also the most important problem in game design* (2010, p.18).

The traits that NPCs lack can be summed up as follows: memory functions of previous interactions, feelings, emotions, and models of other agents that potentially serve as allies or enemies in a game world, and also coincide with many of the traits lacking in current NPCs (articles 5 and 6).

The idea behind the creation of the MSGA was twofold: first, to explore the potential of believable game agents further and to evaluate the effects if these agents were part of the population of a game world; second, to assess the attitudes of game developers with regard to the seemingly dynamic aspects of the MSGA compared with traditional scripted NPCs. Three sources indicated a need for more advanced games AI, and Lindén indicated that much of the actual work behind games AI meant to give the game believability in terms of skill is also directed at making intentional mistakes that fool the player (Lidén, 2002) into believing they are playing against agents mimicking the occasional inaccuracy of human agents. Further, Bartle indicated as early as 2003 that if games AI were to become more complex, it would solve many of the problems with online worlds which have persisted
from the beginning. Castronova made the same observation in 2006, that the one aspect of games that has been most neglected is games AI.

13.6 Attitudes towards believable agents and the MSGA

The conceptual model introduced in article 4 was used as the basis for a series of interviews and surveys with game developers and game designers, in order to explain more about games AI. Article 5 used the conceptual model to point out that certain aspects of games AI were lacking in most current implementations to see whether or not these aspects had been purposely omitted by game developers and designers and if so why.

The five respondents in the interview section of article 5 gave different views on the capability of current NPCs, but one thing that most agreed about was that the A* algorithm seldom fails to provide NPCs with the navigational skills needed. The continuation of the results from the interviews and the surveys is best described as diverse. Some of the respondents from the survey and the interviews reported that they had worked on many of the aspects that we identified as parts of the MSGA, such as:

- Navigation/pathfinding
- Strategy/tactical choices
- Behaviour adapted to context
- Decision-making
- Memory of previous interactions
- Cooperation among NPCs
- Emotions

Yet some of these aspects were described as difficult to implement and concerns about ‘the black hole of AI’ were raised. This black hole was described by one of the respondents as what happens when really smart and dynamic NPC behaviour is still interpreted as ‘just scripting’, indicating that effort spent on over-complex behaviour by game developers is not seen as such by players. When talking about emotions, the respondents cited *L.A Noire* (Team Bondi, 2011) in which emotions were implemented, but with the problem that NPCs are typically not aware of the context, making
emotions hard to script. The respondents who were not critical of the types of behaviours presented in the above list thought that memory function and behaviour adapted to context would be the most promising aspects of the MSGA, since at present memory implemented in NPCs, degrades too quickly to make a difference. The rest of the discussion in the interviews was on what could be summed up as ‘systemic AI’ versus ‘scripted AI’ and in the spirit of the black hole of AI, if the players do not know the difference, then scripting is preferred since it does not add complexity or unnecessary maintenance costs to the game.

Since the answers to our questions in the survey and the interviews did not point towards a consensus on the issues raised by MSGA, believable NPCs and systemic AI, this indicates the need for more advanced techniques for analysing agent complexity and usability. These techniques are at an early phase in their development but still provide valuable insights into the design of games and the complexity and believability of NPCs, as sections 13.7 and 13.8 will show.

Although multi-agent systems and BDI architectures add a new perspective on game agents or NPCs, they are not seen as a solution for real games, since they do not solve the problem of more believable characters. Further, even the MSGA has not so far provided the answer to how to create more responsive agents with plausible social behaviour. The question is what believability is and how we can measure it.

### 13.7 Believable NPCs

What is believability, and what makes a believable NPC believable? This is perhaps one of the most important considerations as regards the conceptualization of character for games that exceeds the behavioural repertoire of current NPCs, since believability is currently lacking (Gomez-Gauchia and Peinado, 2006). One reflection about believable agents that is transferable to this section reads as follows:

> For many people, the phrase believable agent conjures up some notion of an agent that tells the truth, or an agent you can trust. But this is not what is meant at all. Believable is a term coming from the character arts. A believable character is one who seems lifelike, whose actions make sense, who allows you to suspend disbelief. This
is not the same thing as realism. For example, Bugs Bunny is a believable character, but not a realistic character. (Mateas, 1999, pp. 5-6)

In my interpretation, one of the most important aspects of believability deals with actions situated in a context where NPCs are lifelike, ‘whose actions make sense’ in a certain situation. There are indeed many suggestions about what makes an NPC seem lifelike and believable, and the Oz group at Carnegie Melon University have been working on the following set of requirements for believability (Loyal, 1997, pp. 15-26; Mateas, 1999):

- **Personality** – characters displaying any believability should have a rich personality that is reflected in all their actions, making them stand out as unique in all their actions. Further personality is about the specific and unique expressions and not the general.

- **Emotion** – a believable character should exhibit personality-specific responses to the emotions of others.

- **Self-motivation** – a measure of the character's own internal drives and desires that the character pursues whether or not others are interacting with them. They do not simply react to the activity of others.

- **Change** – a believable character should change and grow with time and in a manner that is motivated and consistent with their personality.

- **Social relationships** – a believable character should also engage in detailed interactions in manners consistent with that social relationship, a relationship that in turn changes as a result of the interaction.

- **Consistency of expression** – can be seen as one of the basic requirements for believability, which deals with the character's expression including facial expression, body posture, movement, voice intonation, etc. and needs to work in orchestration to make the character believable.

- **The illusion of life** – a collection of requirements dealing with a character's reaction to stimuli in the environment, pursuing multiple simultaneous goals and capabilities such as movement, perception, memory and language and including the following subcategories:
  - **Appearance of goals** – believable characters should seem to have goals that make them seem alive.
Concurrent pursuit of goals and parallel action – in order for characters to be perceived as believable they should be able to perform some actions in parallel while others are done concurrently with interwoven steps and parallel or overlapping action.

Reactive and responsive – a believable character should be both reactive and responsive, meaning that the character must react within the confines of people’s expectations of believability.

Situated – a believable character should appear to be situated both in terms of the change of actions in a response to changes in their environment and as a response to the unfolding situation.

Resource-bounded — body and mind – believable characters should have limits in terms of what they are physically capable of and how much they can think about.

Exist in a social context - believable agents must also be situated in the culture, social conventions and other aspects of the world in which they are to exist.

Broadly capable – for a character to be perceived as ‘alive’ and believable it needs to be broadly capable, making it seem to act, think, sense, talk, listen, understand, have emotions, exist in dynamic worlds, etc.

Well-integrated (capabilities and behaviours) – believable characters should be well-integrated, smoothly moving from one activity to the next, often overlap portions of behaviors that are characterized by appropriate and distinct transitions between behaviors (Mateas, 1999, p.4).

If we take a closer look at the Oz group's list of requirements for believability, we can see that there are many common traits compared with what other researchers have reported as important aspects of believability, and this coincides with Carley and Newell’s (1994) fractionation matrix (Figure 1), which inspired articles 4, 5 and 6.
The work of Lankoski and Björk has many overlaps with the Oz group, particularly as regards the following traits: emotional attachment, contextual conversational responses, and goal-driven personal development. Where the interpretation might differ slightly, but indicates the necessity for emotions.
character development/change and social aspects on an individual plane. Most other traits as identified by Lankoski and Björk (2007, p.1) fall under the category of the Oz Group’s ‘the illusion of life’. When we compare the requirements for believability with the values in the fractionation matrix (Figure 1) above, overlaps between these occur in the left column of the matrix, the non-social task, column 1.

One thing that stands out is that whereas the Oz group details the individual behaviour of believable characters the social fractionation matrix has little to add to our understanding of believability in individual characters. The social fractionation matrix does however add a lot to our understanding of the fine-grained details about the social believability of and interactions between characters, adding an important focus to the social dimension. Figure 2 depicts the relation between these sources, where the theories from the Oz – group (Loyall, 1997, pp. 15-26; Mateas, 1999) end up in the ‘individual NPC’ part of the figure, accompanied by the overlaps identified in Lankoski and Björk (2007). Lankoski and Björk also touch upon ‘narrative’, a subject that has also been studied in depth by Mateas and Stern (2003). It is obvious that these theories deal with different parts of Figure 2. Little attention, however, is paid to how the behaviour of groups of NPCs influences immersion, indicating a gap that needs to be discussed further.

**Figure 2 Social believable NPCs**

Different research groups seem to have found some of the aspects mentioned in (Lankoski and Björk, 2007; Loyall 1997, p. 15-26; Mateas 1999)
independently, and these should therefore be considered the basis for a believable character. Unfortunately, according to Bailey and Katchabaw:

> There have been few, if any, attempts to unify psychosocial behaviour in NPCs so as to include emotions, personality, and individual social relationships. (2008, p.1)

This would indeed indicate a gap and a possibility for further research into believable characters and why they are so important, and also how to combine these traits, as a continuation of the argument that:

> Unbelievable characters and situations detract from the enjoyment of the narrative. (Tanenbaum and Bizzocchi, 2009, p. 7)

A closer investigation of immersion, arguably the closest measure of how believability or the lack thereof influences the gaming experience of players, follows.

### 13.8 Immersion

The word immersion has been used as a catch-phrase to describe the magic, alluring and deeply engaging qualities of games in ways that are not always entirely coherent. There is no real consensus on exactly what it is. Immersion has been compared to ‘suspension of disbelief’ (Murray, 1998) a term originally coined by Coleridge (1817), and could be described as the attitude a player needs to assume in order to become immersed in the game at all. Examples of research on immersion include studies aiming to break the immersion of players in order to understand what it is and how it works (Cheng and Cairns, 2005), interview studies measuring levels of immersion of players, indicating that there are different degrees of involvement or immersion ranging from engagement, engrossment, and finally total immersion (Brown and Cairns, 2004), and studies aimed at quantitatively measuring immersion (Jennett et al., 2008). Many of these sources not surprisingly also draw parallels between immersion and flow (Csikszentmihalyi, 1990), where immersion is often described as a flow-like state. Sweetser et al. also make this connection and further describe the sensation of being absorbed by a game as ‘[d]eep but effortless involvement, reduced concern for self and sense of time’ (2012, p.2) and that of ‘[player enjoyment] which coincides with Csikszentmihalyi’s (1990) flow concept, a relation also mentioned in Salen and Zimmerman (2004). Immersion is also
related to the challenge of gaming and the flow concept, where a balance in
the difficulty of the challenge is needed in order to make the player enjoy the
game. When immersion is established it also makes players more likely to
overcome difficulties in the game (Cheng, 2005). Without a unifying
definition of immersion (and I do not intend to invent a definition), the
following rather general description will be used: ‘[..]the degree of
involvement or engagement one experiences with a game’ (IJsselsteijn et al.,
2007, p.3) in combination with Ermi and Mäyrä’s (2007) distinctions
between three different types of immersion:

- Sensory-based immersion – related to the audiovisual execution of
games and the experience enabled through for instance a three-
dimensional game world.

- Challenge-based immersion – based on achieving a satisfying
balance between challenges and abilities, related to motor skills,
mental skills such as strategic or logical thinking, and even problem-
solving.

- Imaginative immersion – directed at capturing the imaginative
aspects of being immersed in characters and story elements or the
game, and also being immersed in the world.

The three types of immersion have much in common with Costykian’s
discussion on struggle that points out some of the aspects of games that
game developers try to refine (Costykian, 2002). In games such as LA Noire
(Team Bondi, 2011) or Façade (Mateas and Stern, 2005) the emotional
aspects of NPCs are part of creating the illusion of smart adversaries,
contributing to imaginative immersion. In Skyrim (Bethesda Game Studios,
2011), The Witcher 2: Assassin of Kings (CD Projekt red, 2011) and
Assassin’s Creed 3 (Ubisoft Montreal, 2012) both the sensory and
imaginative immersions are stimulated. Lastly, in RAGE (id Software, 2011)
and Starcraft 2 (Blizzard, 2010) the opponents of the game, the NPCs, are
strategically competent, leading to a more interesting challenge for the
player, and therefore are part of challenge-based immersion.

It is perhaps challenge-based immersion that most directly influences
immersion and flow in games where skills and tactics are more pronounced.
One strategy for not creating too steep a learning curve and also enabling the
player to experience flow during a gaming session is to apply dynamic
difficulty (DD), a technique used for adjusting the skill levels of the opponents to make every minute of gaming interesting with obstacles that are just hard enough to be both entertaining and rewarding to overcome.

Since immersion can be seen as a measurement of the absorbing qualities of games and there seem to be many different aspects that can threaten the immersive qualities of a game, such as unbelievable characters, the three levels of immersion by Ermi and Mäyrä (2007) could benefit from a more pronounced focus on the interaction with believable NPCs, leading to a need for a fourth category ‘social immersion’. Social immersion, then, should be a compound of the requirements as identified by the Oz group (Loyall, 1997, pp. 15-26; Mateas, 1999) in combination with the traits found in the fractionation matrix (Carley and Newell, 1994). Further, social immersion should reflect the findings from the player section (section 12) of this thesis, with a focus on how norms and rules are an integral part of the everyday interaction in groups of players. Consequently, the question is how to evaluate social immersion and social believable NPCs.

13.9 Tools for evaluating social believable NPCs

There are plenty of methods, ideas and tools for understanding, analysing and discussing games, e.g. design patterns (Björk et al., 2003; Lankoski and Björk, 2007), that on a general level can be used for evaluation of certain aspects of games, but they do not provide the detail needed to cover the behavioural aspects of NPCs. A more in-depth study on the components and mechanics of computer games is provided by Järvinen (2009), but is still hard to apply as a tool for evaluation of games. The reason it is important to provide tools for these kinds of evaluations is that we do not want games that prevent us from being entertained, and in addition the evolution of games AI has some lost years to make up for.

In the immersion section (section 13.8) challenge-based immersion was one of the categories not directly reflecting the focus of this thesis, since challenge primarily deals with the obstacles associated with reaching predefined goals in a game. Challenge in games is a major aspect that is as important as games being immersive. Suits describes challenge in the following way:
Suppose I make it my purpose to get a small round object into a hole in the ground as efficiently as possible. Placing it in the hole with my hand would be a natural means to adopt. But surely, I would not take a stick with a piece of metal on one end of it, walk three or four hundred yards away from the hole, and then attempt to propel the ball into the hole with the stick. (2009, p.38)

When Suits describes challenge, the playful qualities of games become obvious. Costykian describes the challenge of games slightly differently, focusing on the struggle that gives the game a meaning:

Part of the struggle lies in the opposition posed by monsters and NPCs; part of it in exploration of the world and the story; part of it in traps or puzzles posed in the game’s physical world, or in social difficulties posed in the game’s social realm. (2002, p.15)

In a sense the aspects of believability proposed in this section aim at capturing the essential element in Costykian’s quote by measuring and developing the opposition through more believable monsters and NPCs, as well as addressing the challenge of games raised by Juul (2010). Since struggle and challenge are at stake, there should be ways of analysing and balancing these aspects of games.

13.10 Prerequisites for analysing socially plausible behaviour

This thesis has thus far discussed players, the social cooperation that is essential for groups of players and the believability and plausible social behaviour in NPCs. Although there are many tools and methods for analysing games there are few tools available for measuring social believability, plausible social behaviour or complexity in NPCs. The matrix by Carley and Newell (1994) served in (article 6) to evaluate the behaviour and complexity of existing NPCs. This article was followed by a study (Warpefelt and Strååt, 2012) using the same idea but on a more elaborate and instrumental level. In both studies, however, using Carley and Newell’s matrix without alterations proved to be difficult (article 6). Further, these two studies indicated that most NPCs are well suited to performing the simplest actions (the non-social task column of the fractionation matrix (Carley and Newell, 1994), but that social action often failed.
If instead we start from the beginning of this thesis and the player section (section 12), it becomes apparent that players use both rules and norms to create and maintain social groupings. The work on requirements for believable characters (Loyall, 1997, pp. 15-26; Mateas, 1999) in combination with the work of Lankoski and Björk (2007) details the whole range of attributes singular agents need to exhibit in order to seem believable. Carley and Newell’s fractionation matrix (1994) in combination with the indications from the player section (section 12) sums up the social climate that is a prerequisite for individual agents to exhibit socially plausible behaviour.

The studies on immersion described in this thesis generally come to the conclusion that immersion is not easily disrupted, once established (Cheng, 2005). On the other hand, once immersion is broken it should be for other reasons than NPCs behaving in implausible ways. It is probably safe to assume that challenge-based immersion is the aspect of immersion that is most easily controlled by a game designer, with cognitive immersion a close second. This would imply that these aspects can be fairly easily calibrated and adjusted to make the gaming experience as pleasurable as possible for the player. The most problematic aspect of immersion from a believability perspective is imaginative immersion (Ermí and Mäyrä, 2007) and the suggested increment, social immersion.

A tool for analysing (and fostering the development of) socially believable NPCs should consider the individual traits of the NPC, with the requirements for believability (Loyall, 1997, pp. 15-26; Mateas, 1999) as a base. Further, the social climate of these NPCs should be considered in combination with Carley and Newell’s fractionation matrix (1994). Additionally, the latter aspect that adds the contextual awareness of NPCs should consider the requirements for believability and connect to the narrative (Lankoski and Björk, 2007; Stern and Mateas, 2003).

### 13.11 Section summary

This section has introduced and discussed believability and immersion, which are often mentioned in the same breath, and how NPCs have an effect on how we perceive the game and the experience that lies in playing games. Even though immersion and believability cannot be discussed in isolation, since there are other factors that influence how we perceive the games we
play, such as the pace of the game, especially in FPS games (Bates, 2001), flow (Csikszentmihalyi, 1990) and suspension of disbelief, immersion does describe an elusive but important aspect of the gaming experience.

Further, this section has discussed games from an indirect perspective, leaving definitions and mechanics aside, but in so doing looked at interaction and the design of games. It has also introduced the MSGA and the use of this conceptual model as a topic for discussion with game designers, and as a result created an understanding of game designers' and developers' views on dynamic/systemic games AI. This section has also shown that design science is a way to evaluate a problematic situation; in this case the principal themes of social believability and plausible social behaviour have been studied in some depth.

Further, this section has pointed out some shortcomings/gaps in previous research. These shortcomings relate to research focusing on the social dynamics of NPCs and the lack of tools for analysing the complexity of NPCs. It also proposed a set of criteria emanating from game studies that should be part of an evolutionary tool for measuring the social dynamics of NPCs (article 6).
PART FOUR- Finishing
14 Conclusion

This thesis has described two aspects related to games and the culture of games through a focus on groups of players and a focus on believable characters. It may seem far-fetched but the exercise has in fact contributed to an understanding of the social dimensions of groups playing together and given some valuable ideas on the social aspects of believable characters. The thesis has been directed by the two following highly thematic questions:

T1. Which social mechanisms are present and necessary for groups of players in stable groups in online games?
T2. What are the possibilities for creating NPCs that act plausibly in social situations, and which traits are the most important for socially plausible behaviour in NPCs?

These questions have been broken down into more specific research questions in articles 1 to 6. These jointly answer the more general questions T1 and T2. The first focus of this thesis was mainly studied by means of ethnographic methods and is more a traditional contribution to the overall field of games research. The second focus of the thesis built on design science, a method that more directly relates to computer and systems sciences.

A personal reflection regarding game studies is that much research has an exaggerated focus emanating from a gaming perspective that might become a ‘going native’ problem, meaning that objectivity is lost in the process. In this thesis and the data collections of the articles presented, playing games has been the least significant element. Games research without playing games is of course possible but the opposite problem of going native would appear. The problem with games is that to understand the fine-grained details, one must play. What Agar (1996) would call ‘creating rapport’ through interviews in ethnographic research is what playing games is to game studies, but with the risk of going native, everything in game studies must be balanced in order to avoid subjectivity or ignorance (Dewalt and Dewalt, 2002). The question is if the research should be theory-driven or
problem-driven. In this thesis my interpretation is that most articles are problem-driven in the light of the initial two thematic research questions.

A combination of perspectives in the different articles mentioned has been used in order to get a detailed picture of games, the people who play games and the role of immersion and believability.

14.1 Conclusions regarding method

The two areas that have been explored in this thesis deal with the social dynamics of groups of players and social believable NPCs. Describing players and groups of players is relatively straight forward, since theories from social psychology, group psychology and sociology are transferable to games and communities of players. The research and analysis of games from a believability perspective is, however, not so trivial since the existing methods do not always capture the aspects of games that are interesting to study, and this part of my research has been influenced by HCI and the available literature on game design for a deeper understanding.

The methods used were taken from the social sciences, and are influenced by ethnography. Since game studies (with a focus on video/computer games) is a fairly young research tradition, however, I think that the contribution of this thesis is more about how to use these existing methods than inventing new ones, except for situations where methods and analytical tools are missing and new tools have been invented, as is the case with the tool for measuring social dynamics of NPCs mentioned in article 6.

One drawback with studying players indirectly, as I called it in the methods chapter is that the internal evaluation of norms is difficult to monitor, and shows the need for complementary studies focusing on individual players and their personal reflections regarding shame or guilt owing to transgression of norms.

14.2 Conclusions regarding players

The player section of this thesis (section 12) was directed at answering research questions Q1 to Q4 or, rather, these questions informed the process of analysing groups of players. A recap of the questions and answers follows:
Q 1: How are stable groups in online games coordinated and kept together?

Guilds and clans are coordinated and kept together by communicating the norms and rules of the group to their members. As seen in article 2 there is a connection between the ambition of the group and how detailed and instrumental the rules are.

Q 2: How are groups in online games structured?

The stable groups studied in article 1 and 2 had a hierarchical structure that may relate to the fact that guilds have a guild leader and the possibilities of promoting players in the guild to different ranks such as officers. On the other hand, more casually oriented guilds and clans had a less pronounced hierarchical structure with less regard for the different ranks.

The temporary groups observed in article 3 were even less structured and interested more in complying with the functional roles of the players in the group. For instance, the main tank of the group, a central functional role, would decide at what pace the progression of the dungeon would be completed.

Q 3: What is the meaning of rules and norms for groupings of players in online games?

Rules and norms are communicated in different ways for different groups of players. The rules of the guild in article 1 were considered of high importance since the guild wanted to avoid certain difficulties encountered before a recent guild split. In article 2 the importance of rules can be seen as essential for communicating what it takes to be in the group. Complying with the rules is necessary to be able to be part of that group.

The implicit rules share qualities of norms, and in this thesis implicit rules and norms are viewed as implicit rules made explicit since they are also communicated in the rules of guilds and clans.
Q 4: How do the rules of groups playing online games relate to theories on rules?

The rules of groups playing online games have much in common with the three levels of rules described by Salen and Zimmerman (2004). The exception to the three levels of rules is the implicit rules which the groups of players in article 2 have made explicit for all members of the group.

In relation to research questions Q1 to Q4 there are many conclusions which can be drawn regarding players. To start with, players are a diverse population. Since the introduction of casual games it has been increasingly hard to tell who is playing games on a regular basis and who is not. When we focus on games that have a steeper learning curve and that are more demanding in terms of mastering the game, such as most FPS games or MMOGs the picture is perhaps slightly different. I cannot provide any proof of this, other than the arguments put forth by Juul (2010) and Yee (2006). It is however intuitive that different players choose different games, and in this thesis the intention has been to investigate the players who play cooperative online games.

There are many ways of studying players, but only some of them have been used in this thesis because of time limitations. I chose classical theories from the social sciences, with one aim in mind: to focus on social interaction and what makes cooperation in online games possible. This strategy has proved to be highly useful since the publications in this thesis fill a gap in games research in that user-created rules, norms and sanctions have been largely ignored.

Yet again, using an indirect perspective, being a spectator, or gathering data from internet search engines allowed me to see a totally different picture of the cooperation and interaction in these groups, but with the drawback that the individual motivations of players were outside the scope of my research. The indirect perspective also helped in finding the answers to research question Q2 whereby both casual and more ambitious groups of players create rules and follow norms. The social structure of these groups indicates that the same rules apply as in real life, but that some behaviours need to be addressed explicitly.
The focus on rules and norms gave an analytical depth to studying groups, and also addressed the definitions of rules of the game. This focus was important in answering questions Q1, Q3 and Q4. Peripheral to this thesis were the possibilities of sanctioning rule breaches and strengthening norms (by sanctioning unwanted behaviour), mechanics which were a principal contribution of (Johansson, 2010; Johansson and Verhagen 2010a). There were however interesting indications relating to the cost of interpersonal relationships in article 3 that indicated a total disrespect for the norms in PUGs in World of War and suggested that the possibility of sanctioning unwanted behaviour is also a really important design decision that has to be taken into account in order to make the presence of some norms possible. The question that should be raised in this section is why the sanctioning systems of some games barely punish rule or norm transgressors at all.

Further, the player section (section 12) with its focus on rules and norms gave interesting insights into how players cooperate and create a social group, an insight that is valuable for the further understanding of the social aspects of believable NPCs. The main contribution of this thesis regarding players is a deeper understanding of groups of players and their use of rules and norms to create stable constellations of players, and the added focus on groups that have been left out of most previous work on the social and cultural aspects of online games.

### 14.3 Conclusions regarding believable NPCs

The social believable NPCs section (section 13) of this thesis was directed at answering research questions Q5 to Q8 or, rather, these questions informed the design science process. A recapitulation of the questions aimed at analysing believable NPCs and a summary of the answers follows:

**Q 5:** Which theoretical model on social behaviour would enhance the social believability of the NPC??

The theoretical model chosen in this thesis is the fractionation matrix by Carley and Newell (1994), but it is perhaps premature to say that it adds to the believability of NPCs, since the MSGA presented in article 4 is still very much a conceptual model. The strength of the fractionation matrix is that it
introduces the social mechanisms that thus far have been an overlooked layer of believability.

Q 6: What are the attitudes amongst game developers towards socially believable NPCs?

There are as many answers to this question as there were respondents in the interview study of article 5. One thing that stood out, however, as a major concern was the loss of control over NPCs and the difficulty of synching their behaviour with the narrative. Two aspects that were seen as promising were memory function and emotions. These aspects were considered the most promising for increasing the social believability of NPCs. The black hole of AI and the ‘uncanny valley’ (Mori, 1970/2012) were further mentioned as potentially problematic effects of socially believable NPCs. The black hole of AI was more or less a measure of how much time was spent developing sophisticated NPC behaviour in relation to the reception from players and interpreting the NPC behaviour as just clever scripting.

Q7: Which aspects of believability are essential for creating an NPC with plausible believability regarding behaviour?

The most essential aspect of creating believable NPCs according to the respondents in article 6 was memory of previous interactions and emotions.

Q8: How do NPCs compare with human social behaviour?

The use of Carley and Newell’s fractionation matrix (1994) for evaluating social behaviour in NPCs was informative in that it provided a focus for observing NPCs. The fractionation matrix deals with everything from simple agents to the model social agent (MSA) that is an approximation of a human being, and in this respect much of the matrix deals with behavior far too complex to be used for existing NPCs. Another point regarding the fractionation matrix is that most NPCs in article 6 passed the less complex tasks but the matrix must be altered slightly to cover game-specific aspects such as path-finding algorithms and realize when a value in the matrix, or rather a behavior, is displayed in a believable manner.
In relation to research questions Q5 to Q8 there are many conclusions to be drawn regarding believable NPCs. To start with, the player section (section 12) heavily influenced the first research question of the believable NPC section and also coincides with research question Q5. What became obvious was that players have rules, they have norms, they relate to cooperation in certain ways, and a conceptual model of a believable NPC should be able to grasp concepts as rules and norms. The requirements in stage 2 of the design science process should contain norms, rules and social interaction in order to take believability to the next level. These factors influenced the choice of the social fractionation matrix and were the answer to Q5.

In *Designing virtual worlds* Bartle in essence ascertains that even though the sophistication of virtual worlds has gone through significant changes since the textual Multi-User Dungeons the social dynamics have not (2003), meaning that players interact in much the same way as they used to do; there are still bullies who enjoy griefing other players and socializers who enjoy the social possibilities of game worlds. There seems to be a consensus in games studies that the most significant changes have been in the graphics area (Juul, 2010; Bartle, 2003; Castronova, 2006), and that games AI have been neglected for a long time. When Adams stated that human behaviour is the most difficult to implement, I also divined that this is something that is worth doing, something that game designers should strive for. This assumption on my part was tested in article 5 where game designers were part of the evaluation of the MSGA. Their view however was slightly different from my assumption regarding human, social and plausible behaviour.

The interviews and questionnaires in article 5 gave interesting insights into the knowledge and experience of game developers and designers, but unfortunately indicated the fear of change in how things are done. They also showed that one of the most important aspects of big game development projects is return of investment (ROI) which seems to prohibit alternative and creative ways of producing innovative games. Since the respondents of article 5 did not have totally agree on the issues that MSGA (article 4) raised there is still reason to believe that these aspects could actually add something to future games, and a partial answer to questions Q5 and Q6 was given. One aspect of article 5 is that there seems to be a consensus between academia and game developers in terms of the most interesting aspects of NPC behaviour. Even though the respondents in article 5 did not find the MSGA a
solution to the difficulty of creating interesting interaction between players and NPCs, they still found memory functions, emotions and social aspects to be the most interesting and worthy of further work. The evaluation of the MSGA in article 5 might point towards drawbacks with the conceptual model. A conceptual model that would answer the call for a more holistic view on believable agents as put forth by Bailey and Katchabaw (2008), but until implemented and evaluated deemed too complex, too difficult to control to be considered in real games.

Another conclusion that can be drawn from the games section is that there is a need for new methods that capture some of the possible areas of development in games yet to come, as addressed in article 6. What I am referring to is of course believable/dynamic NPCs that seem to be a neglected aspect of games development (with a few exceptions). The prerequisites for evaluating social believable NPCs pointed to yet another gap in existing research, a gap that I think it is safe to describe as social immersion. This gap consists of the social layer of NPCs that have been beyond the scope of most research that has a focus on the individual traits of NPCs and on narrative. These conclusions were part of the fifth stage in the design science process, where both an evaluation of the conceptual model have been performed and the criteria for a tool for evaluation proposed.

Immersion and believability are of utmost importance for games, and one thing that should be taken into account is concerned with the social aspects of the requirements for believability outlined by the Oz group (Loyall, 1997; Mateas, 1999) and the suggestion to expand the different types of immersion as identified by Ermi and Mäyra (2007). What I am referring to here are the social dynamics seen in both guilds and clans, how they interact in the presence of a norm system, with or without the possibilities for sanctions, and the presence of rules. The social dimension mentioned in the research so far on believability and immersion only seems to scratch the surface of social interaction. Further, norms and rules are concrete aspects of group dynamics that should also be taken into account, in order to create a truly believable generation of NPCs, a generation of NPCs capable of displaying plausible behaviour, even in the social domains of interaction, that is currently absent. This conclusion applies to research question Q7 that to some degree has been answered in the thesis.

Further, the analysis of socially plausible behaviour in NPCs in this thesis, the work of the Oz group (Loyall, 1997; Mateas, 1999) and the work of
Lankoski and Björk (2007) are indicative and not yet proven to be the right tool for evaluation, since the answer to research question Q8 is that Carley and Newell’s matrix in isolation does not suffice to deal with the plausibility of social behaviour in NPCs. To complement this model individual NPCs and groups of NPCs should be considered in relation to both narrative and the environment they populate. This conclusion should at least be an indication on what aspects game designers should consider important in NPC design for the future.

14.4 Finally, do non-player characters dream of electric sheep?

I think it is safe to say that NPCs do not dream of electric sheep, and they are unlikely to do so in the foreseeable future, but imagine if we could make players believe that their digital opponents or co-workers in digital games were capable of decision-making based on some kind of rationality and context, and had the possibility to display feelings in a dynamic and not a scripted sense: that would be a really interesting start and good news for the development and evolution of games.

This part of the conclusion may be speculative and overly visionary, but then again those were the exact reasons why I started doing research and the reason behind my work on the conceptual model of the MSGA.

14.5 Section summary

This section have provided some final thought relating to the previous chapters, and pointed out some of the contributions of this thesis. The main influence on methods comes from the social sciences, HCI, and ethnography in combination with a background in Computer and Systems Sciences have been the most influential parts of choosing methods.

Finally, some drawbacks with existing strategies on how to study games and players were presented, with recommendations on how to address these drawbacks for future studies.
15 Contributions

The contribution made by this thesis is relevant for:

- Game developers and game researchers with an interest in plausible social behaviour in that it bridges a gap where the social dimension of NPCs have been left out.
- Game researchers who are interested in player communities in that it provides insights and indications regarding the importance of player-created behavior-regulating mechanisms through the use of norms and rules.
- Game developers in understanding the need for sanctioning mechanisms in social games, since this influences the whole player community.

The major contributions of the player section of (section 12) this thesis are a deeper understanding of how players perceive games and how they express their virtual freedom (Balkin and Noveck, 2006) in changing or interpreting the rules of the game; the use of rules and how possibilities for sanctioning rule/norm transgressions should be part of the focus for game designers; focus on the communication within guilds and clans, and how rules are a central part of how these groups are created, managed over time and kept together.

The contributions of the social believable NPC section (section 13) of this thesis are the views of game developers in article 5, and the cautious shift towards more dynamic NPCs. The contributions in this section are also a complement to Ermi and Mäyrä’s interpretation of immersion and social immersion that should not be overlooked. Further contributions can be seen in the discussion on social believability where the social dynamics of groups of NPCs are discussed from a new perspective.
16 Future work

Future work will mainly be directed at implementing the MSGA in a game world. The implementation will follow the design science stages used in this thesis with an in-depth evaluation of how these NPCs are perceived by players. These studies will be structured around observations and interviews aimed at measuring player reactions towards this type of NPC. Further, such a study should answer questions about the potential utility that such a NPC would add to a game world. This would also be beneficial for our understanding of immersion, and social immersion between players and NPCs, indicating if and how NPC behaviour can strengthen the immersive properties of a game session or if other effects would appear. One such effect that has been studied in robotics is the ‘uncanny valley’ (Mori, 1970/2012) or the suspension of disbelief (Coleridge, 1817). This thesis is merely a first step in elaborating the creation of dynamic NPC displaying plausible social behaviour. Informed by the game designers' views in article 5 it should help us to pick up where the conceptual model of the MSGA left off, as it the latter is not set in stone and may go through further alterations and elaborations.

As indicated in the social believable NPCs section (section 13), the tools for evaluating complexity and social abilities in combination with a heuristics for evaluating usability in games will be developed further. The combination of these two tools will also be valuable for the creation of a test methodology for how to evaluate and test games at an early stage that may also be useful for game designers and game developers. These studies should also include interviews with game developers to further inform and deepen the understanding of how NPCs are designed and implemented in order to create better ways of evaluating them.

As indicated in the players section (section 12), there is a gap in the methods used since individual players were not interviewed, neither was anonymity an aspect that was studied. Further work will focus more directly at players and anonymity in online games to close this gap.
Future work will also be directed at a more thorough study of the effects of immersion and believability, and also try to refine the argumentation about social immersion.
17 Publications by the author

17.1 Articles in this thesis

17.1.1 Articles related to players


Johansson, M. (in press) ‘If you obey all the rules, you miss all the fun’ – a study on the rules of guilds and clans in online games’. Accepted for publication in: *JGVW: Journal of Gaming & Virtual Worlds*


17.1.2 Articles related to NPCs


17.2 Journal articles

17.2.1 Articles related to players


17.3 Conference articles

17.3.1 Articles related to NPCs


17.3.2 Articles related to players

Johansson, M. & Verhagen, H. (2010) ‘And Justice for All - the 10 Commandments of Online Games, and then some...’ In Proceedings of Nordic DiGRA. August 16-17, Stockholm


17.4 Licentiate thesis

18 References


Dick, P. K. (1968), *Do androids dream of electric sheep?* Doubleday.


Johansson, M., Verhagen, H. (2010a) And Justice for All- the 10 commandments of Online Games- and the some… In: Proceedings of Nordic-DIGRA.


McGonigal, J. (2011) Reality is broken- why better games make us better and how they can change the world. Jonathan Cape.


101


19 Games

Big Blue Box. *Fable* (PC). Microsoft Game Studios, 2004 September 14th
Higinbotham, W. *Tennis for two* (Analog computer/Oscilloscope). Released date October 18th, 1958
Rockstar Games. Release date November 8th 2011
PART FIVE – ARTICLES
Introduction to the articles in this thesis

20.1 Articles and methods

Many qualitative methods have been part of the overall process and have served as a magnifying glass to find answers to the questions raised in the articles included in this thesis. This section is a recapitulation of the methods used for each and every one of the articles included in this thesis. The articles are divided into a section that deals with players and a section dealing with believable NPCs (Table 7).

Table 7 Articles and methods

<table>
<thead>
<tr>
<th>#</th>
<th>Observations</th>
<th>Interviews</th>
<th>Web search</th>
<th>Content analysis</th>
<th>General analytical approach</th>
<th>Design Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>Players</td>
<td>1</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Believable NPCs</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>6</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td>(X)</td>
</tr>
</tbody>
</table>

20.2 Connections between articles

Article 1 explores the rules and the presence of norms in one guild playing World of Warcraft to get an understanding of the means of control and coordination in guilds. This article answers the question of how the group is coordinated and kept together; it also answers questions relating to the structure of the group in terms of cohesion and hierarchies within the group.

Article 2 is a continuation of article 1, and further explores the presence of rules in guilds and clans, offering a comparison between these two types of groups. The article answers questions about the meaning of rules, how they
relate to the concepts of rules from a games research perspective and more classical interpretations. Articles 1 and 2 in combination describe the presence of rules and norms in a way that makes it clear that online interaction is directed by rules dictating what is permissible and norms that communicate an ‘oughtness’ to act, and the mechanisms that may influence players from abstaining from sanctioning other players transgressing the rules of the group. These mechanisms can be seen as a necessity for believability in NPCs, acting according to context, norms and the presence of rules.

Article 3 is a continuation of articles 1 and 2 with a focus on groups without the stability and lifespan of guilds and clans. This article looks at the cost of interpersonal relationships between players in PUGs, and the absence of functional sanctioning systems, and to some degree the effects on the interaction of this kind of group.

Article 4 conceptualizes the model social agent, an agent that is a combination of traits enabling the agent to display more believable behaviour. The MSGA further addresses issues such as display of emotions, social behaviour between agents, dynamic responses to changes in the environment and decision-making, both individually and influenced by other agents socially. The MSGA is an ambitious project displaying systemic representation of behaviours that are usually scripted. The conceptual model went through two separate evaluation processes; the first evaluation took place during conferences where the input from the audience and the reviewers was part of the development of the model, and the second in the interview study in article 5.

Article 5 served as an external evaluation of the MSGA introduced in article 4, and also served as a way to establish an understanding of the most common current techniques for creating NPCs. This article also addresses issues such as game developers’ views on systemic versus scripted games AI, how complex games AI relates to the black hole of AI and which aspects of the MSGA are most promising and which should be avoided from a game developer’s perspective. Further, this article incidentally includes some interesting attitudes of academia and the industry.

Article 6 was written as a comment on article 4 and Carley and Newell’s social fractionation matrix served as inspiration (1994). Article 4
conceptualized a model social agent based on the matrix and the same matrix was used for evaluating NPC behaviour in 12 games in article 6.

20.3 Players section

1 Demystifying guilds: MMORPG-playing and norms (Verhagen and Johansson, 2009)

This article has a focus on groups of players in guilds and heavily depends on the contributions of Baron et al. (2006), and Svedberg (2003). The data collection was performed during participant observations both as a gamer and as a passive member of one guild.

2 ‘If you obey all the rules, you miss all the fun’ a study on the rules of guilds and clans (Johansson, in press)

This article used a convenience sample from an internet search as its input, with keywords such as ‘guild’, ‘clan’ and ‘rules’. The result was a long list of guilds and clans that have an online rule collection, dictating what kind of rules their members are supposed to abide by.

The main method used for this article was the above-mentioned convenience sample and the data were structured by what can be called an alternative method of content analysis. Since there are many theories on groups and social behaviour, two main sources of information were used to inform the clustering of data in the content analysis: social psychology (Baron et al., 2006) and group psychology (Svedberg, 2003).

3 Social Play? A study of social interaction in temporary group formation (PUG) in World of Warcraft (Eklund, L. Johansson, M)

The data collection of this article was performed through participant observation during game sessions in PUGs in World of Warcraft. During a two-week period, 24 random dungeons evenly distributed over weekdays and weekends were observed and recorded.
20.4 Believable NPCs Section

4 Model of social believable NPCs for teacher training using second life (Johansson et al., 2011)

This article is an introduction to the model social game agent that served as the foundation for the interviews in article 5. It deals with an alternative strategy for creating believable NPCs using the mind module (Eladhari, 2010) that builds on theories on the five-factor model (Catell, 1945), sometimes referred to as the Big Five. The mind module in combination with the Consumat (Jager, 2000) is used to create an NPC that in a sense can cooperate with other NPCs; it has novel ways of decision-making, where the level of certainty is of importance for the NPC and also can exhibit emotions and evaluate sentiments thanks to the mind module. The methods used in this article are focused around the general analytical approach and the premise of the usability of the MSGA that was tested in article 5.

5 Complexity at the cost of control in game design? (Johansson et al., 2012)

This is article is based on the conceptual model in article 4 and describes how the conceptual model of the MSGA was used to start a discussion with game developers. The main idea of this article was to measure the attitudes towards more dynamic approaches for content development in games and in this particular sense the behavioural aspects of NPCs. The methods used were interviews and questionnaires addressing the themes of the conceptual model introduced in article 4 (questionnaires) and the actual model as a topic for talk during interviews focused at targeting certain states of affairs in games development.

6 Analyzing AI in NPCs – An analysis of twelve games (Johansson et al., in press)

This article is based on the social fractionation matrix (Carley and Newell, 1994) and utilizes the matrix differently from article 4. Whereas the matrix created a conceptual model of a dynamic and believable character in article 4, article 6 employed a different approach, using the matrix to evaluate existing NPCs in 12 games, and further evaluated the suitability of the social fractionation matrix for evaluating games AI.
20.5 Section summary

This section has introduced the articles of this thesis in terms of the methods used for each of them, and has also described how they relate to each other and the major questions asked. It has also served as a further exploration of the two main themes: players and believable NPCs.
Players, articles 1-3
Demystifying guilds: MMORPG-playing and norms

Digra 2009 (published)

Harko Verhagen           Magnus Johansson
Department of Computer and Systems Sciences
Stockholm University Forum 100, 164 40 Kista, SWEDEN
verhagen@dsv.su.se        magnus@dsv.su.se

ABSTRACT

One of the most influential gaming trends today, Massively Multi Online Role Playing Games (MMORPG), poses new questions about the interaction between the players in the game. Previous work has introduced concepts such as community, commons, and social dilemma to analyze situations where individual choices may result in sub-optimal global results. We propose to use the concept of norms instead.

Modelling the players and groups of players in these games as normative systems with the possibility to create norms and sanction norm violations, we can analyze the different kind of norms that may deal with the trade-off between individuals, groups, and society at large.

We argue that our model adds complexity where we find earlier concepts lacking some descriptive or overstretching when trying to analyze the balance between individual players and the game playing society.

Author Keywords

Clans, guilds, norms, cooperation
Introduction

Both computer games and console games are starting to focus on the opportunities that online game playing can provide for the gaming experience. Games such as World of Warcraft (WoW) can have as many as thousands of active players in one of their gaming servers at the same time. Much of the “Massively multiple online role playing games” (MMORPG) genre seems to be all about co-operation and playing together and this in turn makes MMORPG an interesting phenomenon to investigate. In WoW there are many opportunities to engage in different social formations of different sizes with one of the most common ones being the wish to join a guild. A guild is a group of players that decides to play together for a period of time exceeding the length of one playing session. It is also possible to form smaller groups with short term goals.

After exploring the game world of WoW it is obvious that these games have rules, codes of conduct, do’s and don’ts that are either explicit or implicit. We may even want to call them norms and these norms seem to be part of the very fabric of the interaction in this game genre. It is important to get an understanding for the differences between where a designer actually could influence the norms and where the norms are beyond the control of the designer and perhaps constantly evolving. If we take a close look at different aspects of most MMORPG it will be apparent that some parts of the game will live a life of its own, where local norms will appear through the interaction between players.

In this article start describing current frameworks of analysis of social processes in online MMORPG. Following this we will introduce the view on norms as it has developed in the social sciences, mainly sociology. Then we will propose an extension to the normative framework developed in [2] and apply this framework to situations in WoW. Finally we will describe some related research before we finish with conclusions and proposals for future research.

Multiplayer games, common goods and social dilemmas

In [8], Smith tries to balance the picture of games being built upon conflict with cooperation as a second central issue. The issue of “local norms”
addressed by the author in previous work ([7]) is thus extended. However instead of using the framework of norms to its full extent, [8] turns to the concepts of “collective action” and “tragedy of the commons” to analyze cooperation issues. We first give a summary of Smith [8] and Pargman and Ericsson [6] before we turn to our alternative solution.

The problem of collective action (and its closely related variety of the “free rider” problem) in essence expresses that individuals may get benefits from the collective of which they are part without contributing to it. One way to analyze this problem (used originally in economics and political science) is the idea of “commons”. Here the problem is not that individuals get benefits but rather that individuals, following their own preferences, do not always produce well-being for all (as Adam Smith would have wanted it in his concept of the invisible hand). Consuming of finite resources or any form is the prime area of this concept. Abstaining from consuming a resource so that global well-being is not in danger is the driving force behind this concept. The more general form of the tragedy of the commons is “social dilemmas” (which [8] does not want to distinguish from collective action) Collective action and commons are in fact related to two very different situations, namely either a situation where individuals profit without contributing or situations where individual should abstain from using a shared resource in the light of other individuals’ needs.

In [7], Smith deepens the analysis of multiplayer games using social dilemmas, more specifically he focuses on the gaming situation (including player characteristics and the cultural context in the analysis) rather than the game as a rule system (where the definition of wins and losses is at stake). The game rules themselves create opposing parties that are competing whereas the gaming situation itself usually implies compliance with game external “rules” such as not using out of the game moves to win in the game (e.g., kicking your opponent in a car race in real life is not ok, bumping into him in the game is ok).

Further expanding this, [8] takes three types of conflicts in multiplayer games and analyses each of these from a social dilemma point of view. These three are “cheating”, “grief play” and “irresponsible participation”.

In terms of the analysis, the common good at stake is by [8] seen as “even chances on the battlefield” (comparable to the arguments against using certain substances in sports) and the social dilemma is “the temptation to
One interesting aspect of cheating is that various sorts of cheating involve knowledge about “the intent of the game”. An example of counter actions mentioned in the cheating case is players proposing to have a forum to display cheaters (so they use face and also prevent others from cheating) and to only play other players that one can trust (based on previous experience or because they are part of a trusted group).

Grief play is the breaking of an implicit community rule, usually followed by sanctioning. Moreover, it is done intentionally and usually does not imply any gain by the player exhibiting grief play. Here the collective good is “an enjoyable game environment” and the social dilemma is “the temptation not to make the effort needed to maintain the value of the game”. The third category is irresponsible participation. Even this is related to breaking the implicit rules of the game to make the game entertaining and pleasant for all involved. Again, the collective goods the enjoyable gaming environment and the social dilemma is “the temptation to put personal gratification (or other selfishness) over the interests of other players”.

Summarizing, one can see that in all three cases the collective good at stake is an enjoyable game environment for all players (this being the implicit goal of game play) and the social dilemma is the temptation to either break this implicit goal or to abstain from forcing others to comply with the implicit goal. Solutions proposed in general include:

1. A neutral body for surveillance and punishing
2. Privatization of the commons
3. Use of strategies to regulate the use of the commons such as developed by Ostrom [4], including communities with a degree of permanence, the ability to monitor others and a prolonged interaction.

In [8], Smith gives examples of similar solutions in the area of game play. An example of measure one would be the tool PunkBuster, a tool that for a number of games automatically can detect cheating. Another solution mentioned is to make certain behaviour impossible (this is for natural reasons impossible in the real world and thus not part of the list above). The ability to see other peoples’ actions via (built-in) tools is unfortunately combined by [8] in this solution, where it should an item on its own in parallel with measure three mentioned above. In-game communication and out-of-game forums are other ways to deal with this. Other aspects of measure three addressing the community aspect as such can be seen as
equivalent to the existence of clans or guilds in games, an analysis proposed in e.g. [5]. The absence of trust systems (such as the ones used in e.g. EBay or Slashdot.org) in gaming communities is signalled by [8] and he offers some suggestions on how this could be implemented. It would amount to a system for monitoring game behaviour as such.

With respect to measure two [8] does not give an example and in fact it is hard to imagine one. What would it mean in the case of multiplayer games, how can one privatize an enjoyable game environment? Maybe this is the essence of our critique. The commons defined cannot be protected in (all) the ways commons are protected in real life, so the question is, is the concept of commons helping or hindering game research? This issue is all the more prominent since the other two solutions offered by the commons analysis are also part of other conceptual frameworks.

The approach chosen in [6] has some resemblance to [8] even if [6] is not mentioned in [8]. Analyzing behaviour in Everquest, the authors describe a set of “unsuitable” behaviours. These include kill-stealing (breaking official rules of conduct), trains (not warning other players you are endangering them while you yourself are trying to get to a safe spot), camping (not recognizing or acknowledging that others have “the first shot”), twinking and power-levelling (shortcuts to higher levels), automatic play (a shortcut involving coding), and virtual commerce (officially not allowed by game manufacturers). If we disregard misunderstandings and not knowing the local rules, all situations can be seen as social dilemmas (according to the authors). To give the aspect of collective rationality more perspective, the sociological theory of Granovetter [3] about weak and strong ties is translated into 3 different levels of collectivity:

1. micro-public (small groups with strong ties),
2. meso-public (relatively small groups with semi-strong ties) and,
3. macro-public (large groups of loosely connected individuals bound by weak or no ties).

Unfortunately the paper does not explore the proposed framework in any depth.
Norms as a framework to analyze MMORPG social aspects

In sociology, norms are seen as one way to explain why prisoner dilemma type of problems are solved in ways that are contrary to the analytical solutions proposed by game theory. Game theory (and prisoner’s dilemma as the prime example of a game theoretical analysis of a social dilemma) builds upon rational individuals choosing according to their own preferences including the norms at stake within the decision situation. Other norms may exist that are outside of the direct situation at hand such as: “it pays off to be a nice guy in the long run” which makes ‘real’ humans choose in ways different from the theoretical rational actors. We will describe some definitions and typologies of norms, then apply these on some the MMORPG behaviours mentioned above and finally map the analysis of [8] and [6] on our analytical framework.

The definition of norms in the social sciences

Within the social sciences and more particularly in sociology and social philosophy norms are discussed and defined in different ways. We present some of the definitions common on the social sciences and conclude with the framework we will use.

In [2] a typology of norms concerning the regulation of behaviour and acts is described encompassing conventions, morals, mores, rules and laws as depicted in appendix 1. These various social mechanisms are structured using the following dichotomies:

• Probability that a sanction will be issued (yes – no)

• Characteristics of the individual issuing a sanction (special status or no special status)

• Evaluation of an act (collective or not)

• Expectation concerning the act (collective or not)

While [2] focuses on social norms, others have build theories and frameworks addressing other types of norms. Tuomela [11] distinguishes two kinds of social norms (meaning community norms), namely, rules (r-norms) and proper social norms (s-norms). Rules are norms created by an
authority structure and always based on agreement making. Rules can be formal, in which case they are connected to formal sanctions, or informal, where the sanctions are also informal. Proper social norms are based on mutual belief and consist of conventions, which apply to a large group such as a whole society or socioeconomic class, and group-specific norms. The sanctions connected to proper social norms are social sanctions and may include punishment by others and expelling from the group.

Therborn [10] distinguishes three kinds of norms. Constitutive norms define a system of action and an agent's membership in it; regulative norms describe the expected contributions to the social system, and distributive norms defining how rewards, costs, and risks are allocated within a social system. Furthermore, he distinguishes between non-institutionalized normative order, made up by personal and moral norms in day-to-day social traffic, and institutions, an example of a social system defined as a closed system of norms. Institutional normative action is equalled with role-plays, i.e., roles find their expressions in expectations, obligations, and rights vis-à-vis the role holder's behaviour.

In [1] a whole range of social mechanisms are described. Among them is the concept of social norms. A social norm is defined as an injunction to act or abstain from acting. The working mechanism is the use of informal sanctions aimed at norm violators. Sanctions may affect the material situation of the violator via direct punishment or social ostracism. An open question is the costs of sanctioning. Apart from social norms, [1] describes moral norms (that are unconditional) and quasi-moral norms (like social norms these are conditional but triggered by being able to observe what others are doing instead of by being observed by other people as is the case for social norms). Other connected concepts are legal norms (where special agents enforce the norms) and conventions that are independent of external agent action. In [1] some examples of norms are discussed in detail such as: norms about etiquette, norms as codes of honour, and norms about the use of money.

Combining these frameworks results in the following: [10]'s regulative norms encompass all of [2]'s categories whereas [10]'s constitutive and distributive norms are outside of [2]'s scope. [11]'s r-norms describe situations of collective evaluation with certain individuals in charge of sanctioning. The s-norms also coincide with collective evaluation but here any individual can issue sanctions.
In the remainder of this paper we will use the following notion of norms:

“Norms are statements about the appropriateness of an individual’s act which may result in a sanction being issued by another individual or an individual belonging to a specific class of individuals.”

**Norms in MMORPG**

We propose to use the revised framework presented above to understand the dynamics of the most common norms and norm violations in MMORPG.

In MMORPG severe violations are usually punished by ostracisation of the norm violators or the loss of points in a value system where a player can earn points for assisting the guild in raids (measured in DKP\(^3\)). It may be difficult to differentiate between what social behaviour is acceptable and what is not.

Some players exhibit behaviour that violates norms in ways that could be described as cheating or grief play. Some of these examples are so common that most guilds have structured their rules to cover these issues as well. [7] Mentions three different categories of behaviours that might infringe on the gaming experience of others. These are even part of the above analysis by in [8]. The three categories are cheating, local norm violation and grief play.

**Cheating**

Cheating is difficult to prove. The risk of sanctions being made against a violator depends on the severity of the violation. If the violation is very severe there usually is a “High probability that an attempt will be made to apply a sanction when the act occurs” (from [2] corresponding to [11]’s s-norms).

\(^3\) An abbreviation for dragon killing points, originally taken from Everquest
Local norm violation

Local norm violations have a different level of implications for other players and the players are usually sanctioned if the violation appears repeatedly. These violations have a “High probability that an attempt will be made to apply a sanction when the act occurs” from [2] but we have to keep in mind that minor violations might be ignored. These actions could potentially be sanctioned by anyone in the group, but the most probable solution in the case of a raid group would be that the raid leader would solve the problem without the use of force. The severest forms of violations may be punished with ostracism.

Grief play

Examples of grief play are; unprovoked harassment through game chat channels, repeatedly killing a player as soon as the character comes back to life, and behaviour not related to the winning condition of the game. Grief play in its different forms is behaviour that infringes the higher level norms of the realm and can be difficult to sanction. The penalty for someone engaging in this kind of activity should perhaps be ostracisation, but since the players are from different factions, it is difficult to make any sanctions from the victim’s side. Grief play would therefore fit the description of “Low probability that an attempt will be made to apply a sanction when the act occurs” from [2].

All examples above are examples of social norms, since norm violations are punished with sanctions and are thus in accordance with e.g., [1] and our definition of norms. In the case of the last example this can be hard to prove however. The typology taken from [2] gives a better understanding at least when it comes to the probability of a sanction to occur, but it is very difficult to judge from case to case, since all these violations have different severity and impact on other players. Thus it seems that the framework from [2] and consequently also our revised framework may need to be extended to produce a more fine grained categorization.

Norms regulating the distribution of resources

Not surprisingly, resources such as money (or the equivalent such as DKP) and valuable equipment may lead to conflicts in MMORPG. There are multiple ways of breaching norms for how to distribute resources between all members of a guild. Some of the most common examples where
discussions about resources occur are the following situations; begging, ninja looting, and twinking.

**Begging**

Begging is usually other gamers in game asking for money, and this can in fact be disturbing behaviour that many guilds have strict rules against. Most beggars are being ostracised or ignored, since it is hard to make other sanctions against them. Beggars will eventually earn a bad reputation since gamers will gossip about this unwanted behaviour. It may be argued that this is addressed by [10]’s distributive norms.

**Ninja looting**

Ninja looting is another form of misconduct that most guilds have rules against. When a gamer steals the loot from another gamer under certain conditions when playing as a group this is defined as ninja looting.

Both begging and ninja looting have a “High probability that an attempt will be made to apply a sanction when the act occurs”, ostracism is the most probable action taken, but other actions may occur. The probability of sanctions including force is not very probable. Ninja looting can also be seen as a breach against [10]’s distributive norms thus placing it outside the set of regulative norms.

**Twinking**

When a high level gamer decides to help a low level character with money to buy better equipment or helping the low level gamer killing creatures above his/her skill level this is labelled as twinning.

The last example is actually not a serious norm violation and most gamers do not care about it and thus it would fit in the first category of [2]’s typology where no sanction would appear. It would also fit in under [10]’s distributive norms.

**Norms regulating the use of tools**

Most MMORPG today are highly complex and sometimes a player can find that it is hard to keep track of the situation in game. Most games with a certain degree of complexity will eventually be subject to “add-ons”, where
someone develops tools to highlight information in the game or perhaps give certain advantages for a player with the add-on installed.

Add-ons range from small “cheating” applications in games such as “Counter strike” where “auto aiming” and the possibility to see through walls were used by some players. In WoW the most common add-ons are used for co-ordinating raid groups and displaying statistics for all characters in an instance (both players and Mob). This gives all players in the group an advantage that is not considered unfair, since most players use this kind of tools. But what is interesting is where to draw the line of what is considered enhancing the game and what is considered cheating. Norms are usually subject to constant change and there are interesting stories where new forms of norms are being created.

Taylor [9] describes the use of a tool called CTRaidAssist during a raid. This tool monitors many statistics of the characters of a raid group and in this example someone in the group came a bit to close to a mob (a non-player character or NPC) and therefore the entire group was being attacked by the mob and nearly killed. The raid leader (using CTRaidAssist) could see that the amount of aggression (a measurement of how close or threatening a character is to a mob) had increased, which had triggered the attack. The interesting part about this story is that the raid leader told everyone in the raid group that if someone would do the same thing again, this would result in penalties. This shows that tools can be used to monitor the players’ behaviour and thus enable the possibility of sanction behaviour that previously could not be sanctioned. This involves a move from one category in the framework proposed in [2] to another. Without the tool there is no or a very low probability of a sanction since the action cannot be detected. The tool enables a special person (in this case the raid leader) to issue a sanction. The message send by the leader leads to a collective expectation that players will refrain from this action and it is only the leader that can evaluate so there is no collective evaluation. So, introducing the tool moves the raid group from the logical null-class (non-normative situation) in [2]’s typology to the situation labelled as “exogenous rules” (type N) even if the rules and sanctioning agent are mutually agreed upon in and part of the group.
Different levels of organisation where norms appear in MMORPG

WoW can be described at different organisational levels and as different types of norm systems, ranging from a high level perspective (the different types of servers, usually called realms in the game) down to the lowest level focusing on players and small groups. What seem to be characteristic about the higher levels such as the different gaming realms and factions is that the norms are of a wider scope, and communicate the spirit of the game without much attention to detail. On the middle level (Guilds) there seems to be a stricter way of communicating, creating, and changing norms. It is apparent that a large group needs some form of organisation to work properly. On the lowest level (groups) there seems to be a mutual respect for the group and the norms are close to what could be considered common sense. The difference between the highest level and all levels below is that sanctions are more easily distributed on the lower levels, perhaps because they are agreed upon within a group with a finite number of players in a way similar to the proper social norms discussed by [11]. The use of “local norm violation” in [7] defined local as the server. In our view, both other levels also define “local”, thus extending the definition of local norms and local norm violation.

Game servers

The different types of game servers give rise to different sets of norms for the type of interaction that takes place on the server. Three different kinds of servers will be mentioned here, since they are the most common:

1. Normal servers (No special rules applied),
2. PvP servers (Player versus Player), and
3. RP servers (Role Playing Servers).

There are combinations of these types of servers, but they will not be discussed here since these combinations do not interfere with our analysis of the basic types.

For our purpose the most interesting types of servers are the fairly restricted RP servers where all players are to stay in character when playing. This means that the player has to play along and make decisions according to
what would be most likely for the character in the game. For instance, discussing game functionality or other meta-gaming issues is not allowed on these servers, since it would interfere with the overall gaming experience.

Normal servers are servers where no explicit rules are applied. This gives players a freedom from the strict rules of the RP servers which could possibly lead to a different kind of interaction. The special rules on the level of game servers are an example of the constitutive norms as described by [10].

**Factions**

All MMORPG have some kind of history and a world with resources that are being shared between its inhabitants in one way or the other. For the sake of making this history interesting a player belong to a faction. In WoW one is associated with either the Horde faction or the Alliance faction depending upon the race chosen during the character creation process. On all types of servers it would be fair to kill a character from the opposing faction. But there are specific norms on what is acceptable and what is not. For instance, a high level player who kills someone from the opposing faction who does not stand a chance of defending him/herself would be regarded as playing unfair, or even as a performing grief play, and may, if repeated, leads to a stressful disadvantage for the target.

**Groups (Guilds and small groups)**

Groups in WoW may lead to observable behaviour and sometimes conflicts. Guilds usually have a forum page where all issues concerning in game tactics are being discussed. Rules are usually available in the forum pages of guilds, to inform all players of the norms that all players should stick to.

**Large groups/Guilds**

Guilds are large group of players that play together often aiming at co-operating in so called raid groups. A raid group consists of as many as 25 players co-operating to overcome Non player characters (NPC) in special instances of the game.

**Small groups**

Small groups can consist of 2 or more players co-operating on small missions in game, called quests. In WoW, it’s sometimes apparent that the
quests are too hard for a single player and that joining a group is the only solution to solve the quest.

Norms and sanctions in a WoW guild

In the following sections we present the findings of studying high-level WoW guild (guild X in the remainder of the text).

Norms on the use of skills

In one guild X, part of the decision on who is allowed to become a member or not is based on how skillful the player is. The guild has a trial period that all applicants have to pass to become members of the guild. One of the main reasons is that players sometimes buy a high-level character and cannot play the character using all the skills and abilities in a way that is beneficial for the group. Skills are very important when playing and players that lack the skill will in this case be excluded from the guild. The gamers applying for membership in the guild must fill in a form where they account for their experience of raid instances, which guilds they have been members of and what level of commitment they can offer. All of the questions are there to clarify that to be a member of this group, you should be able to join a raid at least three times a week, and that the members that are most fit for the task ahead, will be the ones to join the raid group. This is also a safeguard to make sure that the applicants really have the right level of skills to become members of the guild.

This is a local norm on guild-level. Sanction: being left out of the raid-group if not fit for the task.

Norms on preparation

Neglecting to prepare before a raid is a local norm violation (guild-level), preparation meaning: to be equipped with the right gear (different weapons and armors have different attributes) and can make a big difference depending on which instance the raid-group will raid. Other types of preparation typically mean bringing ingredients and healing potions that are needed to survive a raid.

Sanction: Loss of DKP, if repeated being kicked from the raid group (explanation: not being fit for the task).
Norms on guild composition

Shared values are something that also could be transformed into a set of norms for the members of a guild. Initially some common ideas about how the guild ought to play is transformed into a set of rules. In the case of guild X participation, high ambition, and commitment where all part of the value that the guild was a hard working guild with talent and ambition. When summer came the guild was split in two factions where the hardcore gamers on the one side accused the other side of abandoning the values of the guild because they did not show up for raids, probably due to a really nice and warm summer. Eventually the guild was split in two, the hardcore gamers left the guild to create a new guild with the same core ideas about the guild being hardworking and ambitious, so in a way the sanction here is not ostracizing the less ambitious part of the group as much as abandoning what the hardcore gamers considered being a sinking ship.

Local norm violation (guild-level), sanction: ostracizing a whole group of players

Norms concerning raiding and attendance

When it comes to guild X, all members reside in Europe and the rules of the guild state at what time every player that is part of a raid group should be online. Raids were usually performed three times a week, and each joining player should be online at 18:30. All raids started at 19:00 and stopped at 00:00. This planning made it easy for the class leaders and raid leaders to pick the members that will be part of the raid group. If someone could not join the raid group the player had to report this to his class leader or the raid leader 24 hours ahead of time so that someone else can get that spot. Ultimately failing to do so would be regarded as negligence and could lead to DKP-penalties and being excluded from the guild if it happened repeatedly.

The members get DKP for being in the raid group; even players that are requested to act as a backup for the players in the raid group are awarded DKP. The rules also state when someone might lose DKP mostly because of misconduct or disrespect towards the guild and guild members.

---

4 Backup players are logged in to the world and can fill the gap if someone has to leave the party.
Local norm violation (guild-level), sanction DKP-penalties or being excluded from the guild if it happens repeatedly.

Norms concerning raiding and communication

Another norm of guild X is that the different channels of communication should be kept “open” during raids. If someone is talking over the ventrillo-channel about issues not related to the raid this ultimately leads to DKP penalties. Clogging the chat channel did not seem to violate the norms as much and did not lead to penalties as often as violating the rule against talking gibberish over the ventrillo channel.

Local norm violation (guild-level), sanction: DKP-penalties, ultimately being kicked from the raid-group.

General code of conduct

All communities need responsible members and in the case of a guild, commitment and responsibility comes in different kinds. Perhaps the most important aspect is the social one, meaning that a member of a guild should show a level of commitment towards the guild’s cause and act responsibly. Another issue is raised when talking about the “in-game” consequences of this criterion. There are many rules that imply that as a member of guild X you should act responsibly and show all guild members an appropriate level of respect. Looking at the forum of guild X it is evident that many players have a deep commitment towards the guild and that they try to help each other out when someone encounters a problem. Guild X has a hierarchical structure, with a Guild Master (GM) as their leader. Each class has a class leader and there are raid leaders in charge of the raiding groups. Both class leaders and raid leaders have the rank of “officer”. But the rules of the guild, state that all decisions are to be taken with “mutual respect” for all, and that the officers have no formal power besides performing the tasks they are in charge of. The game itself has mechanisms for promoting characters in game within the guild as well as for degrading characters, and you have to have the officer rank to be able to invite new members to the guild. This means that in a way there is a general idea that players in a guild should have some kind of differentiation when it comes to status. An officer can be degraded for not acting responsible and on the other hand a player can be promoted for being valuable for the raid-group.
Local norm violation (guild-level), sanction: being ostracized, being degraded (stripped of ranks if officer), reward: being promoted.

**Whining about rules**

The rules and norms are something that all members are in contact with. Guild X states that the rules are open to change after a discussion that proves to be useful for the guild, but that whining about trivial issues will not result in any changes. This is actually one of the norms that is most easily identified in their forum, guild X does not encourage people to whine about things, since this seem to be one of the reasons behind the split with the old guild. Whining may even result in the loss of DKP, if it is done for no good reason.

Local norm violation (guild-level), sanction: DKP-penalties

This far we have identified 6 different sanctions:

- Different levels of ostracism, towards a single player
- DKP-penalties
- Exclusion from a raid-group.
- Degradation: when an officer or player with a higher rank than “private” or regular player looses his/her rank(s)
- Exclusion: being excluded from the guild
- Guild split: ostracism against a group of players

**Fitting in Smith and Pargman & Ericsson**

We suggest the following; in the table proposed by [2] (see appendix 1) we can add the analysis based on ideas of a commons problem or social dilemmas in the following way:

- Smith’s solution 1 equals the situation where a specific person or group is endowed with the power to sanction. Smith’s solution 2 was already by the author proposed to be impossible to copy to the world of MMORPG. Smith’s solution 3 has several components. The community component is expressed in the whole framework of norms. Even the longevity of the interaction is part of the concept of norms. The monitoring of behaviour is equal to the category “high probability a sanction will occur”. The proposal about a trust system in [8] (or the example of PunkBuster in the same article) is in our mind equal with the
introduction of a monitoring system and thus part of solution 3.

- Pargman & Ericsson micro-public is the community with close ties to speak with [3]. This is equal to the situation with collective expectations and collective evaluations. Pargman & Ericsson meso-public is a situation that is equal to a situation with collective evaluations but no collective expectations. Pargman & Ericsson macro-public is the weak ties situation of [3]. This is equal to the situation where there is no collective evaluation.

Since our solution encompasses the useful suggestions from previous work while eliminating the less useful ones we believe it lives up to the general advice of the guide lines of Occam’s razor.

Conclusions and discussion

We have introduced the reader to an extended version of the norm categorisation scheme developed [2]. In our examples we have shown that this framework enhances our understanding of human MMORPG gamer behaviour. We propose that the extended framework should be developed further to a finer grained categorisation to deal with the (close to) real world phenomena encountered in MMORPG. Analyzing behaviour in and between guilds on a RP server is another future research topic.

REFERENCES

## Appendix 1: Norm Typology as Proposed in [2]

<table>
<thead>
<tr>
<th>Type</th>
<th>Evaluation of the act</th>
<th>Expectation concerning the act</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type A: Collective conventions</td>
<td>Collective evaluation</td>
<td>Collective expectation</td>
</tr>
<tr>
<td>Type B: Problematic conventions</td>
<td>Collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type C: Customs</td>
<td>No collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type D: Collective morals</td>
<td>Collective evaluation</td>
<td>Collective expectation</td>
</tr>
<tr>
<td>Type E: Problematic morals</td>
<td>Collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type F: Empty class</td>
<td>No collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type G: Collective rules</td>
<td>Collective evaluation</td>
<td>Collective expectation</td>
</tr>
<tr>
<td>Type H: Problematic rules</td>
<td>Collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type I: Empty rules</td>
<td>No collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type J: Exogenous rules</td>
<td>Collective evaluation</td>
<td>Collective expectation</td>
</tr>
<tr>
<td>Type K: Problematic laws</td>
<td>Collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type L: Empty laws</td>
<td>No collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type M: Collective laws</td>
<td>Collective evaluation</td>
<td>Collective expectation</td>
</tr>
<tr>
<td>Type N: Problematic laws</td>
<td>Collective evaluation</td>
<td>No collective expectation</td>
</tr>
<tr>
<td>Type O: Empty class</td>
<td>No collective evaluation</td>
<td>Non-normative</td>
</tr>
<tr>
<td>Event/Consequence</td>
<td>Collective Expectation</td>
<td>Collective Rules</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>No collective evaluation</td>
<td>Logical null class, i.e., non-normative</td>
<td>Empty class</td>
</tr>
</tbody>
</table>
| Grief play | Cheating, and local norm violation | Cheating, and local norm violation | Cheating, and local norm violation | }

**MMORPG behaviour**

Smith [8] and Pargman and Ericsson [6]

- **Evaluation of the act**
  - Expectation concerning the act
  - By means that exclude the use of force
  - By means that may include the use of force

- **Collective evaluation**
  - Collective rules
  - Collective laws
  - Problematic rules
  - Problematic laws

- **Conventions**
  - Small group and guild interaction,
  - Cheating,
  - Local norm violation

- **Collective expectations**
  - Problematic morals
  - Problematic mores

- **No collective expectation**
  - Logical null class, i.e., non-normative

- **Low probability of a possible sanction when the act occurs**
  - When the act occurs
  - Low probability of a possible sanction when the act occurs

- **High probability of a possible sanction when the act occurs**
  - When the act occurs
  - High probability of a possible sanction when the act occurs

- **Exogenous rules**
  - Coercive rules
  - Coercive laws
‘If you obey all the rules, you miss all the fun’ – a study on the rules of guilds and clans in online games

Journal of gaming & virtual worlds (in press 2013)

Magnus Johansson, Stockholm University

ABSTRACT

How groups create and sustain internal social order is a general topic of interest, to researchers in game studies. In game studies, most research has looked at social order processes during game play, while little attention has been directed at groups of players such as guilds in Massively Multiplayer Online Games (MMOGS) or clans in First Person Shooters (FPS) in between game sessions. Groups are not dissolved between gaming sessions, nor are all rules implicit. This article explores the way groups of players create and sustain order within their groups between games as well as by using explicit norm declarations.

Starting from the most common descriptions of rules in social and behavioural science literature this article analyzes the public announcements in group forums of the rules 20 guilds and 10 clans playing either MMOGs or FPS games have published. Not surprisingly, both genre and player motivation play a large role in the selection and creation of rules for guilds and clans. One of the most common types of behaviour addressed in the guild/clan rules, ‘griefing’, needs a more sophisticated analysis than used in previous game research. Finally a list of ‘game commandments’ that summarize the rule sets from both guilds and clans is presented. This article positions user-created rules as implicit rules made explicit and also indicates a need for a thorough investigation of how players make sense of their social sphere online.

Keywords Clans, Guilds, Rules, MMOGs, FPS, Online games
1. INTRODUCTION

Amongst the most prominent and classical definitions of games, rules are mentioned as a central part (Juul 2003; Suits 2005; Callois 2001; Huizinga 1938; Avedon and Sutton-Smith 1979). The reason might be that a fixed set of rules is one of the components that makes a game that particular game and not another game. However it is not that simple; according to Järvinen ‘[r]ules relate to different elements in a game, and once these elements are defined, we can begin to analyze and classify games through identifying the elements they have’ (Järvinen 2008: 47). In that sense games are not only manifested by their rules, but through relations between elements.

According to Juul (2003) there is an affinity between games and computers or video game consoles, and this affinity builds on the fact that the system, the console or the computer keeps track of the formal or ‘constitutive’ rules of play (Salen and Zimmerman, 2004) in ways more consistent than ever possible for a human player. That said, even though the system keeps track of these rules in digital games, there are possibilities for players to break them in different ways.

Recent game research shows an increased focus on other aspects than games and play. Perhaps the reason for titles such as Rules of Play (Salen and Zimmerman 2004), The Ethics of Computer Games (Sicart 2009), Cheating (Consalvo 2007), and The State of Play (Balkin and Noveck 2006) is that in everyday interaction there is room for some players to exhibit behaviour that disrupts the gaming experience for other players. In online games, ‘griefing’ and cheating have become aspects that are part of the everyday life for players (Lin and Sun 2004; Smith 2004; Taylor 2003; Dumitrica 2011), perhaps due to the players’ relative anonymity that these games provide (Curtis 1992).

This article presents an overview of rules that are created by groups of players in order to prevent/prohibit certain behaviours by their members in online games. Since most research presented above focuses on MMOGs such as World of Warcraft (WoW), this article also covers some FPS games where the goals of the individual player could be different from the goals of a ‘social’ player in a MMOG.

Both guilds (groupings in MMOGs with a long time span) and clans (groupings in FPS games) have to deal with problems and conflicts within
large groups that emerge both internally and externally. This article sets out to explore what actual rules randomly selected guilds and clans find important to have as a written codex of behaviour.

2. BACKGROUND

2.1 Rules in game studies

Among the previous work on rules and definitions in game studies (Juul 2003; Suits 2005; Callois 2001; Huizinga 1938; Avedon and Sutton-Smith 1979; Tavinor 2009), Salen and Zimmerman’s seminal work *Rules of Play* (2004) is an important contribution that addresses the issue of rules in computer games. In their definition rules are meaningful since they limit player action, are explicit and unambiguous, are shared by all players, fixed, binding, and repeatable. Furthermore, they distinguish rules on three levels:


2. Operational rules: Operational rules are the rules of play of a game, the rules that are most often written out. The Terms of Service (TOS) document can be considered as an example of operational rules in online worlds, and in some cases even the End User License Agreement (EULA).

3. Implicit rules: Implicit rules are the rules that communicate the ‘spirit of the game’ (Smith 2004). These rules deal with what is considered fair play and can be broken since there are limited or no possibilities in games to prevent breaking implicit rules.

Paradoxically, the last level does not qualify as rules in game play since it by definition has none of the characteristics these rules are supposed to have according to the same authors.

In the context of role-playing games, Montola (2009) discusses three types of rules as well, namely endogenous (rules of the game, defined by the game designer), exogenous (rules players take with them from outside the game into the game), and diegetic rules (rules existing within the fictional world of the game). One can see the last level as a second order of rules created by the players, the first order being the exogenous rules. The endogenous rules can
be interpreted as the constitutive and operational rules as defined by Salen and Zimmerman (2004).

The following sections introduce other theories on rules from philosophy and social science in order to create a basic understanding of the meaning of user created rules. Furthermore, theories from group psychology and social psychology are described to position the need for rules in a more general context.

2.2 Rules in philosophy and social science

In philosophy, rules have a long history that is not touched upon in the above-mentioned works on game studies as seen in Salen and Zimmerman (2004). In particular, the linguistic turn of philosophy in the previous century, where Wittgenstein (1953) described for example language games, has focused on rules to explain human behaviour. Since the early 1970s the theories of Searle (1969) have been central in discussions on rules and have influenced researchers in numerous areas of the social sciences ranging from sociology (Giddens, 1984) to cognitive psychology (Winograd and Flores 1986).

Interestingly, of the two types of rules Searle describes, the main one shares the name ‘constitutive’ rules with Salen and Zimmerman’s (2004). Indeed, many of the examples Searle uses are from the world of games and sports. In Searle’s view, the specific issue of constitutive rules is that they produce ‘institutional facts’; that is, they define meaning. The other category is regulative rules that define what is allowed and disallowed. Searle’s constitutive rules differ from Salen and Zimmerman’s constitutive rules in that they do not limit the players (as game rules do by Salen and Zimmerman’s definition) but actually give them possibilities by creating meaning. The same goes for regulative rules that express what is allowed rather than only what is disallowed.

In sociology and related social sciences such as criminology, rules are closely connected to norms. Indeed, in the norm typology presented by Verhagen and Johansson (2009) rules form one of the norm types. However, since there are different types of laws, the ontological status of laws differs clearly from that of rules, in that they are (often) issued by a special organ and any law breaking is to be punished following strict procedures and by special persons. In Salen and Zimmerman (2004) no such ontological
distinctions are made, but the disciplinary basis for their three levels of rules unfortunately remains unclear.

2.3 Theories on groups

Group and social psychology have much to offer on defining groups and group-related rules. According to Svedberg (2003) a group is formalized through the following three criteria:

The group has a central, shared goal.

The group is formalized through institutional arrangements (rules and policies).

The group is defined through the exclusion of non-members.

A closer examination of these criteria indicates that a group needs a central and shared goal to coordinate the cooperation and direction of the group. Furthermore the group is formalized through institutional arrangements (rules and policies) either explicitly or implicitly. The group becomes a group when there are rules to which all members comply, and these rules apply to all of the group’s members. This maps onto some of the principles of Salen and Zimmerman (2004) but is restricted to members of the group rather than to all players. The rules keep the group together and offer information about what is socially accepted in the group.

Lastly, the group is differentiated by the exclusion of every person that is a non-member of the group (Svedberg 2003). This criterion is important because it has much in common with the cohesiveness criterion from social psychology presented below. To be part of a group must be beneficial for the individual.

In social psychology, Baron and Byrne (2006) provide the following four criteria to describe the formalization of groups:

1. Roles: All members of a group usually have a certain role. This role is sometimes automatically assigned to a person but sometimes individuals acquire certain roles without being formally assigned to that role. The role is a set of behaviours the person holding the position connected to the role is expected to exhibit in the presence of the group.
2. Status: Status is an important aspect of groups. Most groups have hierarchies and different roles are granted different statuses. Status is often used as a means to make members follow the rules. A ‘good’ member is granted higher status and can earn higher rank through behaviour that is both beneficial for the individual and the individuals higher up in the hierarchy.

3. Norms: The rules of the game could be considered to contain both the norms and rules of the group. Norms are powerful means of control, and following the rules or acknowledging them might help the individual earn higher status within the group.

4. Cohesiveness: Cohesiveness is used to describe the forces that keep the group together, the glue or the cement of the group, and is a measure of how important it is for members to belong to a certain group.

2.4 Social organization in MMOGs and FPS

Before looking at the rules created by different social groups playing games a brief description of the most common forms, namely guilds and clans, is needed. In both FPS games and MMOGs players like to organize themselves in groups. Grouping in guilds or clans is a way to team up with players that share the same preferences in the game or just like to play together. In MMOGs there are more possibilities to form different kinds of groups than in FPS games, where guilds can be seen as a large group with a longer life span than ‘pick-up groups’ that typically have a lifespan limited to solving a quest or a mission in the game. Typically FPS games are structured into matches where the players are part of a team for that particular match. When these players compete, they compete as a part of a clan on the same team against another team from another clan.

2.5 Example of behaviour used to take control in computer games: grief play

Game research and the gaming community have described ‘grief play’ as one of the most prominent behaviours that needs to be controlled using additional rules apart from the game play rules. In 'Designing Virtual Worlds' Bartle gives a definition of ‘griefers’ as [b]ullies prepared to use force or other unpleasantness to get their way or be noticed' (Bartle 2003: 167). One example of grief play is ‘Ganking’, where a high level player or a
group of high level players kills another player, sometimes repeatedly as a way to impose power over a less skilled or low level player.

The history of griefing seems to be as old as MMOGs and Multi User Dungeons (MUDs) as can be seen in the following statement about MUDs: ‘[T]he protective anonymity (of virtual worlds) also encourages some players to behave irresponsibly, rudely, or even obnoxiously’ (Curtis 1992 n.p.). New ways of describing grief play have emerged even though Bartle’s definition still holds. Foo and Koivisto give another, perhaps more precise, definition of grief play as

[play styles that disrupt another player’s gaming experience, usually with specific intention to. When the act is not specifically intended to disrupt and yet the actor is the sole beneficiary, it is greed play, a subtle form of grief play. (Foo and Koivisto 2004: 247)

Foo and Koivisto also suggest four categories of griefing that can serve as a way of structuring the data in this article:

Harassment: The act of harassing another player has the intention of causing emotional distress to the victim and may include verbal abuse, racial slurs etc. Other types of harassment are: ‘spatial intrusion’, ‘event disruption’, stalking and eavesdropping.

Power imposition: Being powerful or skilled is not considered griefing, but when put into action towards other players such as in the case of ‘player killing’ (killing other players on a server instead of attacking non-player characters), ‘ganking’ (a group of characters or one high level player attacking and killing a player below their own level), ‘corpse killing’ (waiting at the corpse of a killed player until that player revives their character) or harassment, it is.

Scamming: Fraudulent behaviour that includes ‘trade scamming’ (exploits made possible through badly designed trading systems), ‘promise breaking’ and identity deception.

Greed play: Greed play is a collective term for types of behaviour that are directed at winning the game in terms of following the operational rules but with no regard for the ‘spirit of the game’. Examples of greed play are ‘ninja looting’ (stealing loot that is not rightfully yours), ‘kill stealing’ (attacking a
non-player character that is already under attack to get experience points) and 'camping' (area monopolizing).

This article has a focus on rules created by groups of players, rules that have more in common with the regulative rules in Searle’s (1969) sense and the Implicit rules as defined by Salen and Zimmerman (2004) than the constitutive (or endogenous) rules, since these rules directly point out what is expected of every member of the group rather than dealing with the core mechanics of the game. Implicit rules that can be seen as the unwritten rules of the game or ‘[i]mplied rules of proper game behaviour’ (Salen and Zimmerman, p.130) have more in common with the use of norms as discussed by Verhagen and Johansson (2009) in that they are not made explicit, yet in this article I will argue that the implicit rules of guilds and clans are made explicit and part of most rule sets since they are crucial for both clans and guilds in online games.

3. FINDING THE RULES

To get an impression of the user created rules a convenience sample was taken by using Google with the following key words: ‘guilds’, ‘rules’ and ‘clans’. The result was a vast number of hits that would have been impossible to analyze. The final set of rules analyzed in this article is a selection from the convenience sample of guild and clan sites where a collection of rules could be found and the rules were structured enough to be ordered into categories. The sample in this article was limited to 30 guilds and clans in total without restrictions on what specific games the guilds or clans played. The reason for 20 guilds to be represented in the collection and only 10 clans is a continuation on the work of Johansson and Verhagen (2009), where a discussion is held about how to differentiate between different kinds of norms, sanctions and norm breeches based on an in-depth study of one guild. This article extends this work to rule sets and puts MMOG guilds in a larger context by comparing them with FPS clans.

The games represented in the dataset are presented in Table 1. Amongst the FPS games in the data collection the most frequent game was Counter Strike (Valve Corporation 2003), followed by titles such as Battlefield 2 (EA Games 2009), Far Cry (Ubisoft 2004), and Call of Duty (Activision 2004).

Amongst the MMOG games in the data collection the most frequent game was World of Warcraft (Blizzard Entertainment 2005), followed by Star
Wars Galaxies (LucasArts 2003), Age of Conan (Funcom 2008), Lord of the Rings Online (Turbine, Inc. 2007) and Eve Online (CCP Games 2003). The frequency and distribution in the list should by no means be taken to be representative for the whole population of guilds and clans.

Table 1: Games played by the guilds and clans in the data set

<table>
<thead>
<tr>
<th>MMOG</th>
<th>Number of guilds/clans in the study</th>
</tr>
</thead>
<tbody>
<tr>
<td>World of Warcraft</td>
<td>8</td>
</tr>
<tr>
<td>Star Wars Galaxies</td>
<td>5</td>
</tr>
<tr>
<td>Age of Conan</td>
<td>3</td>
</tr>
<tr>
<td>Lord of the Rings Online</td>
<td>2</td>
</tr>
<tr>
<td>Eve Online</td>
<td>1</td>
</tr>
<tr>
<td>Aion</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
</tr>
<tr>
<td>FPS</td>
<td></td>
</tr>
<tr>
<td>Counter Strike</td>
<td>5</td>
</tr>
<tr>
<td>Call of Duty</td>
<td>2</td>
</tr>
<tr>
<td>Battlefield 2</td>
<td>2</td>
</tr>
<tr>
<td>Far Cry</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
</tr>
</tbody>
</table>

The rules come in all shapes and forms. Some guild/clan leaders have rules about almost anything that could potentially happen. Some rule sets are structured with sections regarding what kind of behaviour they regulate and other leaders write all rules as a long story containing the dos and don’ts of that particular guild/clan.

4. ANALYZING THE RULE SETS

Since there is no uniform or standard way of writing rules, the following sections will be based on interpretations and generalizations of the rules collected, where if possible a certain rule will be part of a general definition based on the above-described theories from social and group psychology as well as by game research literature (section 2.1 to 2.5).
This section is divided into three subsections, where the first section introduces the categories used in the analysis of the rules. The second section has its focus on FPS games and the third section is dedicated to MMOGs.

4.1 The categorization of rules

In the analysis the following categories are used:

The Group: Under this category, rules that are specifically targeted at what it takes to be in the group are mentioned. Also the rules and policies of the group and means to exclude non-members from the group are part of this category (see Criteria 1-3 from Svedberg 2003, and Criteria 1-4 from Baron and Byrne 2006).

Commitment: ‘Commitment’ is a verbatim term used in many of the rule sets analyzed in this article, and it is expressed in the institutional arrangements of what it takes to be part of a group (Svedberg 2003, Criterion 2).

Conduct: This category is also an example of a verbatim term directly from many rule sets, but it communicates what is socially accepted in the group and towards other players (Svedberg 2003, Criterion 2).

Resources: ‘Resources’ as a term is used by many of the guilds and clans, but is not explicitly mentioned in group psychology or social psychology. It is related to the second criterion (status) from Baron and Byrne (2006) since the distribution of loot influences the status of an individual player in MMOGs. If we focus on clans, the concept of ‘resources’ is connected to criterion 1 from Svedberg (2003), where resources are means of achieving the goals of the group. In game research, ‘resources’ are seen as one of the motivations of achievers (Yee 2005).

Cheating: This category is related to Criterion 2 from Svedberg (2003) and Criterion 3 (‘norms’) from Baron and Byrne (2006). Yet again, ‘cheating’ is a verbatim term from the rule sets studied.

Strategies: Strategies can be seen as a way to communicate the commands that are important for the group to reach its goals (Svedberg 2003, Criterion 2), but it is also a verbatim term from the rule sets.
Griefing: This category is well-known from game research and is related to Criterion 2 from Svedberg (2003) and Criterion 3 (‘norms’) from Baron and Byrne (2006). Yet again ‘griefing’ is a verbatim term from the rule sets and an established expression for a typical type of behaviour.

4.2 FPS clan rules

The rule sets of most FPS clans in these data exhibit a consensus on many rules and the need for rules. Some of the explanations given by the leaders of the clans in the data set state that rules help new members understand how to fit in. They communicate the spirit of the group and what is considered important. Rules are also there to help solve conflicts before they actually appear.

These are the general definitions, or thematic classifications, given to the rules from the data collection:

4.2.1 The Group

All 10 FPS clans in the dataset have rules describing what it takes to be in the group and emphasize ‘being a good ambassador’ for the clan. Being a good ambassador is the verbatim definition that five out of the ten clans use to describe how all players should behave. Five out of ten clans state that a clan member shall always play with the same player-name and the clan-tag visible (i.e. the player shall be identifiable for other players). Playing without the clan-tag repeatedly will in most cases result in the player being expelled from the clan. Another aspect that is common for three of the clans is that ‘double clanning’ (being a member of more than one clan at a time) should be avoided. There are various ways of reacting to double clanning, ranging from being expelled from the clan with no exceptions to a more gentle approach where exceptions can be made. All members must at all times and in all cases be loyal to their clan even in the case of being in more than one clan.

From the rules of different clans two styles of leadership can be found. Some of the clans have an authoritarian leader but a democratic leadership style is not uncommon. The clans with a hierarchical structure also have special ranks for members. This becomes apparent when focusing on the recruitment process of clans. Eight of the clans have rules about what players in the clan may recruit new members. Only two clans have no restriction on the
recruitment process, but the top priority for those clans is to grow in numbers.

Two clans also have an age restriction where all members must be at least 18 years old to participate in the FPS-related clan activities. Two clans have a monthly membership fee; one of these clans motivates the fee by explaining that the clan is running and maintaining a dedicated server of its own where the clan plays different mods (modifications to existing games) of different games.

4.2.2 Conduct

Rules about conduct, meaning what is appropriate conduct towards other clan members and other players in the game, are amongst the three most common rules of all clans in this article. Another aspect of rules that concerns conduct is discrimination. There is a consensus on a zero tolerance of negative remarks on gender and ethnicity. The reactions to inappropriate behaviour are invariably that when behaving in a racist or sexist way, the player will be expelled from the clan. Two of the clans that seem to be more considerate than the rest of the clans also have policies on how to treat newbies and that being less skilled is not a reason for being met with less respect in the clan.

The rules relating to proper conduct have a strong focus on synchronous interaction (behaviour while playing), but five of the clans also have strict rules about conduct on the clan forum with general rules about what content is allowed. These rules regulate offensive material, pornographic content and other material that may be upsetting.

4.2.3 Cheating

Cheating is part of the rules of all 10 clans in the study, and what seems to be an overarching theme could be structured as follows:

The code of the game is the law.

Cheating is when a player gains an unfair advantage over other players using different exploits, altering the code of the game or running scripts.

Two of the clans actually refer to the EULA and the TOS for information about what is considered cheating, in terms related to using add-ons, scripts or hacking the code. Not unexpectedly all definitions of cheating have been
discussed in detail by Consalvo (2007) and by Salen and Zimmerman (2004), and two of the three rule levels discussed by these authors are actually present in the data set. The rule level missing is ‘implicit rules’, which is a consequence of the data selection method. The biggest difference between clans is not a shared definition on cheating, but rather how to sanction transgressions. What in most cases is considered the worst cheat is to alter the code or hack the code of the game, usually with a permanent ban as a result. Other types of behaviour that are considered cheating include exploiting known bugs/glitches in the game (map bugs are mentioned as a typical example) and using specific strategies that in some cases may lead to an unfair advantage over other players.

4.2.4 Commitment

Commitment is one of the aspects that seem to differentiate clans into two main categories: the ambitious, competing clan and the more laid-back, casual clan. The most serious clans have pre-scheduled mandatory training sessions where members must have a good reason for not participating. In the casual clan, statements such as: ‘family first, the clan second’ communicate in which order priorities are being made, and it also tells us something about the demographic of players. According to Yee the average MMORPG player is 26 years old (Yee 2006), and the statement above seems to confirm that the members and leaders of casual clans consist not only of teenagers but also mothers and fathers. Some clans also have a requirement of how many hours of game play a member is supposed play weekly in order to hone their skills in the game.

4.2.5 Resources

Resources are of importance for some of the clans in this study, mostly dependent on the clan’s game of preference. Resources in FPS games are the in-game resources such as crates for collecting goods, vehicles, and other items that, if monopolized by one player, will mean a disadvantage for the rest of the group. Other aspects of the use of resources that could be discussed are covered under the section on strategies since destroying resources for the opposing team in certain games could be part of a winning strategy.
4.2.6 Strategies

Most strategies are intimately connected to what items/resources are available in the game. Other strategies have a completely different meaning, where the coordination of all players is really important to outsmart the opposing team. Most of the rules about strategy cover topics such as what strategically important objects the group should focus on controlling in the game or the different roles in the group where, for example, a medic has a totally different role than an engineer or a sniper.

It is slightly unclear how sanctions for not following a strategy are administered. However, for the clans that mention sanctions, these deal with poor team players by not allowing them to play with that group and eventually kicking them out of the clan. Rules about different strategies, however, are not that common (only two clans have a strategy guide available online).

4.2.7 Griefing

Griefing is being addressed both in terms of improper behaviour and as a special rule in three of the clans. What seems to be the difference is that if mentioned at all (only three clans address griefing as something particularly distressing) there is a problem with distinctions. Griefing in some cases addresses behaviour as intentional ‘TK’ (Team Kill) and ‘TD’ (an abbreviation for Team Down where one player single-handedly takes out the entire opposing team). Killing a teammate intentionally is considered grief play and constitutes a special example of griefing, since most instances of grief play that have been mentioned in literature focus on griefing as an act between players from different teams while, in this case, both players are on the same team. The best way of describing intentional team kill is that it would be an example of ‘power imposition’ as described by Foo and Koivisto (2004).

Single-handedly taking out the entire opposing team could be interpreted as a display of skill but, as seen in the example above, it might also create a distressing situation for other players not being able to contribute to the victory of the team. The definitions and interpretations of what is considered griefing are therefore unclear. It becomes slightly clearer when looking at the sanctions regarding TK and TD. In the case of a TK being intentional beyond speculation, that particular clan member will be expelled from the clan, but in other cases, where the degree of intentionality is unclear, the
clans that discuss these issues focus on the aftermath of that action. If the player committing the act apologizes and is aware of his/her behaviour, it can reflect positively on which sanction will be used. This seems to be a part of the code of conduct: if you are polite and acknowledge your mistakes, the group is not too prone to sanction the act unless the act is repeated frequently.

4.2.8 Comments on the FPS Clan rules

In Appendix 1, a breakdown of the categories from the FPS clans is presented with examples of the subcategories. The column with sanctions has been marked with an ‘X’ in the column Expelled and/or Warning to mark occurrences in the sanctions for the respective rule. In the case of a repeated behaviour (such as in the case of not wearing a clan-tag), where the player will receive warnings to some point and eventually be expelled, the Warning column is marked with an ‘(X)’.

In cases where both the Expelled column and the Warning column are marked with an ‘X’, there is no uniform way of treating these transgressions and the act will be evaluated to judge what sanction is suitable. There are also categories that do not have any sanctions associated with them. These categories are rules that are not probationary in the sense that transgressions are possible without sanction. Both the trial period and age verification of applicants precedes actually becoming part of the clan, and are examples of rules without sanctions.

4.3 MMOG guild rules

Most guilds have structured their rule set in ways similar to the clans in this article. Thus the analysis for the MMOG guild rules will be presented following the same structure as with the clan rules. Most guilds seem to have a much more extensive set of rules, perhaps due to the fact that MMOGs are more extensive in terms of gaming elements and types of interaction.

4.3.1 The Group

There are many types of guilds in MMOGs, where raiding guilds, casual guilds, and role-playing guilds (RPG) are the most common. In the data set five out of 20 guilds were RPG guilds and the distribution between casual guilds and raiding guilds was fairly even. For many guilds (13 out of 20) it is important that their members are ‘ambassadors for the guild’ (again, this is
an example of a literal description taken from the rules of the above-mentioned guilds) and act in a way that does not reflect badly on the guild. Loyalty towards the guild is not as frequently mentioned as trust/responsibility towards fellow guild members, but four guilds emphasize both of these traits among their members, and they are usually mentioned in the same context.

Ten guilds have rules about the skill level of players applying for the guild (prerequisite in Appendix 1), and 7 of these guilds also apply a trial period for all applicants to see if they will be accepted as members of the guild. The trial period is a way of testing the skill level of the applicant and probably more importantly to see if the applicant fits the group socially.

Age restrictions on members are mentioned in the rules of 9 guilds and are part of the rules for two reasons, to make sure all members have a certain level of maturity and skills, and also not to subject young members to the sometimes harsh climate in the guild.

### 4.3.2 Conduct

18 guilds in the dataset have rules on being respectful to all other players in the game. 15 of these 18 guilds have explicitly called this part of their rule set a ‘code of conduct’.

The two exceptions are interesting if we choose to look at their definition and interpretation of the rules. The first exception is an RPG guild where a player is supposed to stay in character and that means acting in a way that is true to the story of the guild and the history of that character. The code of conduct in that particular guild has a focus on the player being a good storyteller: as long as the conduct is motivated by the story, anything goes. The second exception is a casual guild consisting of a group of old friends, where rules are meant to be broken. This guild perceives the gaming world of their preference, to put it bluntly, as ‘just’ a game world, and those who do not approve of their anarchistic approach to rules and conventions are considered to be taking the game far too seriously. Ten of the guilds have rules against any type of discrimination, where transgressions against these rules in a majority of cases will be sanctioned by instant expulsion from the guild. There is a consensus on a zero level tolerance on sarcasm and derogatory remarks on gender and ethnicity. Other rules about conduct have a focus on keeping the drama to a minimum in the guild forum and that foul
language is something that is best avoided. These transgressions are most likely to be sanctioned through warnings.

4.3.3 Cheating

Rules about cheating if mentioned are directed towards the EULA and TOS of that particular game or are covered under the Resources and Griefing categories of this article.

4.3.4 Commitment

11 of the guilds have rules about the level of commitment necessary to be part of that particular guild and seven of the 20 guilds have scheduled activities, some of which are mandatory for all guild members. It is far more common for raiding guilds to have scheduled activities than any of the other categories of guilds and these activities are targeted at raiding activities. Most guilds (15 out of 20), however, have rules about being inactive, and a player that has not been logged into the game for a long period of time will eventually be expelled from the guild.

Transgression of these rules will in most cases be sanctioned with warnings or not being allowed to participate in that activity. Sanctions in their severest form (when the transgression appears repeatedly) will lead to that guild member being expelled from the guild.

4.3.5 Resources

There is a strong emphasis on how to distribute the in-game resources of most guilds. Raiding guilds are the type of guilds where rules about resources are especially common. It is common that guilds use a distribution system with a currency called DKP (short for Dragon Killing Points) to buy items out of the guild vault (a kind of bank for the guild). WoW has mechanisms to solve these problems such as having players roll a die to distribute the loot from Non Player Characters (NPCs), or the players can choose from ‘need or greed’ to signal if an item is needed or if it will be sold instantly, etc. Even though the rules about how to distribute loot are straightforward, transgression of these rules is usually referred to, as ‘ninja looting’ is common.
4.3.6 Strategies

The existence of strategies in guilds is almost without exception part of the more result-oriented raiding guilds. There are reasons to believe that strategies in MMOGs are more related to how to defeat a certain NPC in the game, how to survive an instance in the game, or how to survive a quest. However, there is an abundance of strategy guides on the Internet, making specific strategies less important for the guild. Five guilds have guidelines on how to prepare for a raid and how to help other players. These guilds also have rules that state that attracting the attention of NPCs when in a raid is strictly forbidden unless all members of the raiding group are prepared and have given their approval. Most strategies are not on an instrumental level; rather they are recommendations of what preparations are important on a general level.

4.3.7 Griefing

Different definitions of griefing are used by different guilds. The following definition illustrates the general aspects of most guilds and the seriousness of such behaviour:

“Kill stealing, ninja looting, taking advantage of others for personal gain, or any other kind of unethical behaviour will NOT be tolerated under ANY circumstances.” (World of Warcraft Guild)

Seven guilds have rules about ninja looting, but what we can see from the above citation is that guilds may cover the same aspects under their Code of Conduct section.

4.3.8 Comments on the MMOG guild rules

In Appendix 1 a breakdown of the categories from the MMOG guilds is presented with examples of the subcategories that have been used to come up with the categories. The same system as in Appendix 1 is used to describe how and what sanctions are common for different kinds of transgressions to the rules of that particular guild.
5. DISCUSSION

5.1 Similarities and differences between MMOGs and FPS

There are many similarities between the two genres of games that we have studied, such as being a good ambassador for the group, being fair, following the rules and committing to the group; on the other hand, many differences can be seen in Appendix 1 as well. What rules that are considered important can vary within the same game type (FPS or MMOG). The type of interaction that these two genres facilitate has large consequences for some of the rules but the game being online with many other players is much more important. The shared rules that concern these games as online games focus on respect for other players and a zero tolerance of discrimination and would be an example of preventing harassment (Foo and Koivisto 2004).

Previous computer game research has distinguished between instrumental play and social play (Taylor 2003) to address the motivation of the player. Many of the rule sets of the clans in our data have a much more explicit focus on instrumental play than the rule sets of most guilds. The raiding guilds tend to have more instrumental play focus than the other types of guilds but they do not come close to the level of structuring strategies and ‘instrumentality’ of clans.

Some of the differences between the two genres are related to game mechanics, where MMOGs are games typically referred to as games without a fixed ending (Bartle 2003; Castronova 2007), whereas the FPS genre is divided into separate matches. One difference that can be seen as a direct result of the game mechanics is that players of MMOGs cannot change their name as easily between gaming sessions as in the FPS games where ‘scamming’ or ‘identity conception’ is one of the topics mentioned frequently in the rules. A closely related problem in guilds would be that of players playing with an ‘alternative character’ (ALTs), but the name of that character would be as static as their main character.

Another big difference is how resources are used and how they are being treated in rules of MMOGs and FPS games. When resources are discussed in clans it is related to how to win the game in terms of controlling resources and therefore would be classified in the Strategies category. When resources
are discussed in guilds it is about the distribution of resources between guild members and the fairness of that distribution, where greed (Foo and Koivisto 2004; Smith 2004) is a common factor.

The two genres also differ in the sanctioning of rule transgressions. In MMOG guilds, warnings are more often used than in FPS clans. Perhaps this difference is due to differences in motivation, game mechanics, and in the intentionality behind a rule transgression, whether or not a sanction will occur as mentioned by Foo and Koivisto (2004).

5.2 Rules

As discussed in the introduction section on rules, the aim of this article is a closer analysis of the rules explicitly stated by groups of players. The three levels of rules by Salen and Zimmerman (2004) can be applied directly to both MMOGs and FPS games, but with the number of guild and clan forums with rules created by players it is obvious that there is a specific need for an additional rule category to make up for their omission of social aspects of game playing and for the process of creating meaning in a group. Typically there are some rules that are related to a particular game world and which would not find their counterparts in any other game, but we can see many common traits between these games. These rules are not defined by the game designer but by the players, yet explicitly and not implicitly. In that sense they are more like the exogenous and diegetic rules described by Montola (2009), yet they are not only about creating meaning but also about how to keep a group together and give it an identity in terms that could be described with cohesiveness in social psychology (Baron and Byrne 2006) and the institutional arrangements from group psychology (Svedberg 2003).

The first level of rules (Salen and Zimmerman, 2004) the constitutive rules, are almost exclusively part of clan rules with one exception. The reason might be that these rules, which it could be argued encompasses bugs and exploits (Foo and Koivisto, 2004).

If we use the second level of rules – the operational rules – the EULA and the TOS documents can be seen as a base. Many clans and guilds use the definitions from these documents to point out what is appropriate especially when it comes to running scripts or altering code (also mentioned in Consalvo 2007). There seems to be a consensus between many players and developers about what is considered cheating in terms of altering the code.
We can also see a small tendency that clans focus on hacking/altering code and using exploits when they are referring to the EULA, while guilds focus on a much more general application of these rules that could be described as what is permissible in the 'spirit of the game' also discussed by Smith (2004).

The third level of rules, implicit rules, is somewhat problematic, and perhaps the sole reason behind a need for player-created rules. The gap mentioned above is perhaps part of the need for an interpretation of what is fair play. The rules created by players are therefore to be considered implicit rules that needed to be made explicit. Only one guild studied treated rules as meant to be broken. Even though the claim is somewhat unique, the same kinds of ideas have been put forth before: ‘The clans of the griefers develop their own identities and distinctive norms against that of the mainstream gaming community’ (Lin and Sun 2005).

Since online worlds are social spaces with lots of room for interaction that can include play, economy and politics (Castronova 2006; Dumitrica 2011), player-created rules are needed to structure the cooperation in clans and guilds. In contrast to the study by Dumitrica (2011), resources are not only seen as wealth maximization for the individual but for the entire group of players in MMOGs.

5.3 Grief play

The definition of grief play seems to be interpreted in different ways in the rule sets we analyzed compared to the literature. In addition to the categories of grief play as defined by Foo and Koivisto (2004) the suggestion of the present article is to differentiate between intragroup grief play and intergroup grief play. The reason is that, generally speaking, clans talk about only intragroup grief play in their rules. Two examples discussed above are Team Kill and Team Down. Since FPS games are targeted at winning over an opposing team, the intergroup grief-play is part of the game objectives. Some clans would consider camping as cheating or grief play, but this article would rather call that kind of in-game behaviour a ‘local norm violation’ (Smith 2004) or ‘area monopolizing’ (Foo and Koivisto 2004).

MMOGs have rules about intragroup grief play as well but they all fall under the category of ‘ninja’ behaviour, or more specifically ‘ninja looting’. There is, however, lots of room for intergroup grief play in most MMOGs if you are playing on a PvP (player versus player) server, since most MMOGs have
a faction system where all players are part of one faction. Most guilds are similar to the clans in that sense that they have rules for coordinating the intragroup behaviour and not the intergroup behaviour.

As a concluding remark the rules of clans and guilds found in the dataset of this article could be summed up with the following 10 commandments of online games:

**The ‘10 Commandments’ of Online Games**

1. Thou shalt treat others the same way thou like to be treated.
2. Thou shalt play fairly and just.
3. Thou shalt show respect to fellow players.
4. Thou shalt watch thy tongue and speak fairly.
5. Thou shalt play as a part of team.
6. Thou shalt be loyal to thy group.
7. Thou shalt not steal thy co-players’ treasures.
8. Thou shalt not sail under a false flag.
9. Thou shalt not weep or cry.
10. Thou shalt be merry.

And then some....

11. Thou shalt obey thy Leader.
12. Thou shalt obey the rules.

**Acknowledgments**

This article would not have been possible without the valuable insights from both the reviewers of the Nordic DiGRA 2010 conference and the reviewers of the *Journal of Gaming & Virtual Worlds*. 
REFERENCES


Lin, H. & Sun, C-T (2005), ‘The ‘White-eyed’ Player Culture: Grief Play and Construction of Deviance in MMOPRGs’. In proceedings of DiGRA 2005 Conference.


Valve Corporation (2003), Counter Strike, Bellevue, WA: Valve Corporation.


**CONTRIBUTOR DETAILS**

Magnus Johansson is a Ph.D. student at the Department of Computer and Systems Sciences, Stockholm University, Sweden. His work has a focus on social norms and rules in online games, and how to create believable Non Player Characters in virtual worlds. His research on believable characters includes conceptual models on how to create autonomous agents and responses from the game design community on these issues.

Contact: Department of Computer and Systems Sciences, Stockholm University, Isafjordsgatan 39, 164 40 KISTA, SWEDEN

Email: magnus@dsv.su.se
Appendix 1: Overview of data analysis results

<table>
<thead>
<tr>
<th>Category</th>
<th>MMOG #</th>
<th>MMOG Sanctions</th>
<th>FPS #</th>
<th>FPS Sanctions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Expelled</td>
<td>Warning</td>
<td>Expelled</td>
<td>Warning</td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>1 Group</td>
<td>20</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Guild Tabard</td>
<td>2</td>
<td>(X)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trust/responsibility</td>
<td>12</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Clan-tag</td>
<td>5</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Double clanning</td>
<td>4</td>
<td>X</td>
<td>(X)</td>
<td></td>
</tr>
<tr>
<td>Loyalty</td>
<td>6</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Recruitment</td>
<td>3</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Membership prerequisite</td>
<td>10</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Trial period</td>
<td>7</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Age restriction</td>
<td>9</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>2 Code of conduct</td>
<td>15</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Discrimination</td>
<td>10</td>
<td>X</td>
<td>X</td>
<td>9</td>
</tr>
<tr>
<td>Newbies</td>
<td>5</td>
<td>X</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Forum conduct</td>
<td>7</td>
<td>X</td>
<td>X</td>
<td>5</td>
</tr>
<tr>
<td>In-game conduct</td>
<td>12</td>
<td>X</td>
<td>X</td>
<td>9</td>
</tr>
<tr>
<td>No drama</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language</td>
<td>14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Cheating</td>
<td>8</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>EULA and TOS</td>
<td>7</td>
<td>X</td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Altering code/scripts</td>
<td>8</td>
<td></td>
<td>6</td>
<td>X</td>
</tr>
<tr>
<td>Exploits/bugs</td>
<td>1</td>
<td>X</td>
<td>6</td>
<td>X</td>
</tr>
<tr>
<td>4 Commitment</td>
<td>11</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Scheduled activities</td>
<td>7</td>
<td>X</td>
<td>X</td>
<td>6</td>
</tr>
<tr>
<td>Be active</td>
<td>11</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>5 Resources</td>
<td>8</td>
<td></td>
<td>5</td>
<td>X</td>
</tr>
<tr>
<td>Need/ greed</td>
<td>5</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Begging</td>
<td>5</td>
<td>X</td>
<td>(X)</td>
<td></td>
</tr>
<tr>
<td>6 Strategies</td>
<td>5</td>
<td></td>
<td>2</td>
<td>X</td>
</tr>
<tr>
<td>Preparation</td>
<td>5</td>
<td>X</td>
<td>(X)</td>
<td></td>
</tr>
<tr>
<td>Pulling</td>
<td>4</td>
<td>X</td>
<td>(X)</td>
<td></td>
</tr>
<tr>
<td>7 Griefing</td>
<td>7</td>
<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Ninja looting</td>
<td>7</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TK</td>
<td></td>
<td></td>
<td>3</td>
<td>X</td>
</tr>
<tr>
<td>TD</td>
<td></td>
<td></td>
<td>2</td>
<td>X</td>
</tr>
</tbody>
</table>
Social Play? A study of social interaction in temporary group formation (PUG) in World of Warcraft

Digra 2010 (published)

Lina Eklund
Department of Sociology
Stockholm University
lina.eklund@sociology.su.se

Magnus Johansson
Department of Computer and Systems Sciences
Stockholm University
magnus@dsv.su.se

Abstract

One of the main components and reasons for the success of the Massive Multiplayer Online Games genre (MMOG) is that these games are seen as arenas for social interaction. The focus of this paper is the phenomenon of “Pick up Groups” (PUGs), a neglected aspect of online gaming. How is the social interaction structured in these temporary groups?

The results of a participant observation study reveal a low level of social interaction between PUG players. Communication is held to a minimum and dungeons completed at high speed. Even in the event of downtime, interaction is rare. What little interaction has been observed is divided into instrumental and sociable interaction. A higher level of sociable interaction was found when several players from the same guild played together in the same group. But looking at greetings and goodbyes, normally used to acknowledge an ongoing social situation, we see that the social engagement in most PUGs is low.
In summary, social interaction in PUGs, if any, is mainly instrumental, making these temporary groups unsocial game experiences; something not normally associated with group play in the MMOG genre.

**Keywords**

PuG, Sociability, Social Interaction, Looking for group, World of Warcraft.

**Introduction**

We play MMOGs mainly because they are social (see e.g. [1]; [2]; [3]). The saying “You come for the game but stay for the players” summarizes this attitude. Player interdependency, guild tools, instance grouping and other social engineering features of games are ways in which developers foster a social engagement with the game and force players to interact ([4]; [5]). The focus of this study is on aspects of social interaction in World of Warcraft (WoW), released in 2004 by Blizzard and currently the dominating title in the MMOG genre. More specifically we focus on the phenomenon called “Pick up Groups” (PUGs). A PUG a group of 5-25 players, is one of the basic arenas where players meet in this virtual world and join forces to take on greater challenges together than they could possibly have been able to do on their own. This is a common phenomenon and most players at all levels spend some times in these PUGs doing dungeons or raids together. When looking at group formation in MMOGs, some research has focused on the more permanent group structure of the Guild (e.g. [5]), but very little attention has been directed towards these more temporary groups. How do players interact? What happens in this gameplay? Our specific research question is: How is the social interaction structured in these temporary groups?

**Dungeons**

Our study focuses on a specific type of PUGs in WoW, Heroic Dungeon at level 80, currently the highest level attainable for players in the game. Even though PUGs are frequent before reaching this level it has been said that level 80 is when the real game begins. At level 80 players can set the difficulty on a dungeon, or “cave” to normal or heroic⁵. These dungeons

---

⁵ Raids can also be set to increasing the amount of players needed to complete it from 10 to 25.
require players to join into groups of 5 for completion. The heroic setting makes the dungeon more difficult but also yields greater rewards. These heroics, as they are called, are a very important feature for level 80 players, both increasing the challenges of the game and the rewards to be found; that is, items, reputation in specific groups that give access to more items, and character improvements, titles and badges that can be used to buy items.

Any player reaching level 80 will soon come in contact with these dungeons and the rewards they offer. Many play these over and over to improve their play and master the challenges. There are currently 16 different dungeons, all adjusted to level 80 players but of varying difficulty. A heroic dungeon can be actively chosen and played once a day. However, there is no limit to how many dungeons you can play in one day if you let the game decide your choice by using the random dungeon option.

**LFG**

Looking for group, LFG, is the action of MMO players searching for others to play with. In WoW's world Azeroth it is used to find party members to do a dungeon or a raid with. This article, however, only deals with LFG aspects of dungeons and not raid groups. We will start with a short outline of the history of LFG in WoW.

**A brief history of LFG in WoW**

When WoW was launched in 2004 there was only a LFG chat channel available to assist players in finding others to group with. But this channel was local, meaning that only players in the same area of the game world could be reached. The designers (Blizzard) later introduced a queuing system by creating so-called “meeting stones” situated outside the dungeons. These were rarely used, however. So in patch 1.9.0 (2006-01-03) the LFG channel was made global but was restricted to major cities. With the first WoW expansion, “The Burning Crusade”, released in the first quarter of 2007, a new LFG system—a special menu facilitating group building—was introduced. The meeting stones were also transformed into “summoning stones” making it possible for two players to summon the rest of the group there. The LFG channel was removed and replaced with the LFG menu, but this resulted in players using the trade channel to find groups. Due to pressure from the players, Blizzard later reintroduced the LFG channel but players only had access to it through the LFG menu. In the second
expansion, Wrath of the Lich King (2008-08-13), a new option of choosing roles was introduced in the LFG menu (Tank, Healer or DpS\textsuperscript{6}). In patch 3.3.0 (2009-12-08), the LFG tool was renamed “Dungeon Finder” (DF). The new DF tool introduced cross server (realm) automatic grouping according to role selection, with special rewards for using the random dungeon option; that is, letting the game choose which dungeon you end up in. For the remainder of this paper the terms LFG and DF will be used interchangeably.

The new DF tool enables players to queue for dungeons across realms, providing faster and easier grouping. Before the introduction of the Dungeon Finder gamers could only group with others from the same realm, making each realm a separate world where different norms and cultures could arise. Blizzard first introduced cross realm Player versus Player (PvP) battles with the aim of shortening waiting time, making PvP easier in low populated or unbalanced realms in terms of faction [6]. Gamers are now divided into battlegroups, where each battlegroup contains gamers from several realms. Players can via the Dungeon Finder access a menu for joining a group for a dungeon with players in their own battlegroup.

Theory of Social Life

Erving Goffman defines social contact, called an encounter, as a situation where individuals address themselves to one another and where the situation (encounter) is reciprocally acknowledged by all participants [7: 70]. Each situation is governed by social norm structures that are highly contextual and culture specific. PuGs are in Goffman’s terminology encounters, where social contact is essential. Moreover, they can be seen as focused gatherings structured by a “sanctioned orderliness” [8: 19] with local rules and identities.

An encounter between two or more people often starts with a greeting and ends with a farewell. Greetings and goodbyes are what Goffman calls supportive rituals. “Taken together, greetings and farewells provide ritual brackets around a space of joint activity” [7: 79]. Greetings and farewells

\textsuperscript{6} These are the standard roles players take in group play, each having a distinct play style. The highly armored Tanks are the ones engaging enemies. Healers heal the damage that enemies do to friendly players. A DpS (Damage per Second) does damage to enemies, thereby killing them.
respectively increase and decrease access to the other person’s involvement in the social contact. When we meet someone the greeting comes first and marks a period of heightened access to the other person(s). As Goffman says: “Access, after all, is one of the things that personal relationships are about. An introduction, like a greeting, is an access ceremony” [7: 79]. Greetings vary in intensity and appropriateness depending on the situation in which they occur; greetings that are appropriate in one situation may not be appropriate in another. The intensity of a greeting promises something about the outcome of a situation and is defined by the expectations of its participants.

**Norms in MMOG**

In all situations where people interact there are norms describing what we ought to do in each situation. Looking at interaction in MMOGs and the shared knowledge about acceptable behaviour in the game, the presence of a norm system at different levels, ranging from large groups (guilds) to different kinds of small groups, is clear. According to Goffman social norms are something that guides both positive and negative actions, and is supported by social sanctions [7]. When looking at norms in MMOGs, Verhagen & Johansson states that “Norms are statements about the appropriateness of an individual’s act which may result in a sanction being issued by another individual or an individual belonging to a specific class of individuals.” [9: 3]. In the case of an act being evaluated as a breech against a norm, there must be the possibility of using a sanction, where sanctions can be monetary⁷, ostracization (shunning by the group) or accumulation of bad reputation [9]. Another fact that we need to take into account is that social norms are always about observable behaviour [11]. To uphold norms means that sanctions will have a direct effect and cost for the player who does not comply with the norms.

**Social Gameplay**

Throughout the development of game technology and particularly since gaming moved from the arcades into the home (although most often into

---

⁷ In this instance it might be loss of player controlled currencies e.g. Dragon Kill Points, see [10].
public spaces in the home, see [12], the question of whether playing fosters or hinders social relationships has been an unresolved issue. Gaming has been described as a bedroom culture where children sit in isolation playing games [13]. Yet in other game studies the social aspects of gaming have been highlighted and focused upon. The fact that people now increasingly play online with or against others has somewhat changed the view of games as antisocial media. Online gaming is rapidly growing and MMOGs can be considered a form of “social spaces” (see e.g. [2] where human interaction is important. The games happen in real time and are dependent on high levels of trust and cooperation in order to function [14]. MMO games constitute social spaces where a group, or an individual, takes part in different adventures. Interaction between players is a basic condition for the social possibilities of these games [15]. The games have inbuilt possibilities for social interaction ([16]; [17]) and this social interaction is the key attraction for gamers to play the games [18]. When gamers ranked the reasons they played [1] 39 percent put the social aspect first. Jakobsson & Taylor argue that “The production of social networks and the circulation of social capital prove to be one of the most important aspects in EQ [EverQuest].” [4: 88].

Previous research has shown that the social aspects of gaming are indeed important, for casual as well as power gamers [19]. Many play with friends and family, persons that they know outside the game ([18]; [20]). Jansz & Marten [21] have shown that for visitors to local area network (LAN) game meetings the social aspects of the gatherings are the main attraction. Other researchers have shown that participating in online gaming can strengthen social bonds within families [22] and lead to new relationships for youths within their own peer group [23] or via the Internet [24].

Simons et al. [25] define two aspects of sociality in gaming:

1. Designed sociality, i.e. the social architecture/structure of the game; 2. Played sociality, i.e. what gamers do. These two parts of sociality regulate social gameplay and are intertwined and dependent on each other. Yee [3] has looked at computer mediated communication (CMC) in EverQuest (EQ) and argues that besides CMC, designed sociality matters. EQ is a difficult game to play solo since classes are highly dependent on each other. This high dependency on other players fosters a culture of acceptance of seeking and providing assistance. The social architecture provides ways that players can help other players. Through the many crises occurring in EQ, players learn fast about the importance of trust. The social architecture of EQ is a
manner of social engineering [3]. The designed sociability or social structure of the game matters for social interaction in these types of games.

Method

Berger & Luckmann [26] once argued that we must move in society in order to understand it. In empirical studies of MMOGs this becomes very apparent, as there is nothing to observe unless the observer enter into the game. It is necessary to get close to social life to study it [27]. The game “happens” in real time with players logging in to the game and playing. A Dungeon in WoW is limited to 5 players; there is no room for outsiders to quietly observe what is happening. To study PUGs, then, our only option was to be involved in the game. Twenty-four random dungeons were played during a period of 2 weeks. The playing sessions were distributed over weekdays (12) and weekends (12) and divided over the Horde faction (6 weekends + 6 weekdays) and the Alliance faction (6 weekends + 6 weekdays), making a total of 24 dungeons played.

This does not include waiting time which varied from 10 seconds to 10 minutes with an average of 4.2 minutes, making total play time almost 14 hours. The dungeons were played with both a healer character and a DpS character on both factions. The Horde character is on the server Zenedar (PvP) in the battlegroup Blackout, English (18 servers, see Appendix). The Alliance character is on the server Moonglade (PvERP) in the battlegroup Reckoning, English (13 servers, see Table 2, Appendix). Both battlegroups are mixed PvE and PvP, Reckoning also contains 1 RP server.

All random PUGs were filmed and then transcribed. All chat (including emotes, say channel and party channel) was recorded using a WoW add-on called WoWScribe (all chat was text based). All data were analyzed using a program for qualitative analysis. Notes were also taken of characters played with; role, class, race, gender, server, and if any players in the same PUG were from the same guild. In the end a total of 105 players were grouped

\[\text{In total we estimate that the recordings cover around 12 hours of game time.}\]

\[\text{Chat describing what the player does, e.g. Legolas laughs.}\]

\[\text{You will note that the number of characters is more than it should be due to leaving/replacing during the dungeon.}\]
with (not counting the researcher’s characters). The researcher played in total DpS 10 times and healer 14 times. A tank character was not chosen since this role often controls the pace of the dungeon run and therefore was considered to be a too demanding and leading role for the researcher. Since the focus of the research is social interaction the researchers set up some rules for their participant observation. Besides, not choosing to play a tank, no social interaction was initiated by the researcher but all interaction initiated by another player was participated in. Conversations necessary for the progress of the game (e.g. asking for time to regenerate resources) was not avoided, being a part of what is expected of a player and in line with the participant observation method ([28]; [29]).

**Ethics**

To protect the players no actual character names are used in the paper, instead a standard naming system has been applied. This is explained below:

Example 1; Tank.D16.A, Tank meaning the role the player performed in the group, D16 for dungeon 16 weekend and last A standing for Alliance.

Example 2; DPS2.D2.H*, DPS2 standing for second damage dealer, D2 for dungeon 2. *meaning weekday dungeon and H standing for Horde.
Limitations

This paper only studies PUGs in WoW. Complementing studies of other games and online phenomenon are therefore called for to understand social interaction in temporary group formation.

Results

The results show that the social interaction in PUGs can be divided into two main types; instrumental and sociable interaction. Instrumental interaction deals with strategy and achievements, e.g. asking for buffs or breaks and calling for attention when unforeseen events occur. Sociable interaction, on the other hand, deals with greetings and goodbyes, jokes, out of game discussion and discussion concerning the game but not necessary for the progression of the session. Sociability or pure sociability is defined by Simmel [30] as the play form of association; that is, interaction free of meaning or purpose. Sociable talk, according to Simmel, is the only talk that is “a legitimate end in itself” [30: 259]. Dividing interaction in this way allows us to understand how social interaction functions in these specific game sessions between players.

Instrumental interaction

What we generally saw was a low level of both instrumental and sociable interaction in the PUGs. The excerpt below displays all written interaction in one of the random dungeons.

Dungeon 22:

DpS3.D22.H: 1 sec. snus

DpS3.D22.H:: back

DpS3.D22.H:: ..

DpS3.D22.H:: lol [laugh out loud]

DpS2.D22.H: thx for the run

---

11 A Swedish tobacco product similar to (American) moist snuff or dipping tobacco
First, there were no greetings when the group was formed and the fight was started without any communication. One DpS takes a short break to put in *snus* and only one thanks the others after the completion of the dungeon. The laughter of DpS3 is uttered when that player died in an enemy encounter.

What we see in PUGs is that players at the highest level “know” the game. They know their roles, what is expected of them and different dungeon strategies, etc. Having played a character to the highest possible level in the game, everyone is expected to “know the ropes” of the game. Tactics are uttered as an exception and mostly only if the group encounters problems, e.g. dies during the encounter, or in the matter of Achievements. Achievements are awards for completing a task under special conditions in the game, giving non-combat rewards such as titles. The extract below shows a discussion about tactics regarding the completion of an achievement called “Ruby Void” in dungeon 24.

`Tank.D24.H: w8 [wait]`

`Tank.D24.H: we do Ruby Void plz [please]`

`DpS3.D24.H: if we do, whelps are prio [priority]`

`DpS3.D24.H: they die too slow`

`DpS3.D24.H: so kill the whelps as they appear`

`Tank.D24.H: k`

`Researcher: kk`

The interaction here is structured around how to attain a particular achievement and the strategies connected with it, and is a typical example of instrumental interaction in PUGs.

Speed is another aspect of the instrumentality of the interaction. A PUG is not expected to take long. In the extract below, dungeon 12, some players are urging the tank to go faster.

---

12 Compare this interaction with: [8: 83-84]
Some aspects of instrumental interaction have been called “grinding”. Grinding [31] is a term for repeatedly doing the same thing again and again, e.g. killing the same enemy for game rewards. These dungeons can be repeated multiple times during a day to receive special tokens that can be used to buy new upgrades for players. The upgrades are often considered as being the “endgame”, what players do after reaching the highest level of the game. For players outside the high end raiding guilds these dungeons constitute an alternative “endgame”. The faster they go the more of them can be done.

Dungeons are completed at a rapid pace and tactics seem to be something all players are aware of. At this point WoW has traveled far in its life cycle, the current expansion of WoW is slowly reaching its expiration date, and dungeons are becoming old and worn out since they have been played many times. There is, however, a contradiction in that new dungeons introduced in patches with novel content, more rewards and challenges for players, in our data, is played no differently from any other dungeons. Sometimes even looting the dead enemies is ignored, which is a waste of time that slows the pace of the group in a specific dungeon. From our material we cannot conclude that the level of the challenge or rewards affect the interaction in the dungeons.

Sociable Interaction

Sociable interaction in the studied PUGs is scarce. In Goffman’s definition of an encounter a social situation arises when two or more people address each other and all involved acknowledge this. In this process “greetings and goodbyes” fill important ritual functions. In World of Warcraft, greetings in PUGs are by no means a certainty. In most dungeons greetings are not exchanged or only exchanged between some players as seen in the extract.
above. The ritual of greeting is not seen as something necessary for the completion of the dungeon.

During frenzied dungeon runs it is possible that there simply is no time to interact. There is an assumption that downtime create sociability [17]. In our data there are several examples of downtime. Most common is when a character leaves just at the start of a dungeon and the ones left have to wait for a replacement. This would seem like a good time for interacting with other players; but our data show to the contrary that these opportunities are lost, since players do not then engage in any sociable interaction, rather everyone simply waits for a new group member to appear. We also saw examples of players clearly being bored by the waiting for a replacement and jumping frantically around in circles trying to pass the time, see extract of notes from dungeon 19 below.

0:00: Dungeon starts, the tank leaves straight away. The researcher having been randomly selected as Group Leader gets a preprogrammed message saying: "A player has left your Dungeon group. Would you like to find another to finish The Occulus?" The researcher presses "Yes" and we join a queue to get a new tank, no one says anything, one player sits down and after two minutes another also sits down.

4:10: A tank joins but leaves straight away; we join the queue again without words, one player clearly bored jumps frantically around.

4:48: A new tank joins and says "yay" unclear why, no one replies and we start killing enemies.

On the other hand, in dungeons where we saw a high level of sociable interaction, players knew each other beforehand or belonged to the same Guild. In dungeon 18 the researcher together with a tank joins a group of three DpS who instantly explain that they had just died and that the tank and healer had left the group as a result. The three DpS were all from the same server and Guild. During the run they engage in frequent sociable interaction also pulling the rest of the group with them, chatting and joking. The pace of the dungeon was high but all players still found the time to chat even during boss fights. Speed of play did not seem to be a hindering factor in the social encounter. Players at this level clearly know how to multitask, playing and chatting at the same time. At the end of the dungeons the three DpS ask if we (the researcher/healer and the tank) would like to join them for another run,
we both accept and are randomly put in a new dungeon. At the end of this
dungeon we saw a clear mark in the expressed goodbyes.

DpS2.D18.A: sleep well all :D
Researcher: bb [bye bye]
DpS1.D18.A: thanks for the runs
Tank.D18.A: thanks alot :)
DpS3.D18.A: cya and ty all :)

The goodbyes are heartfelt thanking, not only for the dungeon but also for
the company. The goodbyes match up to the level of sociable interaction in
the encounter marking its end in the same way it was perceived. The phrase
“see you around” is also uttered although all know that it is not likely to
happen due to the structure of the cross server dungeon system.

In dungeon number 10 all group members start with greetings. DpS1 and
Heal are from the same server and Guild.

Researcher: ello
Heal.D10.H*: hey
Researcher summons a Healthstone
DpS1.D10.H*: hi and ty :)

The social standard for this dungeon is set at the start, greetings
acknowledges the fact that access is given to the participants and that this is
a sociable situation as well as a focused gathering. During the run talking continued, one example with players joking about the death of a player in the game.


In quiet contemplation, you mourn the death of DpS2

DpS2.D10.H*: can I wear mail on mage?

Researcher: ;D


DpS2.D10.H*: and where is my pet?

The dead DpS jokes about wanting more armor and even a pet that could protect her. At the end of this dungeon we could also see “goodbyes” matching the level of interaction in the rest of the dungeon. When we see dungeons with sociable interaction as well as instrumental interaction players are more likely to exchange thanks and goodbyes, marking an end to the interaction period.

**Norms and focused gatherings**

PuGs are focused gatherings, relying on local rules and identities as well as a mutual acceptance of the situation. The situation builds on players fulfilling their roles and “playing their part” otherwise the game encounter could fail.

It is therefore in the interest of the group to make sure that these local rules and identities are followed (Goffman, 1961). This can be seen in the following transcript from dungeon 15.

DpS1.D15.A: DK [Death Knight] was that u??

DpS2.D15.A: ?

Heal.D15.A: yep

DpS1.D15.A: that ninja pulleed

Heal.D15.A: dont pull

178
Ninja is a term commonly used to describe people’s ingame behavior and originally referred to persons who take items they do not need or that others have the right to. Now the term is used for many other different transgressions as well. In the example above a DpS of the class Death Knight manages to get some enemies to attack the group (pulled), which is the job of the Tank. The group corrects the DpS who apologizes for an act that clearly goes against the local rules and identities of the situation.

PUG Interaction is structured around the focus of the encounter, the common goals and definition of the situation. We never saw any debate over this, showing that gamers share expectations on these encounters.

The occurrence of social norms was largely focused around game rewards. One example is the division of rewards in dungeons as shown below in dungeon 13.

DpS1.D13.A: can i need?

Tank.D13.A: need if you need mate


Researcher: y

A DpS asks if it is ok to take a reward found in the dungeon, the rest confirm the norms concerning rewards that state if a player needs an item, and the item is better than what she or he has got, then taking it is the agreed thing to do. Later, at the end of the dungeon, the same DpS wins an epic item (an item of higher quality).

Heal.D13.A: gz warlock


Tank.D13.A: yea grats DpS1 :) 


Tank.D13.A: sweet :)
The other members congratulate on the win and the DpS thanks with a smiley and later a laugh.

Even in small groups of players there are implicit rules, such as congratulating on a win, the ritual of greeting each other when the group is formed and giving some indication of evaluation of the cooperation when the group dissolves.

These “rituals”, it could be argued, are the social lubricant that makes cooperation an important component of the social aspects of gaming. However, examples of such social lubricants were scarce.

Something believed by the researchers was that there would be norms against leaving during a PUG. However, we saw a large number of players leaving just at the start or in the middle of a dungeon, often just after the group died during an encounter. There were never any reasons given for leaving and no one commented on it. There seem to be no social norms regulating this. This may be due to the structure of the group with players from different servers who in all likelihood will never meet again and are not part of the same game world. A rule of conduct, norm, would have no effect outside the actual dungeon encounter. The system that used to bring them outside, the individual reputation system [19] on servers in other games, does not work here. There is no risk of getting a reputation as a quitter or that a player won’t group with you again, threats that has been shown in other games or even earlier studies of WoW ([19]; [14]).

Conclusions

We divided PUG interaction into two categories; instrumental and sociable. Instrumental interaction deals with strategies and achievements, e.g. asking for buffs or breaks and calling for attention when unforeseen events occur. Sociable interaction deals with greetings and goodbyes, jokes, out of game discussion and discussion concerning the game but not necessary for the progression of the session. The results reveal a low level of both instrumental and sociable interaction between PUG players. Communication is held to a minimum and dungeons completed at a fast pace. Even in the event of downtime sociable interaction is rare. However, cases with a high
level of sociable interaction were found when several players from the same
guild played together in the same group.

It is clear that investment in the sociable situation is low. Goffman states that
there always is a cost associated with interpersonal relationships. These
costs, concerning time, money and effort, are always involved when people
decide to meet [7]. Individuals in relationships with others then develop an
understanding of these costs, especially in relation to frequency and
probability of encounter; will we meet again? How much time can I spare for
this relationship? A relationship where the costs are deemed high or the
probability of ever meeting again is small will therefore be deemed too
costly for the individual and reduce the input and effort invested in that
relationship. The low investment in the social situation of PUGs might stem
from this cost evaluation. PUG players come from a multitude of different
independent game worlds and the system makes repeated interaction
impossible. Further, players cannot create lasting relationships or add people
they PUG with to their “friendlist”. The cost of interaction thus exceeds any
potential benefit and might therefore decrease the incentives for sociable
play.

Contrary to the researchers’ expectations, social norms, had little impact.
Few instances of either positive or negative sanctions were observed. Norms
were negotiated in relation to rewards but were seldom applied to other
behavior. An example of “weak norms” was that many players left instantly
on arriving in a dungeon. This happened on numerous occasions. No
explanations were given or comments made on these leavings. A norm
requires a sanction to be a norm. Reputation and trust have been shown to be
important in MMOGs [14]. Reputation, however, has only a local effect on
the particular server where a player’s characters reside, since those
characters are only visible to players on that particular server. The effect of
ostracizing someone and reporting that character to a “ban-list” or using
other means of sanctioning such as blocking that character from future
cooperation has limited or no effect across servers. Our assumption is that
the cost of sanctioning exceeds the gain in terms of upholding social norms
in this context [9].

The local rules of the focused gathering are upheld but otherwise the norm
system in place is weak, calling for further studies on norms in different
online spaces.
In summary, social interaction in PUGs is instrumental rather than sociable, making these temporary groups generally unsocial game experiences. This is something not normally associated with MMO group play.

**Discussion**

Social interaction in Pick up Groups, as seen in this study, is mainly instrumental, something not often discussed in relation to these types of “social games”. The game design does not encourage sociable interaction and gives no opportunities for creating lasting relationships. World of Warcraft, as the leading title in this genre, heavily influences what many gamers and game producers expect from MMOGs. Moreover, Blizzard has the privileged position of not having to recruit new gamers for their survival; it is more than enough of an achievement to keep the players they have. If we assume that everyone playing WoW already has a functioning social network we can assume that heightened “unsocial” game play won’t deteriorate the social structure within the game.

But that social structures are fixed is a faulty assumption. We live in a social reality that is a dynamic, continuous process rather than set and unchanging [32]. The social reality of Azeroth is likewise prone to changes, perhaps even faster than other social realities; changes not only imposed by Blizzard, designed sociality, but also by gamers, played sociality. Both fluctuate over time and social norms along with them. Norms are contextual and changeable and the same thing can be said about sanctions. How players feel about these structures and in what way this social world will develop are important things to study both from the aspect of game design and for our understanding of social interaction online in general.

The structure of social communication in group tasks has a diminished role in the context of high level players playing together. The opportunities and structures of sociable play have been left out of the fundamental design characteristic for PuGs in World of Warcraft, something that might have long lasting consequences for the social world of Azeroth.
Acknowledgements

A big thank you to Bigal for discussing important insights about the social world of Azeroth.

References


184


Appendix

Battlegroups and servers

Blackout (eng, EU) Reckoning (eng, EU)
Agamaggan PvP Ahn'Qiraj PvP
Aggramar PvP Bronzebeard PvP
Al'Akir PvP Chromaggus PvP
Arathor PvP Dentarg PvP
Aszune PvP Drak'thul PvP
Azjol-Nerub PvP Emeriss PvP
Bladefist PvP Executus PvP
Bloodhoof PvP Khadgar PvP
Bloodscalp PvP Kul Tiras PvP
Burning Blade PvP Mazrigos PvP
Doomhammer PvP Moonglade RP
Draenor PvP Talnivarr PvP
Dragonblight PvP Trollbane PvP
Emerald Dream PvP
Sunstrider PvP
Twilight's Hammer PvP
Warsong PvP
Zenedar PvP
Believable NPCs, articles 4-6
Model of social believable NPCs for teacher training

Using Second Life

CGAMES USA 2011 (Published)

Magnus Johansson
Department of Computer and Systems Sciences
Stockholm University
magnus@dsv.su.se

Harko Verhagen
Department of Computer and Systems Sciences
Stockholm University
verhagen@dsv.su.se

Mirjam P. Eladhari
Department of Game Design, Technology and Learning
Gotland University
mirjam.eladhari@hgo.se

Abstract—This paper explores the possibilities for believable game agents (NPCs) through the implementation of a Model Social Game Agent (MSGA). We present a high level model focusing on the conceptual framework for implementing MSGAs on a Second Life server.

Keywords

NPC models, social NPCs, social agents, agent models, social believable agents

Introduction

In the constantly evolving field of computer game development the focus on graphical representation has been so strong that other areas have been overshadowed. Current games could be considered to have matured,
opening up for new areas of research such as games for learning or simulations. Even though simulations are fairly old with flight simulators as a genre with a history of its own, simulations can simulate so many other things than flying.

There is a common view about games that they are more motivating and potentially more effective than traditional learning [1]. On the other hand, not all games are good for educational purposes, or as Van Eck puts it: “I believe that we need to change our message. If we continue to preach only that games can be effective, we run the risk of creating the impression that all games are good for all learners and for all learning outcomes, which is categorically not the case” [2, p.2].

One problem with developing games with learning content is that game design is both time consuming, costly and difficult. A solution to this problem would be to use Customer Of The Shelf (COTS) games that would reduce the costs dramatically. Already existing Virtual worlds or MMOGs have been proposed as particularly suiting for this problem [2]. This would also mean finding an open game world that can be modified to some extent to fulfill our specific learning expectations and expectations on experimental implementations. In this paper we discuss expectations on a model of social believable NPCs for teacher training, relying on Non Player Characters (NPCs) that are socially believable in terms of being capable of cooperation with other agents, that can evaluate different strategies depending on input and context, and can display emotions. It is important to note that research into basic emotions has shown what emotions primates and humans express but not necessarily what they feel. Definite knowledge of how and individual “really” feels might be beyond the capability of current research in general. Regarding knowledge about someone's "actual" feelings, the information is limited to active areas (visible in MRI scans for example) of the brain and subjective narrative reports. However the aim of this work is not to simulate the actual workings of the human brain, but for use as a tool for the creation of interesting game-play experiences. It is the aim of believability that governs what parts from psychological research to use as inspiration for the building blocks of the MSGA. As it happens this work coincides with the challenges for game design where the limited complexity of NPCs in Online games would benefit from further improvement since games AI have been considered one of the areas of world building that holds the most promise of change [3, p.93], [4, p.616].
The model that we are developing consists of several components and concepts where the result will be a Model Social Game Agent (MSGA). The MSGA is an NPC that will have the possibility to react on stimulus from the game world, show emotions, decide whether or not to cooperate with other NPCs, imitate other NPCs, and by social comparison decide what actions are the most reasonable ones. In short, where regular NPCs have limited possibilities for alternative actions the MSGA have at least four possible strategies to decide on how to react in the game world.

In recent years there have been a couple of attempts at creating more believable NPCs where memory is one of the recurring functions that may help the overall performance of NPCs [5, 6, 7]. The MSGA shares traits of the believable agent discussed in [5] and perhaps this implementation would be relevant for scenarios for behavioral change as discussed in [6]. A critical review on relational agents showed that interpersonal relationships are of importance for agents to perform procedures created for humans [6, p.6] and this would imply that the social aspect of the Consumat and the believable agent [5] both add certain degrees of sociality and emotions that are essential for a socially believable agent. The biggest difference in the MSGA model compared to the believable agents model is that emotions are given a higher priority since the emotional aspects of the agents are processed first and are part of the input of the Consumat.

The scenario for the current application deals with classroom problems in general and the role of the teacher in classroom problems and the psychosocial dynamics involved in particular. Currently, training of handling problem situations within a classroom is based on role-playing if trained at all. The proposed system would allow teachers in training to test different strategies and see the effects of their actions and the interactions between students and teachers without causing harm to real students. The tool would also allow debriefing and walk-through to discuss the interactions. Thus teachers will be better prepared for real life situations of conflicts and emotional distress related to classroom problems.

The model social game agent

The MSGA is aimed to overcome some of the shortcomings of current NPCs and allow us to enable the development of more believable NPCs for virtual worlds. One of the theories behind the MSGA is Carley and Newells’ Model
social agent (MSA), a theory used to approximate characteristics in a matrix that are typical for humans [8]. The MSA has also been used to measure the current complexity of NPCs [7]. The MSGA is not yet implemented and therefore the rest of this paper will be directed at presenting a detailed conceptual model of the agent. The MSGA (fig1) like most agents needs information in order to make decisions but evaluates the input from the world differently than most NPCs. What makes the MSGA different from NPCs is the presence of an emotional state and a social state that contribute to a behaviour selection, which in its turn leads to an output from the agent.

![Figure 1 Model Social Game Agent (MSGA)](image)

**Components of the MSGA**

One of the central components for the MSGA is a memory module that in essence keeps track of three aspects of the agent: Social state, Emotions and evaluations in the Consumat. The MSGA perceives the world through sensory input (WS) that is passed directly to the emotions module. The MSGA will access memory from previous emotions and social state before passing the processed input (WS’) on to the Consumat. In this process the Social state of the MSGA will be updated. The Consumat (further described in section 4) evaluates the input from the emotions module and depending on certainty decides on a strategy. If the Consumat evaluates the information
with a high level of certainty it will turn to an automated action and repeating previous actions. If the Consumat on the other hand evaluates the input from the emotions module with a low level of certainty, one of three possible strategies will be chosen: imitation, deliberation or social communication.

WORLD

Since we aim to explore possible ways of implementing a MSGA in a virtual environment our choice fell on Second Life since Second Life has been used successfully to implement Multi Agent Systems [9]. Many parts of the implementation described in [9] are relevant for the MSGA. Furthermore, Second Life is a fairly “open” platform with much user created content, making the implementation less complex and time consuming. Another added benefit is that the organization of early play-tests may be less time consuming since Second Life already has a player population from which play-test participants can be recruited.

LIBOMV

Library open metaverse (LIBOMV) is a client library that will be used to access the Second Life. LIBOMV can be seen as a layer between the world and the agent and could theoretically be used for interfacing any multi-agent framework. The complications with extracted sensory data from the world as discussed in [9] will need some closer inspection before implementation, since the information from the Second Life server will include information that the MSGA will not be able to interpret. The interpretation of the information from the server must be selected carefully to enable the MSGA to make its’ decision on valid and sensible information.

EMOTIONS

The Mind Module (MM) [12] is implemented as a spreading activation network [10] where the nodes represent emotions, sentiments, mood, and personality. The nodes are interconnected by weighted relationships governing agents’ state of mind.

The MM provides agents with an emotional memory in that, if a strong feeling is experienced (or rather, that the numerical value of an emotion node exceeds a threshold value) a sentiment is created, connecting the entity causing the emotion (such as another agent) to the emotion itself. When the
agent again is in the proximity of the other entity (for example the player character ‘Peter’) the agent will “feel” the remembered emotion again (or rather, the value of the corresponding emotion node increases), for example Anger, or Joy.

How strong an emotion is felt depends on the personality of an agent, or rather, the values of the personality trait nodes. The MM gives each agent 30 trait nodes, inspired by the 5-factor model (FFM) [11]. The traits are grouped into five factors, with the value of a factor being a weighted linear combination of the values of the traits. The five factors of the FFM are:

- Openness - appreciation for art, emotion, adventure, unusual ideas, imagination, curiosity.
- Conscientiousness - a tendency to show self-discipline, act dutifully, and aim for achievement.
- Extraversion - energy, positive emotions, and the tendency to seek stimulation and the company of others.
- Agreeableness - a tendency to be compassionate and cooperative rather than suspicious and antagonistic.
- Neuroticism - a tendency to experience unpleasant emotions easily, such as anger, anxiety, depression.

For example, an agent with a higher value of the trait Cheerfulness will “feel” stronger Joy (for exact mappings refer to [12, p.93.]) than an agent with a low value in the trait node Cheerfulness.

CONSUMAT

The Consumat model combines in an elegant way many of the leading psychological theories on human behaviour\(^1\) and categorizes them into a 2*2 matrix based on the level of need satisfaction (LNS) and behavioral control (BC) on the one hand, and certainty, type of needs, and cultural perspective (CP) on the other hand. Concerning the amount of certainty perceived by the agent, it is either confident in its decision making (and thus adopting an

\(^1\) These theories include amongst others Maslows theory on human needs, Festingers theory of social comparison, Pavlov and Skinner operant conditioning theories, Banduras social learning theory, and decision theories from Simon and Ajzen.
individual based perspective) or uncertain (thus turning towards others for guidance). If the agent has a high need for behavioral control and a high level of need satisfaction it reduces the amount of processing needed (using automated reactions) while a level on both results in a need for cognitive processing. This gives four general strategies humans follow, namely repetition, deliberation, imitation and social comparison (Table 1).

<table>
<thead>
<tr>
<th>Table 1: the Consumat model adapted from [13]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automated reactions (high LNS, high BC)</td>
</tr>
<tr>
<td>Reasoned (re)actions (low LNS, low BC)</td>
</tr>
<tr>
<td>Individual determined behaviour (certainty, personal needs, private individualist CP)</td>
</tr>
<tr>
<td>REPETITION Classical and operant conditioning theory</td>
</tr>
<tr>
<td>DELIBERATION Decision and choice theory, theory of reasoned / planned behaviour (attitude and perceived control)</td>
</tr>
<tr>
<td>Socially determined behaviour (uncertainty, social needs, egalitarian CP)</td>
</tr>
<tr>
<td>Imitation Social learning theory, theory of normative conduct</td>
</tr>
<tr>
<td>Social comparison theory, relative deprivation theory, theory of reasoned /planned behaviour (social norm)</td>
</tr>
</tbody>
</table>

At the end of each processing cycle of the Consumat module a decision about how to react based on current social state, the emotions module and World state is made.

SOCIAL STATE

The social state of the MSGA consists of current status from the social environment and potential norms of the agent society the agent should take into account in its’ decision making. The social states is stored in a memory so the MSGA can access the previous social state and also store the current social state for every processing cycle of the MSGA.

DISCUSSION

There are many issues to consider with this model and probably only a subset of them will be discussed here. The first issue is what kind of
cognitive model will be used when the Consumat enters the Deliberation process. In previous research both Belief Desire Intentions (BDI) models and the extended Belief Desire Obligations Intentions (BOID) models have been used to represent norms in agent architectures [14, 15]. However, these models lack certain aspects, making it impossible to represent norms effectively in the agent society. The BOID architecture can be seen as a further development of a cognitive model (BDI) where obligations (O) are added to represent norms [16]. To control some of the behaviours of a BOID-agent the obligations are programmed into the agents and thus influence the behaviour of the agents. Obligations do not change over time in contrast to norms that in our view should be more dynamic. In BOID, separating individual and social desires protects the autonomy of the agents, and this leads to the agent being able to deliberate over which components have priority. This choice of design might lead to conflicts between agents’ goals and desires from the demands of society, and may lead to both internal conflicts in the agent and conflicts between agents, and contradicting social norms may also occur [17]. Resolution of internal conflicts and conflicts between agents has been discussed and solutions to these problems have been proposed in [16]. Other strategies to overcome this representational problem have been mentioned in [18] but we have not reached a conclusion yet.

Considering memory size and for how long memories should be stored in this model, we need to implement some kind of Time to live (TTL) mechanism or implement rules for when memories degrade (are being forgotten) since this will affect the overall performance of the MSGA. Further to this we also need to find a way to make sure that the data received (WS) contain valuable information from the Second Life server. This might mean that we need to have strategies to limit these perceptions of the world with other strategies as pruning the perception of the agent, meaning that a MSGA should only be able to perceive “local” updates of the world state in its proximity.

What is still missing is a full implementation of all the components we argue would be beneficial for the player experience for us to know for sure if our ideas are too ambitious or even possible. Implementations of reputation system as RePage have been successful in terms of introducing trust mechanisms between agents [19] our approach is just slightly more encompassing. But the real question, whether or not believable NPCs coordinated by a social system, norms, and trust will create the dynamics we
are looking for in computer games and the teacher-training scenario, is yet to be answered.

Future work will be focused on developing a formal model of the proposed conceptual model and implement it in a gaming context. The underlying model of the implementation of the deliberation level is in most cases of a BDI type. Adding the social level to the same tier, such as e.g. in the BOID case [15] would obfuscate the social level in our opinion. The contents of each layer will depend on the actual application environment.

References


198
Complexity at the cost of control in game design?

Computer Games, Multimedia and Allied Technology, Indonesia 2012
(Published)

Magnus Johansson  
Department of Computer and Systems Sciences  
Stockholm University, Stockholm, Sweden  
magnus@dsv.su.se

Mirjam P. Eladhari  
Department of Game Design, Technology and Learning  
Gotland University, Gotland, SWEDEN  
mirjam.eladhari@hgo.se

Harko Verhagen  
Department of Computer and Systems Sciences  
Stockholm University, Stockholm, Sweden  
verhagen@dsv.su.se

ABSTRACT

This paper describes the Model Social Game Agent (MSGA) and presents a comparison to existing strategies to create NPC behavior in video games. We present the results of a survey and an interview-study of professional game developers, designers and scholars with a focus on the social behavior of NPCs in existing games and the potential advantages and disadvantages of the MSGA. The results indicate that there are concerns regarding choosing to implement games AI as systemic AI (such as the MSGA) over an implementation based on scripting and behavior trees. Another question raised is the actual benefits of systemic AI and in what sense it would change the player experience. One of the potential gains of introducing the MSGA in game design would be to open up opportunities for new modes of play and also open up for unexplored design spaces.

Keywords
NPCs, Believable NPCs, Game Design, MSGA, Game AI, Believability, Intelligent Agents.

1. Introduction

Digital games are constantly breaking new ground often accompanied by
breakthroughs in technology. The most prominent aspect of development in digital games is the graphical representation while artificial intelligence in games in many ways has been a neglected aspect. The complexity and roles of Non-Player Characters (NPCs\textsuperscript{2}) are limited to scripted dialogues and scripted behavior. Central contributors to the field of games research have pointed out some of these shortcomings. Richard Bartle made one such claim in 2003, where he pointed out that AI has a potential for further development: “From the point of view of world design, AI promises great thing. If virtual worlds could be populated by intelligent NPCs, all manner of doors would open” [2 p. 616]. Of course games AI has evolved in certain ways since 2003. More recently, Ernest Adams elaborated on the role of games AI in a slightly different way, explaining the reasons behind existing strategies: "Most current video games do not, in fact contain much real AI. The point of video games is to entertain, not to simulate intelligence in depth, so they usually contain just enough AI to make the player feel as if the software is reasonably smart" [1 p.18]. This view gives some perspective on why the behavioral aspects of NPCs have not evolved and it also reinforces Bartle’s observation from 2003. Moreover, the relation between game design and AI design has this far been neglected.

The role of NPCs differs from one game genre to another. Adventure games for instance can be seen as interactive stories and thus players have higher expectations on the characters in such games. These expectations usually imply that the NPCs should be less mechanical and more human-like, something that has been seen as one of the most difficult problem to solve, or as Adams puts it: “Simulating human beings is the most difficult and also the most important problem in game design” [Ibid]. While not all games and indeed not all NPCs need to be or behave highly complex, we still need to explore the possibilities for those games and those NPCs that should be or behave complex. The reason for this design choice is perhaps more a product of the vision of what particular game-play that NPCs are designed to cater for than trying to create truly believable NPCs. Current games AI is designed to be just smart enough to keep the illusion of intelligent behavior alive as mentioned by Lidén in the chapter “Artificial Stupidity: The art of Intentional Mistakes” [10].

If we look at games as emergent systems, games can be seen as consisting of parts with interrelations that form a whole. The interrelations and number of

\textsuperscript{2} In this article we use the term “NPC” and “agent” interchangeably.
parts add to the overall complexity of the system, and according to Salen and Zimmerman, games are far too complex to be either fixed or periodic, and must by necessity be more structured than a chaotic system. Further they introduce the concept of meaningful play as a measure on successful game design. “Complexity is intrinsically linked to meaningful play. Playing a game is synonymous with exploring a game’s space of possibility. If a system is fixed, periodic or chaotic it does not provide a space of possibility large or flexible enough for players to inhabit and explore through meaningful play” [11 p.165]. The overall question for this paper is if the model social game agent (MSGA) [7] adds to the notion of meaningful play or if it introduces too much complexity and chaos to the overall game design.

This paper explores a strategy for developing believable NPCs in games with a focus on emotions, memory, and social aspects such as cooperation. Our assumption about games AI is that much of the logic and interaction with NPCs is designed in static ways with scripting or behavior trees as the most common techniques. As mentioned above AI has been defined as one of the aspects of game worlds that have been neglected for a long time on numerous occasions. We also aim to explore the connection between AI design and game design. We will focus on evaluating a potential strategy to create believable NPCs in games, and present the results of a survey study and an interview study with game developers, people from academia and game designers.

The survey was aimed at gathering information on the views on NPC aspects such as memory, emotions, and behavior adapted to context, navigation, decision-making and cooperation between NPCs. The survey was designed to explore existing strategies to create intelligent NPCs and to find out to what extent the different components of the MSGA have been implemented in the past and to what extent those implementations have been found successful.

The conceptual model of the MSGA was then evaluated with the help of five respondents from the game industry, focusing on what problems the MSGA can solve and also reflect on possible drawbacks of the MSGA. We conclude with a discussion and some conclusions regarding the suitability of the MSGA in the context of current games and game design.
2. The Modal Social Game Agent

The MSGA [7] is a conceptual model that builds on three main components, a meta decision making model (the consumat [5]), a model of emotions (the mind module [4]), and a social state module (currently under development). Complementing this is a memory module to store information about the interaction of the MSGA with the physical world, the social world, and the emotional or inner “world”. The MSGA is aimed to overcome some of the shortcomings of current NPCs and allow us to develop more believable NPCs for virtual worlds. One of the theories behind the MSGA is the Model social agent (MSA) [3].

The MSGA is currently being implemented but since the possibilities for testing the performance of the MSGA are limited the remainder of this paper will be directed at presenting the conceptual model of the agent on the same level of abstraction as for the respondents in the interview study presented in the next section. The MSGA (see figure 1) evaluates the input from the world differently than most NPCs. What make the MSGA different from NPCs are the emotional state module and the social state module. These contribute to a behavioral selection, which in its turn leads to an output from the MSGA.

Figure 1 Model Social Game Agent (MSGA)
2.1 Components of the MSGA

One of the central components for the MSGA is a memory module that in essence keeps track of three aspects of the agent: Social state, Emotions and evaluations in the Consumat [5]. The MSGA perceives the world through sensory input (WS) that is passed directly to the emotions module. The MSGA will access memory from previous emotions before passing the processed input (WS’) on to the Consumat. In this process the Social state of the MSGA will be updated.

The Mind Module (called Emotions in fig 1) provides the MSGA with an emotional memory. If a strong feeling is experienced or rather, the numerical representation of a certain feeling reaches a threshold, a sentiment is created, connecting the entity causing the emotion (such as another agent) to the emotion itself. When the agent again is in the proximity of the other entity, the value of the corresponding emotion node increases, for example Anger, or Joy [4]. For example when the agent is in the proximity of the player character ‘Peter’ the agent will “feel” the remembered emotion. How strong an emotion is felt depends on the personality of an agent, or rather, the values of the personality trait nodes. The MM gives each agent 30 trait nodes, inspired by the 5-factor model (FFM) [12].

The Consumat model combines many of the leading psychological theories on human behavior\(^3\) and categorizes them into a 2*2 matrix based on the level of need satisfaction (LNS) and behavioral control (BC) on the one hand, and certainty, type of needs, and cultural perspective (CP) on the other hand. Concerning the amount of certainty perceived by the agent, it is either confident in its decision-making (and thus adopting an individual based perspective) or uncertain (thus turning towards others for guidance). For example, if the Consumat evaluates the information with a high level of certainty and was satisfied with previous outcomes it will turn to an automated action and repeating previous actions. Other strategies for the Consumat, depending on certainty/uncertainty and satisfied/dissatisfied are imitation, deliberation or social communication.

---

\(^3\) These theories include amongst others Maslows theory on human needs, Festinger's theory of social comparison, Pavlov and Skinner operant conditioning theories, Banduras social learning theory, and decision theories from Simon and Ajzen.
3. Data collection

This paper consists of 15 surveys and 5 interviews where the aim for both surveys and interviews is to get input on further development of the MSGA rather than to present a conclusive view of the current state of NPC development. The data collection is limited in scope and the results should be seen as indicative rather than conclusive regarding the aspects covered by both interviews and surveys. The aspects addressed during the surveys and interviews were:

- Navigation/pathfinding
- Strategy/Tactical choices
- Behavior adapted to context
- Decision making
- Memory of previous interactions
- Cooperation among NPCs
- Emotions

4. Survey Study

The surveys were distributed during game conferences where those interested could participate. Since the questions in the survey were aimed at people with experience from game development, the answers presented here are from those respondents that could contribute and give input to the evaluation of the MSGA.

In the survey study 11 of the respondents were male and 4 female, with 15 in total. Of the 15 respondents, 2 were working in the game development industry, 9 in academia, 1 in both academia and the industry, 1 in both academia and in an indie-studio and finally the last respondent is involved in academia, the industry and is working for an indie-studio. The different roles for the respondents vary between design and programming. A majority (9 of 15) of the respondents report to be working in both areas, only 2 of the respondents are specialized in either design or programming.

4.1 Current NPC Intelligence – Survey Results

Part of the survey was aimed at making our respondents reflect over the current state of NPC intelligence (or game AI). Perhaps not surprisingly, all
respondents mentioned pathfinding algorithms as something that exists and that have been successfully implemented in current games. Strategy and tactical choices was also something mentioned by a majority of the respondents (13 of 15) as an existing aspect of games AI. When answering questions about behavior of NPCs adapted to context, 8 respondents reported that contextual behavior exists while 6 viewed this aspect as missing in current games.

Two of the questions relating to existing strategies to create intelligent NPCs were focused at decision-making and cooperation between NPCs. 9 respondents stated both aspects exist in current games while 5 respondents found decision-making as missing, and 8 respondents found cooperation as missing in current games.

Emotions and memory of previous interactions were among the least common aspects of NPCs implemented in current games according to the respondents, where only 5 respondents answered that they had encountered NPCs in games with a memory function to keep track of previous interactions and only 4 respondents found emotions to exist in current games.

Regarding their own experiences on implementing the NPC aspects of the survey, 12 of the respondents had worked on pathfinding algorithms and mostly on different strategies to implement the A* algorithm. 10 of these respondents also stated the implementation of pathfinding algorithms was successful. Only 6 respondents had been involved in implementing “strategy/tactical choices” in NPCs and 4 of those implementations were deemed to have been successful. 10 respondents had been involved in implementing behavior adapted to context in NPCs and 2 of the respondents found their implementation to be successful. One respondent involved in a less successful implementation of behavior adapted to context found AI good for some adaption but too limited to have a big impact on the behavior of NPCs. Decision-making was only experienced first hand by 6 of the respondents and 5 of the respondents claimed that the implementation had been successful, the reason behind the unsuccessful implementation was that the project was abandoned before completion. 9 respondents had implemented memory of previous interactions in NPCs and 7 of them found the implementation to be successful, but also commented on the limited scope of the implementation of this aspect. Only 3 respondents answered that they had been working with cooperation among NPCs and 2 out of 3 found the implementation to be successful. Emotions had been implemented by 5 respondents and by 3 of them successfully. Amongst the comments
about why the implementation of emotions had failed one of the reasons was that the implementation was not robust enough and that it did not cover a rich enough domain.

4.2 MSGA

The second part of the survey was firstly aimed at answering on a general level how the aspects of the survey could add to games, secondly how the MSGA could affect the play-experience and lastly how the MSGA could affect game design. We also wanted to get spontaneous remarks on the model through free text answers.

4.2.1 What do you think these aspects could add?

When commenting what these aspects could add to gaming experiences, one of the most common general comments was that the aspects of the MSGA would add immersion, believability, and realism to games and that it would also create a more emergent game experience. Also “a richer realization” of characters would appear due to less static authoring associated with NPCs according to one of the respondents. Some of the respondents focused on the use of memory stating it potentially could add much realism to NPC interaction and opportunities for stronger social experiences in games. Further, memory was seen as a way to make NPCs more context aware in their behavior and that this would avoid breaks in immersion that arise from an obvious lack of awareness of history.

4.2.2 How could the MSGA affect the play-experience?

Regarding how the MSGA could affect the play-experience, some respondents repeated their answers from the previous section, but more importantly also raised some concerns. These concerns was directed at what could be called “the black hole of AI”, and that players simply do not notice the added complexity to NPCs or that the behavior of NPCs would not be easily understood by players. One of the reasons for this concern according to one of the respondents was that “players often overestimate the intelligence of real dumb NPCs”.

On the positive side, increased interest through more complex experiences and added re-playability was mentioned by one respondent. The same respondent stated it would be more important and more interesting to interact with NPCs more than once since they remember what happened before. Another respondent mentioned consequences as a potential effect, meaning that since players would be more aware of the consequences of her actions if
reflected by NPC reaction. Finally, one respondent mentioned cohesion between events in games. The MSGA would hopefully cause the player to feel less disconnected with virtual stories, this would potentially open up for new modes of play beyond dialogue trees and combat.

4.2.3 How could the MSGA affect game design?
On the issue of the effects of the MSGA on game design, most respondents provided both pros and cons considering the added complexity of NPCs. One respondent answered that the MSGA would affect game design in ways that would open up new, unexplored design spaces that traditional game design may not be prepared for. Another respondent answered that the MSGA could alleviate some of the workload of game designers, but that the MSGA also potentially would make game design much more difficult, especially the debugging of games. The implementation of the MSGA would need to take quest flow into account since there could be a potential risk that NPCs change over time whereas the quests and story arch of a game remain linear. One respondent stated design should be simplified thanks to less hard coding, but that perhaps this would lead to designers feeling a loss of control over NPCs.

5. Interview Study
The five respondents of the interview study are all working for triple-A studios and have a broad experience of games development from RPGs, MMOGs, FPSs and indie-games. The interviews were semi-structured and many of the questions lead to follow-up questions regarding the respondents’ particular experiences of games AI and design. One of the respondents has mainly worked on game design but with an extensive experience from the game industry as lead designer on some of the leading RPG titles. The other 4 respondents have experience from game development and implementation of behavioral aspects of NPCs. All respondents have a varied experience from different genres where one has mainly worked on a popular first-person shooter.

The interviews lasted between 30 and 60 minutes and the answers to the questions have been categorized thematically to cover a broad area, ranging from the connection between AI in games and game design, to a discussion about current status of NPCs and what strategies for implementing behavioral aspects of NPCs are used, and finally an evaluation of the MSGA and what aspects of the MSGA was seen as a potential problem in games.
development projects. All respondents had the conceptual model of the MSGA presented in figure 1 available during the interview and also a list of existing strategies that were seen as important aspects of games AI.

5.1 Relations between AI and game design

Regarding the relation between AI and game design respondent one gave an interesting view on the relation between AI and game design. He described AI as the domain of system designers and programmers, while story and setting was seen as the domain of narrative designers. According to respondent one, designers rarely have skills or ambition when it comes to programming, system design or narrative design. Supporting this view, respondent four added this is for better or worse. For better because game designers have new ideas and try to invent new concepts, for worse, because they may not understand what's possible and may not know how to communicate, for sort of design for that context.

Respondent two had a slightly different view on the relation between AI and game design. Coming from a practical perspective he states that game designers at times are overly conservative and cautious when it comes to novel ideas in game design and therefore influencing the AI. Furthermore he believes that the relation between AI and game is to make NPCs seem smarter than they actually are. The company respondent two is working for has just released a sequel to one of their titles, a popular first person shooter and in that game all NPCs follow very basic instructions. The strategy for creating the illusion of smart NPCs is that designers actually have “frozen” NPCs while adding animations and effects to make the whole scene seem more believable and dramatic.

When discussing the relation between AI and game design, respondent three focused on heavily scripted games, in which games designers approach NPCs as particular characters in a script containing specific phrases that NPCs need to utter at a particular moment. He continues with one of the problems in games with many NPCs, that the vast majority of the intelligence of NPCs is limited just because there is “a million” of them and the designers do not have time to generate decision trees for million individual characters.

Respondent five says that in an ideal world the game designer has some sort of functionality or some sort of emotion he wants the player to feel. In most current games the emotion is either stress or threat and the AI designer tries to figure out the correct way of implementing that vision. The division of
labor between game designers and AI designers puts the game designer in the position to provide an idea and for the AI designer to come up with the solution. Respondent five also points out a problem about the highly specialized talents of both designers and AI-design: “AI is such a technical, it tends to be such a technical like hardcore computer science problem and just nobody has the time to become both an expert AI designer and an expert game designer.”

5.2 Current NPC Intelligence – Interview Results

When discussing the current status of NPCs respondent one made a distinction between two different strategies that in a way are central for this paper: systemic modeling and scripting. Current NPCs usually have variables which track state changes according to the respondent. This would mean that NPCs do have limited ‘memory’ of previous events but in a scripted sense and the same is true for cooperation and emotions, meaning that they exist where they are scripted.

When discussing the current status of NPCs respondent two mentions path finding as something central more or less all games have solved in satisfying way, but when it comes to interaction with NPCs it is a clear limitation that every aspect of the interaction is scripted. Not in the sense that scripted behavior or interactions are seen as a bad thing, only that it limits possible NPCs to interact with. In, e.g., Grand Theft Auto (Rockstar North 2008) and L.A Noire (Team Bondi Rockstar Leeds 2011), most NPCs are merely padding to make the world seem alive and it is impossible to interact with in any meaningful way.

Respondent three mainly perceives current NPCs as conversation trees and sees the vast majority of NPCs as not interactive at all. His view on conversation trees is illustrative of some of the games he enjoyed the least: “Like some of the really earlier Elder Scrolls (Bethesda Game Studios 2006) type of games or whatever would have, you know a little blurb that any given person on the street would have when you walked up to them. But it really was just a particular blurb, and so if you asked them again, they would tell you again. And if you came up to them three days later, they would tell you it again. And if you woke them up in bed, they would sit up in bed and look at you and tell you the exact same blurb again.”

He also points out path finding algorithms as probably one of the most observable parts of games AI since if the AI programmer has done a bad job this will really stand out and even jeopardize the gaming experience. Further
discussing the status of NPCs he elaborates: “I honestly don't think the style of game has been really invented, where really intelligent NPCs would be appreciated. And that's to m, more the reason why you don't have intelligent NPC's”.

Respondent four shares the view on most of the aspects covered by the other respondents but points out the SIMS (Maxis 2000) as a game with memory of previous interactions. Respondent five also focuses on NPC dialogue in answering the question about the current status of NPCs and that NPCs only go through a dialog tree.

5.2.1 Existing strategies
When addressing existing strategies for game AI respondent one mentions FaceGen (http://www.facegen.com/), which represents emotional states (happy, sad, angry, etc.) using facial expressions, as an example of adding believability to NPCs even though the emotional states may be scripted. Furthermore the emotional states had a limitation in that no AI behavior was connected to those states. Respondent one also sees possibilities NPC-NPC conversations to choose query and responses according to those emotional states, but that still could be scripting, not necessarily systemic AI.

Furthermore respondent one also elaborated on the user perception of the NPC expressions where players found the expressions consistent with NPC emotions, or at least not absurdly inappropriate or inexpressive. The reason according to respondent was that the intention of making highly persuasive emotional behavior was never prioritized as a key feature of Oblivion (Bethesda Game Studios 2006).

Respondent one also mentions the limited memory of NPCs again pointing out that there are indeed a memory for both cooperation and emotions, but when they exist they are scripted. Another aspect he mentions is that systemic modeling of memory, cooperation, and emotions are very rare in games. He speculates that this is the case because they are very hard, and because there is, as yet, no apparent feature-driven market niche for them in games.

On the follow-up question why more dynamic behaviors such as Cooperation-among-NPCS-like modeling systems like Oblivion's faction are not more common, respondent one states these systems were only modestly successful and that the limitations behind them (i.e. the script based implementation) were invisible to the user.

The architecture that respondent two currently has been working on is an agent architecture that is dependent on scripts. He also mentions behavioral
trees as one of the upcoming strategies to create more dynamic behaviors in NPCs. One of the drawbacks with the agent architecture is that NPCs are not as suitable for the single-player scenarios in the game according to this respondent, since all behaviors of the NPCs rely on scripts that make the NPCs a bit predictable. Since the game’s unique selling point is the fast passed multi-player mode respondent two claims it is still one of the best solutions.

Respondent five mentions the game Façade (Mateas and Stern 2005), as an example of pre-scripted dialogue that worked really well, since the characters had memories of these unnamed things relating to the characters, that were deeply important to their relationship in the game. Respondent five raises an interesting point about systemic AI assuming: “if it's all done very, very well” that there: “is always a black hole of AI, where you are programming an incredibly thoughtful, clever, brilliant AI behind the scenes. And the player still reads it as a scripted interaction”. The last quote from respondent five can be seen as an example of the “black hole of AI” since the dialogue of Façade is actually procedurally generated and not pre-scripted.

5.2.2 How could the MSGA contribute?

When discussing the benefits and the potential contributions of the MSGA, respondent two is interested in the cooperative aspects of the MSGA and likes the idea about the possibilities for NPCs to share and come up with shared goals and strategies. He mentions the effect when one NPC does something spectacularly intelligent, there is a problem when other NPCs does not follow the same strategy, and believes the MSGA could improve those situations.

Respondent three says that the two main aspects that the MSGA could potentially add to games are emotions and memory, but also finds them partially solved in later games such as Skyrim (Bethesda Game Studios 2011). However the memory of NPCs in general degrades pretty fast according to respondent three and a more complex memory would add aspects to the interaction that he believes would be interesting for the players.

Respondent four mentions emotions as one of the main contributions of the MSGA since there has not been a lot of that in mainstream games, even though photo real games like Heavy Rain (Quantic Dream 2010) and L.A Noir (Team Bondi Rockstar Leeds 2011) implement emotions to some extent. Further he develops his line of reasoning with more specific aspects
on the MSGA and the emotions module: 

"that's part of the problem, sort of articulating, what you really want emotion in these games to do or how they sort of fit in to the experience. More the sort of game mechanic, less sort of, let's make games emotional point of view. Behavior after the context I think is a, and with previous interaction, which is not a kind of context, it's a sort of more contextual awareness."

Respondent five feels that the memory of the MSGA could be really interesting feature. Enabling the players to experience how the NPCs’ memory affect the NPCs actions could be really powerful.

Discussing the dynamically made decisions in the Consumat according to respondent five could be a strategy for freeing up game designers to be able to add more complicated situation:” So it’s really more than adding something, it's taking away a hurdle, where the designer, designers always want to put in a lot more interaction”.

5.2.3 Drawbacks with the MSGA?

On the final questions in the interviews about potential drawbacks with the MSGA respondent one expressed a concern regarding the MSGA and its functionality that it would add only a small marketable value to a Computer Role Playing Game (CRPGs), since they are commercially successful without them.

Furthermore, respondent one claims that very modest scripted behavior pretending to present dynamic decision-making, memory, cooperation, and emotional state-related behavior could add signature chrome to a CRPG franchise hoping to distinguish itself from its competitors. The implementation would likely be conventional scripting and narrative presentation tricks, rather than systemic NPC actors. And it is possible that such an implementation, if successful, might provide some rationale for research into more systematic renderings of NPC behavior.

Continuing, respondent one can scarcely imagine how the MSGA might affect a gameplay experience. In order to make a strong impression on the user, it would have to have distinct and obtrusive feedback to the user on its workings; otherwise, the user would assume it was just scripting.

Respondent two continues with a discussion about how much an RPG user wants to have an “in-your-face interface” for NPC interaction gameplay.

Respondent two states that he mostly hate RPG dialog which is where he expects most of the gameplay and feedback to be presented to the user. The user might really admire any good presentation of believable NPC behavior in an RPG. The main question according to respondent two is how the
behavior of NPCs is implemented, and if players really care if the NPCs are scripted or systemic AI.

Furthermore, he focuses on some other practical problems with innovative MSGA systems and that it would initially be largely limited by the need to interface with existing convention game systems. The limited number of inputs into the game engine expected by existing games would make an MSGA system seem little more than a scripting implementation... unless it was skillfully, and somewhat disingenuously, marketed. Oblivion's 'Radiant AI' is an example of such a skillful and somewhat disingenuously marketed game systems feature. Radiant AI is supposed to sound like cool AI, but it is really just scripting with a slick narrative presentation.

Respondent two is worried about losing too much of the control over the interaction in games since there already are problems with freezing the NPCs in their agent system in the game that he was working on and imagines the MSGA to be even harder to control when its implemented.

Respondent three mentions one aspect central to NPCs in games which is that they serve a purpose, and that more intelligent NPCs not always are better: “So, if they are intelligent or not, in many cases you don't even want them to be intelligent. If you're playing World of Warcraft (Blizzard 2005) and you have to kill a guy a thousand times, because the shoulder piece that you want only drops one thousand of a percent, you don't want him to be all that smart. Because he's essentially just a container that you have to bust a thousand times to get the thing you want. And if he was cunning in any way and you had to hunt him down, a thousand times, that would drive you insane”.

On a more technical level respondent three discusses the dual edged sword of a dynamic memory based system. The system can store a lot of things that you do not want it to store, it can be maliciously tweaked by players he continues, and that could potentially lead to the overall system not responding within the confines of what the designer originally wanted. Furthermore, respondent three discusses other potential risks of damaging consistency when NPCs have information that would cause them to act differently under certain circumstances and also fears NPCs might crash, unless they are made to be robust. As a last comment respondent three underlined the argument with dynamic NPCs in terms of costs: “any time producers see the word dynamically made decisions, they're going to say: “How much does this increase my tuning/debugging time”. And to a certain extent they are right, because effectively what that means is that the amount of possible states that a particular agent can be in unbounded and therefore
testing the transitions from those states is an undefined task”.
Respondent five discusses games with a larger overarching story such as World of Warcraft (Blizzard 2005) as particularly problematic in the context of a NPC that is both dynamic, interactive and changes over time, because the NPCs might break the story line. Basically according to respondent five: “It's just a lot of purpose that these NPCs have to serve” and that would be very difficult for game designers to have strategies for. Further he discusses the risks with implementing a more intelligent NPC with emotions and a memory of previous interactions:” Players are conditioned to expect the NPCs remember nothing, so first you have to train the player that the NPCs remembering something. And then train them to, I guess it's almost like training somebody to recognize that another human has, like the stage in childhood where you start recognizing that other people have emotions that are going on behind their heads. And you have to start predicting what they are thinking of, and then using that to figure out their emotions. You have to teach the player almost as if they were a child that these NPCs have emotions and this is what they emotions are based on. So they can then make game play decisions based on that”.

6. Discussion/Conclusions

A main direction for the discussion and conclusions of this paper is Systemic Artificial Intelligence versus scripted behaviors and various strategies of scripting. Perhaps the reason is that most games are structured in ways that do not allow a totally dynamic behavior in NPCs without losing parts of the structure. The structure that comes to mind in this discussion is the narrative thread and the designers’ visions of the game. The complex relations of creating an overarching storyline seem to be threatened by adding too much dynamics to NPCs. There seem to be a tension between complexity of NPCs and control of the design that would threaten the emergent properties of the game, and according to some of the respondent create erratic behaviors in NPCs. The potential risk would be to threaten the aspect of meaningful play making the game a chaotic system instead of a complex system [11]. There is also another aspect that became apparent in the interviews and especially with respondent five who pointed out the “black hole of AI” where really clever systemic AI is interpreted as “just scripting” when talking about Façade, a game that does not have pre-scripted dialogue but uses procedurally generated dialogue contrary to respondent five’s interpretation. The “black hole of AI” was also mentioned by some of the
respondents of the survey.
Among the common reactions of the respondents regarding the relations between AI and game design, a central aspect was that AI and game design are highly specialized activities, and designers do not always know what is technically possible. It is however understandable since it is really hard to be both a skilled game designer and AI programmer. One respondent reported that game designers at times do not dare to be too radical, and that might be part of games building on more or less the same basic functionality and interaction.
All respondents more or less stated that NPCs are most of the time static and scripted when discussing the current state of NPCs. One aspect that all respondents mentioned was dialogue trees. The dialogue of many games especially in MMOGs and open world RPGs is problematic because it is highly repetitive. In the interviews NPCs were not considered intelligent but functional.
Among the existing strategies discussed during the interviews, scripting, behavior trees, dialogue trees, path finding algorithms, emotions, and memory were the ones most frequently mentioned.
While discussing how the MSGA can contribute to games emotions, memory, and dynamic decision-making were mentioned, but not by all respondents. All these aspects of the MSGA have according to most respondents been implemented more or less in older games, but probably not in combination. The exception would be dynamic decision making, since it adds complexity at the cost of lost control over the design and behavior of the NPCs.
When discussing the potential drawbacks with the MSGA all respondents but one described many concrete problems the increased complexity of the MSGA could introduce. Dynamic NPCs introduce complexity for testing, narration and dialogues, risks of crashing the game and may be exploited by players, making it difficult to make the game run smoothly.
One respondent did not think that systemic artificial intelligence would add better performance or complexity compared to scripts, since it is the players perception of the NPC that is important.
One of the main concerns raised in the interview study regarding the complexity of the MSGA was the lack of control of a dynamic NPC such as the MSGA. The reason seem to emanate from a need of control of the NPCs, where in simpler architectures the NPCs can be “paused” to enable cut scenes or effects in the game. When the animations are finished the NPCs are activated again and continue to do what they did. In this particular case
the MSGA raised concerns about how easy it would be to freeze the interaction for the duration of animations or cut-scenes and then get the MSGA back on track. Another problem identified with the MSGA is that it might be hard to keep consistency between NPCs and the overall story arch of a game, since again, a dynamic NPC can come up with actions that was not anticipated by the designer.

On the positive side traits such as the social aspects of the MSGA and the possibility for cooperation and learning between the MSGAs was seen as one of the major strengths. The emotional aspects of the MSGA were seen as something that has been solved differently with scripting and other representations of emotions. The main contribution of the mind module would be that there are possibilities to see the actual implementation as a "glass box" where we can adapt the behavior of the MSGAs in a dynamic way compared to the static strategies used.

In the surveys and interviews it became apparent that most of the aspects of the MSGA have indeed been implemented before, but not all of them successfully, and not in combination. Those respondents who reported to have been involved with implementing decision making, emotions, and behavior adapted to context also reported that it was successful because of the limited scope of the implementation, but that it also had effect on how these aspects.

The MSGA does not seem to be a proper solution for all game genres considering the added risk of the dynamic decision-making. However, memory and emotions are aspects that during the interviews were seen as important and interesting aspects that need to be further studied, and the combination of memory and emotions needs to be connected to context. Adding dynamic decision-making to NPCs in, e.g., open world RPG or MMOG has potentially high risks on the robustness of the game, while running an additional risk as being perceived as “just scripting” by players. This would in essence mean that if implemented it should be in a small sandbox game where the effects of rampant NPCs could be controlled, and there is a possibility to test the performance of the NPCs extensively before releasing the game. Furthermore, one of the respondents indicated that with existing game genres there is no real need for truly smart NPCs, but that it would be interesting if indeed one such genre would appear. However, equipping the MSGA with a social state mechanism akin to the use of norms or indeed laws in human societies, these risks may be limited. Regimentation norms could even render these risks to be very small.
7. Future work

The first part of the continuation of this research is to finish the implementation of the MSGA and evaluate how players in perceive it. The second part is to find suitable game genres or even create new genres for the MSGA, identify what types of NPCs that would benefit from being implemented as a MSGA, and identify those NPCs that would be highly unsuitable as MSGAs.

8. Acknowledgement

This article would not have been possible without the help of the respondents that took their time to answer our questions, a big thank you to all of you. And last but absolutely not least a big thank you to Musse Dolk who has been working on transcribing the interview material.

9. References

[9] Pinchbeck, D. An analysis of Persistent Non-Player Characters in the


10. Games


Mateas, M. Stern, A. Façade (PC). Release date July 2005


Quantic Dream. Heavy rain (PS3). Sony Computer Entertainment. Eu-release date 24th February 2010


Id Software. Quake (PC). Activision/ Valve Corporation (Steam). Release date June 22nd 1996.


Blizzard Entertainment. World of Warcraft (PC). Blizzard Entertainment.
Eu-release date February 11th 2005.
Blizzard Entertainment. World of Warcraft, Wraith of the Lich King (PC).
Analyzing AI in NPCs – An analysis of twelve games

(To Be Published 1st October 2013 by Routledge) in: Multiplayer, The Social Aspects of Digital Gaming, Thorsten Quandt (ed)

Magnus Johansson, Björn Stråät, Henrik Warpefelt, Harko Verhagen

ABSTRACT

In this chapter we analyze the AI in NPCs in different games. In 2 studies we apply and develop a method for analyzing game AI based on a framework developed for classifying social theories and their ontological differences. Using observation during game play and analysis of the video captures of the game play we can see that the main focus of game AI on path finding has paid off but that the social believability of NPC behavior has not developed at all.

Keywords: NPCs, Artificial Intelligence, believable agents, model social agent, game AI

Introduction

When Baldur’s Gate: Dark Alliance (Vivendi 2001) was released in 2001 to the PlayStation 2 console it was received with enthusiastic approval. When starting the first mission in the game, a mission that consisted of clearing out a cellar of giant rats and vermin in the Elf song tavern, it was obvious how extraordinary the graphical detail was compared to contemporary games. After finishing the first mission it was time to head back to the Elf song tavern to sell some loot and get another mission. The vendor in the tavern greets you with a long monologue about his products, a sales pitch to make players spend their gold on his merchandise. Even the vendor, a Non Player
Character (NPC) of the game was when compared to contemporary standards both detailed and believable, the first ten times. However after going to the same vendor for the fiftieth time, his monologue was starting to become annoying…

In (Bartle 2003) the history of Virtual Worlds is documented ranging from the Multi User Dungeons (MUD) of the seventies to the game worlds of 2003. Shortly after this World of Warcraft (Blizzard 2005) was released but the question is if World of Warcraft really changed everything? Bartle (2003) claims that the major difference between MUDs and modern virtual worlds is the graphics, under the surface they still function pretty much the same and the same social phenomena can be observed in both. Among the unchanged aspects is the unfulfilled potential of game AI “From the point of view of world design, AI promises great thing. If virtual worlds could be populated by intelligent NPCs, all manner of doors would open” (Bartle 2003, p. 616). Castronova (2006) also suggests further improvement in game AI.

The question we want to investigate is: how has game AI developed during the last 15 years? The chapter will discuss the game AI in 12 games focusing on the complexity of the behavior of NPCs. We also discuss different roles for and types of NPCs.

**NPCs**

In (Johansson and Verhagen 2011) we discussed the limitations in game AI by observing NPCs in World of Warcraft in general. For NPCs acting as means to communicate something in the game world or to fulfill the specific task they have been designed for, complexity of behavior (i.e., unpredictable yet understandable behavior) is not needed. Bartle (2003, p. 287) described some of the most usual tasks NPCs fill in game worlds:

- Buy, sell and make stuff.
- Provide services.
- Guard places.
- Get killed for loot.
· Dispense quests (or clues for other NPCs’ quests).

· Supply background information (history, lore, cultural attitudes).

· Do stuff for players.

· Make the place look busy.

These are perhaps the most common tasks for NPCs in the MMOG genre. In First-person shooter (FPS), Third-person shooter games, Role-playing games (RPG) and Real time strategy (RTS) NPCs are usually allies or enemies, where enemies are part of the intrigue of the game. Sometimes the allied NPCs are so called Persistent NPCs that are also part of cut-scenes to reveal information or parts of the plot of the game (Pinchbeck 2009).

If NPCs in the future should be able to perform other tasks than the automated actions above we should start to think about what traits NPCs today lack. To answer this we investigate 12 games released from 1996 until 2011.

**Data collection**

To explore certain aspects of video games different kinds of observation methods can be used. Based on ethnographic methods, observations made in pairs where one person is playing the game and the other is taking “field notes” is the method used in our studies. Complementary data collecting consists of recordings of the game sessions for in-depth analysis after the observations.

We study AI from a “black box” perspective since the code was not accessible. It also underlines an important aspect of game AI, namely that the actual implementation is not important as long as the result is believable game AI that does not disturb the game-play. In some cases we used cheat codes to trigger some typical behaviors of NPCs for some game scenarios. These scenarios were influenced by the categorization derived from the social fractionation matrix developed by Carley and Newell (1994) (referred to as C&N from here on) to see what parts of the Model Social Agent could be found in NPC behavior and what parts were missing. The matrix consists of several categories of knowledge and processing capabilities that together span all types of agents from omnipotent agents to model social agents. In
(Johansson and Verhagen 2011) we analyzed a regular NPC from World of Warcraft as a mix between a bounded rational agent and a cognitive agent. This chapter uses the same method to study how capable NPCs in different games are at interacting with the player and each other. The first study takes a more holistic perspective focused on biological attributes such as hearing and sight, whereas the second study is focused on the social actions taken by the NPCs.

**Study 1**

Using C&N we identified different situations for NPCs. The tasks can be either non-social, multiple agents or real-time interaction. For the processing interactions of the NPCs, we selected the omnipotent agent, rational agent, bounded rational agent and cognitive agent as the potential categories to consider.

Finally, we added game typical aspects such as path finding and biological aspects such as line of sight and hearing where applicable.

The games that have been studied in this chapter can be arranged in to the following categories:

**First Person Shooters**
- Quake (Id Software, 1996)
- Deus Ex (Ion Storm Inc, 2000)

**Third Person Shooters**
These games are usually divided into subgenres. In our study the three first games are “stealth” games, while the last two games are “sandbox” games.
- Metal gear Solid (Ubisoft Montreal, 1998)
- Splinter cell (Ubisoft Montreal, 2002)
- Assassins creed: Brotherhood (Ubisoft Montreal, 2011)
· Mafia: City of lost heaven (2002)
· Grand Theft Auto 4 (Rockstar North, 2008)

**Multiplayer Online Battle Arena**

Multiplayer Online Battle Arena (MOBA) is a fairly new game genre that in certain perspectives has much in common with the Real time strategy genre. The NPCs that have been part of the MOBA observation are monster and minions, where there are 4 different types of minions for each team and 10 different types of neutral monsters that can be killed in order to get experience points and gold. Throughout this chapter we focus on the AI of the minions, towers of each team. Only one game, League of legends (Riot Games, 2009), was part of the study.

**Results study 1**

**First Person Shooters**

· Quake

The NPCs (named Ogres) are opponents to fight. They have a limited set of strategies and always react in the same way in fighting situations. For example, when being attacked they always flinch back and get stunned for a while and they always attack the player that attacked them last, even if this is not strategically sound choice. The NPCs have a defined set of weapons that is static during the game and the way they use weapons is unvaried as well.

The path finding algorithm is very limited, NPCs walk into walls and have problems with utilizing the different levels of the map. The path finding algorithm seems to ignore the routes available to the player. Their line of sight is fairly realistic, since they do not see players attacking from behind and cannot see through walls or obstacles. The social aspects of NPCs are limited to not attacking each other. They do not have any cooperative strategies whatsoever apart from sharing vision in some sense. If all NPC in a group have line of sight of the player and one NPC sees the player, all NPCs discover the player. However, if an NPC in a group does not have line of sight, it will not discover the player even if the other group members see the player.
· Duke Nukem

Here NPCs (Assault troopers) are opponents as well. They have similar traits as the NPCs in Quake. The NPCs can see through windows but do not discover the player from reflections in mirrors in the game. However, once the NPC discovers the player, the line of sight seems to become infinite and it can see through walls. Before the player is spotter, the path finding algorithm acts in a limited way. Once the player is spotter NPC mobility in the game increases even though they can run into walls and obstacles without resolving the situation. The NPCs have no restrictions when it comes to friendly fire and attack their allies without hesitating. If an NPC gets in the line of fire between another NPC and the player it will keep on shooting. They have no means of communication and if one NPC in the proximity of other NPCs is attacked, there is no reaction to the attack.

· Deus Ex

Here the NPCs (Terrorists) are less limited than the NPCs in the previous games. They are equipped with many types of weapons and adapt the choice of weapon to the situation. The NPCs have no precautions with respect to other NPCs and may fire rounds that hit their allies. They can notify other NPCs if they have spotted the player but do not have any strategies to cooperate with the player. The path finding algorithm seems to be less restricted than in the previous cases.

Third Person Shooters

The stealth games

In all three stealth games in this study the NPCs have three basic modes that direct their behavior.

The first mode is “patrolling” and could be interpreted as a neutral mode. The NPC have not yet discovered anything suspicious but will if the players get in the NPCs’ line of sight or if the NPC hears the player. Once a player has been discovered the NPCs change mode and become suspicious. The last mode for the NPCs of this genre is offensive and this is the active mode where the NPCs will chase and try to kill the player.

· Metal gear solid
The NPCs depend on their line of sight to see and give pursuit to a spotted player. Apart from the above mentioned general stealth modes, the NPC will be in “Suspicious” mode during a cool down period until it gets back to the initial “neutral” mode if they cannot perceive the player anymore.

However, while playing the cold down period feels like the NPC is suffering from amnesia. The path finding algorithm does not resolve problems with obstacles encountered during chase. The NPCs do not seem to cooperate.

· Splinter cell

Here, NPCs in also activate the “Suspicious” mode after hearing e.g., footsteps, gunshots etc. The line of sight of the NPCs is cone shaped and feels realistic complemented with a 360-degree hearing. An NPC that has spotted a player and is in “Offensive” mode will not “forget” the player to return to being suspicious or neutral. The path finding algorithm is efficient as long as the path for the NPC is not blocked with high obstacles. If one NPC spots the player all nearby NPCs will start to chase the player as well, which is the only element of cooperation.

· Assassins creed: Brotherhood

This game offers different types of NPCs such as civilians (creating an atmosphere of crowded city streets) and guards (patrolling the streets). It takes some player effort to trigger the suspicious and offensive mode of the NPCs and if the player does not attack the NPC it will remain in the “patrol” mode. However, if the player attacks the NPC, kills a civilian, or climbs the roofs the NPCs will quickly become offensive and chase the player. A player that has once been spotted by a NPC in offensive mode will be recognized and activate the offensive mode of that NPC.

The path finding algorithm of the NPCs is highly efficient both in terms of the routes the NPCs patrol and how NPCs solve the path finding task when chasing players. The player can only be attacked by one NPC at a time, a strategy to regulate the difficulty of an attack by multiple NPCs.
The sandbox games

In the sandbox games the NPCs are either neutral or offensive towards the player character, and different actions trigger the offensive mode of the NPCs in the game.

· Mafia: City of Lost Heaven

The NPCs (law enforcement personnel) are in neutral mode by default. If a player kills a civilian in the game without any NPCs being in the vicinity, nothing happens. If NPCs observe a killing they will change into “offensive” mode and the player will be “wanted”. If the player manages to kill the NPC during the chase the “wanted” alert disappears. Thus, NPCs do not cooperate or communicate their mode or the status of the player. The path finding algorithm of the NPCs cannot deal with blocked paths.

· Grand Theft Auto 4

The NPCs (police officers) are in neutral mode by default. The “wanted” mode is invoked after an observed killing and remains active when the player is within the limits of a circular. All NPCs will chase the player when spotted in this mode. If the player manages to escape the area there is a cool down period until the NPCs returns to their neutral mode. When in neutral mode the NPCs do not recognize the player even if the player just attacked the NPC and escaped. NPCs in a gunfight try to duck for cover if possible. Different NPCs have different responses to player actions, for instance if the player attacks a civil NPC the police NPCs will try to arrest him, on the other hand if the player would aim a gun at a police NPC, the police NPCs will open fire. The path finding algorithm is similar to the one in Mafia.

Multiplayer Online Battle Arena

In the MOBA genre there is a priority system for some of the NPCs. When the special NPCs (heroes and minions) get attacked a call for help is sent to allied NPCs. The priority system is static with preset values for when to intervene and send help. The status check does however not happen continuously. If hero B from the opposing team attacks hero A the allied minions will continue to attack hero B even if he withdraws. An assumption is that computer controlled heroes share this priority system and the AI of minions.
The difficulty of the game session can be changed and this alters some of the NPCs behaviors slightly.

The aggressiveness of their behavior differs; the NPCs strategic decision making varies, etc.

The cooperative between the NPCs is not that of team play nor do they try to get tactical benefits from tactical formations in the game or prioritize and change their target once its locked on an opponent.

**Study 2**

The first study showed there were some limitations in what could be observed – namely how NPCs interacted with each other and with the player on a level beyond that of pure action. Thus this second study (presented in more detail in Warpefelt and Strååt forthcoming) is aimed at finding the finer details of NPC social behavior – i.e. where they display convincing behavior. We also encountered situations where the behavior of the NPCs was so unrealistic that it could be considered game breaking.

It is important to note that we did not attempt to trick the NPCs into performing aberrant behaviors, but rather played the game as it was intended by the developer (i.e. following the story with some extra exploration of the game world where it was allowed).

The identified social situations were here also recorded using a screen capture utility. The recorded videos were then analyzed in pairs, where the attributes listed in C&N were compared to the behavior of the NPCs. However, here we utilized all the 74 attributes found in the matrix rather than the subset of overarching categories used in study 1. The attributes in the model were assumed to be exhaustive.

The games were selected using three criteria:

- Recently released (i.e. between November 2010 and November 2011)
- Used AI behavior and/or technology as a selling point, and/or had positive reviews of the same.
- Must be a triple-A title (i.e. a big-budget, high quality studio title)
The games chosen using this method were Skyrim (Bethesda 2011), RAGE (id Software 2011), and L.A. Noire (Team Bondi/Rockstar Leeds 2011).

**Results study 2**

In essence we found that these games were similar in their capabilities. Skyrim and RAGE had 10 positive attributes in common, RAGE and L.A. Noire had 7, and Skyrim and L.A. Noire had 8 in common. As for the total number of positive attributes, Skyrim had 15 in total, and RAGE and L.A Noire had 12 and 9, respectively. It should be noted that these results do not transfer between pairs, so Skyrim and L.A Noire having a similarity value of 8 bears no relation to RAGE and L.A. Noire having a similarity value of 7.

Below we present some of our findings in more detail. In addition to the results described above we will also describe the previously mentioned game-breaking behavior. We have categorized the findings as Combat, Non-combat situations and Irrational behavior.

- **Skyrim**

  Skyrim is a typical sandbox type of role playing game. NPCs that exist are story essential NPCs, companions that will follow the player and fight for her, storekeepers, special storekeepers like blacksmiths, ambient NPCs like strolling city people and working farmers, guards, wild animals (friendly or hostile), monsters and several kinds of human antagonists such as bandits.

  1) **Combat**

     In combat situations we observed Crisis response, Group making, Rapid emotional response, Use of tools, Use of language, Group think, Mob action, Goal directed behavior, Adaptation, and Automatic response to status cues.

  2) **Non-combat situations**

     In the non-combat situations we observed the Use of tools, the Production of goods, Use of language, Advertising, and Face-to-face interaction.

  3) **Irrational behavior**

     The player witness a hunter chasing a refugee, both being oblivious of the player. The hunter ignores the player, even when she is blocking his view.
When talking to the king in one town, other NPCs talked at the same time, addressing the player. It appears the NPCs do not have the attributes:

- Acquires information (omniscient guards always know about a crime)
- Models of others (hunter ignoring player when shooting refugee)
- Turn taking (NPCs talking at the same time – quest related cues do not overtake context/proximity triggered cues)

**RAGE**

RAGE is a mission driven first person shooter with some racing and role-playing elements. The player is more or less forced to follow the story in order to progress and is given step-by-step goals to achieve in order to finish each step of the quest line. It is possible to roam the game world, but this is mostly used to travel between locations and provide bonus quests rather than as a key component to the story.

NPCs are either friendly and passive or hostile and active. The friendly NPCs provide the player with quests and services (such as access to racing tracks and repairs), and act as shop keepers who sell supplies to the player. The hostile NPCs are exclusively out to kill the player and never provide any other interaction possibilities.

1) **Combat**

During combat we observed the Use of tools, the Use of language, Models of others, Adaptation, Interruptability, Crisis response, Mob action, Goal directed, Cooperation, Automatic response to status cues, Group think.

2) **Non-combat situations**

In the non-combat situation we observed Face-to-face interaction.

3) **Irrational behavior**

We were unable to find any irrational behavior in RAGE.

- L.A. Noire
L.A. Noire is missions based Third Person Shooter game. The game has an action element (combat criminals) and a racing element (chase criminals). The action elements can be skipped. The only NPCs that can be interacted with are the criminals in a combat or an interrogation situation. To successfully interrogate a criminal NPC, players must observe the NPC’s face and decide if it is lying, withholding the truth, or actually telling the truth when asked a question. The quality of the arguments the player can present to the NPC is based on the amount evidence collected from crime scenes and through interrogation. Other NPCs (traffic and pedestrians) populate the game world but the interaction between the player and these NPCs is limited to the use of car sounds or vocal utterances.

1) Combat

In combat situations, the NPCs displayed the following attributes: Use of tools, Mob Action, and Group think.

2) Non-combat situations

In the non-combat situation we observed Turn taking, Use of language, Face-to-face interaction, Rapid emotional response, Automatic response to status cues, and Crisis response.

3) Irrational behavior

L.A. Noire is not as complex as Skyrim but there are still some situations in which the NPCs act irrationally such as in traffic situations. For example, is the player collides with a car driven by an NPC, the NPC may get out and start signaling displeasure by making gestures. However, the player cannot interact with the NPC in any manner. The NPC will run its animation, enter its car and drive off, ignoring the player. This signals a distinct lack of Models of others.

Analysis

The analysis of the data in study 1 shows that path finding algorithms have developed. The NPCs in the oldest games in this study had problems with a changing environment while newer games seem to have solved this problem.
Only Assassins Creed seem to have solved the problem with NPCs navigating a truly 3Dimensional space.

An open problem is the total amnesia NPCs display when it comes to actions performed by the player character, also noted by Pinchbeck in his study on persistent NPCs (Pinchbeck 2009). A memory function would be motivated for persistent NPCs and NPCs players interact with and expect to act in certain ways. In the action genre where NPCs always are hostile towards the player there is no need for a memory function for believability reasons though.

Regarding the knowledge situation (the x-axis in C&N), NPCs do not cooperate or communicate with other NPCs. NPCs are a bit harder to locate on the information processing axis. Of course the environment limits the possible actions of an agent. Some of the traits of NPCs are similar to the bounded rational agent, such as being rational in their attempts to achieve their goals, and a limited attention span, making it hard for the agent to process all information in its task environment. But

NPCs lack some of the components of the “bounded rational agent”, the “cognitive agent” and the “emotional cognitive agent”. NPCs typically lack a memory function thus NPCs form a separate class in the matrix. Most typical NPC interacting scenarios show patterns similar to the behavior of state machines, where NPCs typically behave in a stimulus-response manner. Most NPCs however could be described with some of the traits common to both the “cognitive agent” and the “bounded rational agent”, in line with the conclusions drawn in (Johansson and Verhagen 2011).

Even though study 2 analyzed NPCs from various genres the NPCs have similar social abilities. An interesting result since the games studied differ in many aspects, especially in the game play experience. However, the NPCs of study 2 had more believable cooperation while in other respects the NPCs displayed irrational behavior that threatens the game-play experience from a player perspective.

**Discussion and conclusions**

The scope of the initial 9 games in study 1 with the additional 3 games in study 2 is too narrow to be used as proof of the complexity of NPCs and game AI in general but served its purpose to evaluate the categories and
helped pinpoint some obvious shortcomings of the games studied and of the analytical values of C&N for game studies. In study 2 the shortcomings of the study 1 were adjusted for to contain all the attributes of C&N which resulted in the possibility of comparing NPCs from a social complexity perspective across games and genres.

Inspired by C&N on social behavior we tested it to analyze NPCs. However, the matrix is designed aiming at with a close approximation of a human agent. Thus NPCs that are not designed to be social have a hard time fitting in or living up to that expectation. Perhaps NPCs are more a product of the vision of what particular game-play that NPCs are designed to cater for than trying to create truly believable NPCs. Game AI is mostly designed to be smart enough to keep the illusion of intelligent behavior alive as mentioned in (Lidén 2003). NPCs in general are not as dynamic and believable as needed if we start having other expectations than from current games. If we would aim at designing games where the interaction with NPCs is deeper or were NPCs need to be socially apt and believable, we need to start developing strategies to cater for these new needs. One way is by adapting the strategies behind games as Façade (Procedural Arts 2005) with a focus on how to enrich the dialogue, or with design patterns as presented in (Lankoski et el. 2011) or (Campbell et al. 2009) and their review of relational agents. Yet another solution to this problem would be to start implementing an internal mode that can be mapped to theories on human decision-making and behaviors as in (Johansson et al. 2011).

As for the limitations to the use of C&N to categorize NPC behaviors, the adaptation in study 2 to include all attributes in the matrix proved useful for both the analysis and to compare NPCs, and even compare game AI across genres. However the method may need to be refined to better differentiate NPCs’ social abilities when comparing games. Applying a graded measurement of the attributes in C&N instead of the binary values is one way forward. This may enable us to evaluate how well an attribute is represented.

The irrational behavior observed in study 2 could possibly be related to a poorly constructed social model, or perhaps even the lack of one. It would also be useful to create an extended model that can describe how and why the AI fails, rather than just when.
Future work will be directed at implementing a Model Social Game Agent that closely maps to the theories of Carley and Newell as described in (Johansson et al. 2011). The expanded method used in study 2 will be further investigated and used to collect data from more games and more genres, to fill the gap where this chapter only introduces an inconclusive and sketchy picture of the current status of NPCs.

Acknowledgment

This study would not have been possible without the help from five bachelor students collecting the empirical data in section IV. Thanks to Jimmie Westerberg, Fredrik Jansson, Hampus Ekelin, Oscar Falk and Mattias Lundman for your expertise and efforts.

References


**Games**


Id Software (1996) Quake (PC) Activision/ Valve Corporation (Steam).


Ph.D. theses:

No 91-004 Olsson, Jan
An Architecture for Diagnostic Reasoning Based on Causal Models

No 93-008 Orci, Terttu
Temporal Reasoning and Data Bases

No 93-009 Eriksson, Lars-Henrik
Finitary Partial Definitions and General Logic

No 93-010 Johannesson, Paul
Schema Integration Schema Translation, and Interoperability in Federated Information Systems

No 93-018 Wangler, Benkt
Contributions to Functional Requirements Modelling

No 93-019 Boman, Magnus
A Logical Specification for Federated Information Systems

No 93-024 Rayner, Manny
Abductive Equivalential Translation and its Application to Natural-Language Database Interfacing

No 93-025 Idestam-Almquist, Peter
Generalization of Clauses

No 93-026 Aronsson, Martin
GCLA: The Design, Use, and Implementation of a Program Development

No 93-029 Boström, Henrik
Explanation-Based Transformation of Logic programs

No 94-001 Samuelsson, Christer
Fast Natural Language Parsing Using Explanation-Based Learning

No 94-003 Ekenberg, Love
Decision Support in Numerically Imprecise Domains

No 94-004 Kowalski, Stewart
IT Insecurity: A Multi-disciplinary Inquiry

No 94-007 Asker, Lars
Partial Explanations as a Basis for Learning

No 94-009 Kjellin, Harald
A Method for Acquiring and Refining Knowledge in Weak Theory Domains

No 94-011 Britts, Stefan
Object Database Design

No 94-014 Kilander, Fredrik
Incremental Conceptual Clustering in an On-Line Application

No 95-019 Song, Wei
Schema Integration: - Principles, Methods and Applications

No 95-050 Johansson, Anna-Lena
Logic Program Synthesis Using Schema Instantiation in an Interactive Environment

No 95-054 Stensmo, Magnus
Adaptive Automated Diagnosis

No 96-004 Wærn, Annika
Recognising Human Plans: Issues for Plan Recognition in Human - Computer Interaction

No 96-006 Orsvärn, Klas
Knowledge Modelling with Libraries of Task Decomposition Methods

No 96-008 Dalianis, Hercules
Concise Natural Language Generation from Formal Specifications

No 96-009 Holm, Peter
On the Design and Usage of Information Technology and the Structuring of Communication and Work

No 96-018 Höök, Kristina
A Glass Box Approach to Adaptive Hypermedia

240
No 96-021 Yongström, Louise
A Systemic-Holistic Approach to Academic Programmes in IT Security

No 97-005 Wohed, Rolf
A Language for Enterprise and Information System Modelling

No 97-008 Gambäck, Björn
Processing Swedish Sentences: A Unification-Based Grammar and Some Applications

No 97-010 Kapidzic Cicovic, Nada
Extended Certificate Management System: Design and Protocols

No 97-011 Danielson, Mats
Computational Decision Analysis

No 97-012 Wijkman, Pierre
Contributions to Evolutionary Computation

No 97-017 Zhang, Ying
Multi-Temporal Database Management with a Visual Query Interface

No 98-001 Essler, Ulf
Analyzing Groupware Adoption: A Framework and Three Case Studies in Lotus Notes Deployment

No 98-008 Koistinen, Jari
Contributions in Distributed Object Systems Engineering

No 99-009 Hakkarainen, Sari
Dynamic Aspects and Semantic Enrichment in Schema Comparison

No 99-015 Magnusson, Christer
Hedging Shareholder Value in an IT dependent Business society - the Framework BRITS

No 00-004 Verhagen, Henricus
Norm Autonomous Agents

No 00-006 Wohed, Petia
Schema Quality, Schema Enrichment, and Reuse in Information Systems Analysis

241
No 01-001 Hökenhammar, Peter
Integrierad Beställningsprocess vid Datasystemutveckling

No 01-008 von Schéele, Fabian
Controlling Time and Communication in Service Economy

No 01-015 Kajko-Mattsson, Mira
Corrective Maintenance Maturity Model: Problem Management

No 01-019 Stirna, Janis
The Influence of Intentional and Situational Factors on Enterprise Modelling Tool Acquisition in Organisations

No 01-020 Persson, Anne
Enterprise Modelling in Practice: Situational Factors and their Influence on Adopting a Participative Approach

No 02-003 Sneiders, Eriks
Automated Question Answering: Template-Based Approach

No 02-005 Eineborg, Martin
Inductive Logic Programming for Part-of-Speech Tagging

No 02-006 Bider, Ilia
State-Oriented Business Process Modelling: Principles, Theory and Practice

No 02-007 Malmberg, Åke
Notations Supporting Knowledge Acquisition from Multiple Sources

No 02-012 Männikkö-Barbutiu, Sirkku
SENIOR CYBORGS - About Appropriation of Personal Computers Among Some Swedish Elderly

People

No 02-028 Brash, Danny
Reuse in Information Systems Development: A Qualitative Inquiry
No 03-001 Svensson, Martin
Designing, Defining and Evaluating Social Navigation
No 03-002 Espinoza, Fredrik
Individual Service Provisioning
No 03-004 Eriksson-Granskog, Agneta
General Metarules for Interactive Modular Construction of Natural Deduction Proofs
No 03-005 De Zoysa, T. Nandika Kasun
A Model of Security Architecture for Multi-Party Transactions
No 03-008 Tholander, Jakob
Constructing to Learn, Learning to Construct - Studies on Computational Tools for Learning
No 03-009 Karlgren, Klas
Mastering the Use of Gobbledygook - Studies on the Development of Expertise Through Exposure to Experienced Practitioners' Deliberation on Authentic Problems
No 03-014 Kjellman, Arne
Constructive Systems Science - The Only Remaining Alternative?
No 03-015 Rydberg Fåhraeus, Eva
A Triple Helix of Learning Processes - How to cultivate learning, communication and collaboration among distance-education learners
No 03-016 Zemke, Stefan
Data Mining for Prediction - Financial Series Case
No 04-002 Hulth, Anette
Combining Machine Learning and Natural Language Processing for Automatic Keyword Extraction

No 04-011 **Jayaweera, Prasad M.**

A Unified Framework for e-Commerce Systems Development: *Business Process Patterns Perspective*

No 04-013 **Söderström, Eva**

B2B Standards Implementation: Issues and Solutions

No 04-014 **Backlund, Per**

Development Process Knowledge Transfer through Method Adaptation, Implementation, and Use

No 05-003 **Davies, Guy**

Mapping and Integration of Schema Representations of Component Specifications

No 05-004 **Jansson, Eva**

Working Together when Being Apart – An Analysis of Distributed Collaborative Work through ICT from an Organizational and Psychosocial Perspective

No 05-007 **Cöster, Rickard**

Algorithms and Representations for Personalised Information Access

No 05-009 **Ciobanu Morogon, Matei**

Security System for Ad-hoc Wireless Networks based on Generic Secure Objects

No 05-010 **Björck, Fredrik**

Discovering Information Security Management

No 05-012 **Brouwers, Lisa**

Microsimulation Models for Disaster Policy Making
No 05-014 **Näckros, Kjell**
Visualising Security through Computer Games
Investigating Game-Based Instruction in ICT Security: an Experimental approach

No 05-015 **Bylund, Markus**
A Design Rationale for Pervasive Computing

No 05-016 **Strand, Mattias**
External Data Incorporation into Data Warehouses

No 05-020 **Casmir, Respickius**
A Dynamic and Adaptive Information Security Awareness (DAISA) approach

No 05-021 **Svensson, Harald**
Developing Support for Agile and Plan-Driven Methods

No 05-022 **Rudström, Åsa**
Co-Construction of Hybrid Spaces

No 06-005 **Lindgren, Tony**
Methods of Solving Conflicts among Induced Rules

No 06-009 **Wrigstad, Tobias**
Owner-Based Alias Management

No 06-011 **Skoglund, Mats**
Curbing Dependencies in Software Evolution

No 06-012 **Zdravkovic, Jelena**
Process Integration for the Extended Enterprise

No 06-013 **Olsson Neve, Theresia**

245
Capturing and Analysing Emotions to Support Organisational Learning:
The Affect Based Learning Matrix
No 06-016 **Chaula, Job Asheri**
A Socio-Technical Analysis of Information Systems Security Assurance
A Case Study for Effective Assurance
No 06-017 **Tarimo, Charles N.**
ICT Security Readiness Checklist for Developing Countries:
A Social-Technical Approach
No 06-020 **Kifle Gelan, Mengistu**
A Theoretical Model for Telemedicine
- Social and Value Outcomes in Sub-Saharan Africa
No 07-001 **Fernaeus, Ylva**
Let’s Make a Digital Patchwork
Designing for Children’s Creative Play with Programming Materials
No 07-003 **Bakari, Jabiri Kuwe**
A Holistic Approach for Managing ICT Security in Non-Commercial Organisations
A Case Study in a Developing Country
No 07-004 **Sundholm, Hillevi**
Spaces within Spaces: The Construction of a Collaborative Reality
No 07-005 **Hansson, Karin**
A Framework for Evaluation of Flood Management Strategies
No 07-007 **Aidemark, Jan**
Strategic Planning of Knowledge Management Systems
- A Problem Exploration Approach

246
No 07-009 Jonsson, Martin
Sensing and Making Sense
Designing Middleware for Context Aware Computing

No 07-013 Kabilan, Vandana
Ontology for Information Systems (O4IS) Design Methodology: Conceptualizing, Designing and Representing Domain Ontologies

No 07-014 Mattsson, Johan
Pointing, Placing, Touching
- Physical Manipulation and Coordination Techniques for Interactive Meeting Spaces

No 07-015 Kessler, Anna-Maria
A Systemic Approach Framework for Operational Risk - SAFOR

No 08-001 Laaksolahti, Jarmo
Plot, Spectacle and Experience: Contributions to the design and evaluation of Interactive Storytelling

No 08-002 Van Nguyen Hong
Mobile Agent Approach to Congestion Control in Heterogeneous Networks

No 08-003 Rose-Mharie Åhfeldt
Information Security in Distributed Healthcare
- Exploring the Needs for Achieving Patient Safety and Patient Privacy

No 08-004 Sara Ljungblad
Beyond users:
Grounding technology in experience

No 08-005 Eva Sjöqvist
Electronic Mail and its Possible Negative Aspects in Organizational Contexts

No 08-006 **Thomas Sandholm**

Statistical Methods for Computational Markets
– Proportional Share Market Prediction and Admission Control

No 08-007 **Lena Aggestam**

IT-supported Knowledge Repositories:
Increasing their Usefulness by Supporting Knowledge Capture

No 08-008 **Jaana Nyfjord**

Towards Integrating Agile Development and Risk Management

No 08-009 **Åsa Smedberg**

Online Communities and Learning for Health

- The Use of Online Health Communities and Online Expertise for People with Established Bad Habits

No 08-010 **Martin Henkel**

Service-based Processes

- Design for Business and Technology

No 08-012 **Jan Odelstad**

Many-Sorted Implicative Conceptual Systems

No 09-001 **Marcus Nohlberg**

Securing Information Assets

- Understanding, Measuring and Protecting against Social Engineering Attacks

No 09-002 **Maria Håkansson**

Playing with Context
- Explicit and Implicit Interaction in Mobile Media Applications
No 09-003 Petter Karlström
Call of the Wild
Using language technology in the second language classroom
No 09-009 Ananda Edirisurya
Design Support for e-Commerce Information Systems using Goal, Business and Process Modelling
No 10-005 Moses Niwe
Organizational Patters for Knowledge Capture in B2B Engagements
No 10-007 Mats Wiklund
Perception of Computer Games in Non-Gaming Contexts
No 10-008 Petra Sundström
Designing Affective Loop Experiences
No 10-009 Tharaka Ilayperuma
Improving E-Business Design through Business
No 11-002 David Sundgren
The Apparent Arbitrariness of Second-Order Probability Distributions
No 11-003 Atelach Argaw
Resource Lenient Approaches to Cross Language Information Retrieval using Amharic
No 11-004 Erik Perjons
Model-Driven Networks, Enterprise Goals, Services and IT Systems
No 11-005 Lourino Chemane
ICT Platform Integration – A MCDM Based Framework for the Establishment of Value Network
Case Study: Mozambique Government Electronic Network (GovNet)

No 11-010 Christofer Waldenström
Supporting Dynamic Decision Making in Naval Search and Evasion Tasks

No 11-012 Gustaf Juell-Skielse
Improving Organizational Effectiveness through Standard Application Packages and IT Services

No 12-001 Edephonce Ngemera Nfuka
IT Governance in Tanzanian public sector organizations

No 12-002 Sumithra Velupillai
Shades of Certainty
Annotation and Classification of Swedish Medical Records

No 12-003 Arvid Engström
Collaborative Video Production After Television

No 12-007 Fatima Jonsson
Hanging out in the game café.
Contextualizing co-located game play practices and experiences

No 12-008 Mona Riabacke
A Prescriptive Approach to Eliciting Decision Information

No 12-010 Geoffrey Rwezaura Karokola
A Framework for Securing e-Government Services
The Case of Tanzania

No 13-001 Evelyn Kigozi Kahiiigi
A Collaborative E-learning Approach
Exploring a Peer Assignment Review Process at the University Level in Uganda

No 13-002 Mattias Rost
Mobility is the message: Explorations in mobile media sharing

No 13-003 Rasika Dayarathna
Discovering Constructs and Dimensions for Information Privacy Metrics