Character-Driven Game Design

A Design Approach and Its Foundations in Character Engagement

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To Stella and Emma, two players of games

Contents

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Helsinki, Finland
January, 2010

1 INTRODUCTION

To explain my interest in game characters and character-driven game design, I need to look at my past. When I discovered computer games, they captured my attention. It is hard to say, retrospectively, why exactly those early games, such as the *Lunar Lander* (Atari, 1979) and the *Radar Rat Race* (Commodore Electronics, 1981), were so fascinating. However, I still remember clearly that exploring the worlds of the text-based adventure game of *The Hobbit* (Beam Software, 1982) or the labyrinths of the *Rogue* (Toy et al., 1988) and the *Atic Attac* (Stamper, Stamper, 1983) were thrilling experiences. I programmed and published my first simple computer game in the early 1980s. It was written for the ZX Spectrum, and published as a source code listing in the computer magazine. Around that time I also discovered tabletop role-playing games. Playing, writing adventures, and game mastering stole my attention from the design of computer games, because the role-playing games at best could offer a wide fictional world to explore and characters to interact that had no par within the computer games of that time. In the mid 1990s I discovered live-action role-playing games. During that time I wrote and organized several character-driven intrigue heavy games. I was excited that I could successfully weave love triangles, jealousy, and friendship in those games.

At that time, I was working at the University of Tampere in a research project and that brought me back to computer game design. I was a lead designer for *The Footprints of Power* (Lankoski et al., 2003) (the game explored integrating dramatic narrative and game) and *The Songs of North* (Lankoski et al., 2004/2005) (which explored possibilities of location-aware multiplayer games) games.

After a long exposure with different role-playing games, I considered game characters as the weak point of single-player computer games. It seemed that the possibilities of character-driven conflict, co-operation between characters, or compassion toward characters were not used. However, games such as *Thief II: The Metal Age* (Looking Glass Studios, 2000) and *Ico* (Sony Computer Entertainment, 2002) flashed the enormous possibilities of computer games. *Thief II* presented a multifaceted anti-hero player character mainly through the gameplay. *Ico* refined co-operation between the player character and a non-player character as an important feature of the gameplay. I published the paper *Approaches to Computer Game Design: Characters and Conflict* (Lankoski, Heliö, 2002) that lead me to explore further game characters. The paper proposed

that character motivations could be used to guide gameplay and argued that there is an analogy between character-driven story writing (Berman, 1997; Egri, 1960) and character-driven game design as a tool for designing well motivated conflicts. (Lankoski, Heliö, 2002.) However, I was lacking tools to discuss the relations between gameplay, game system, and characters in detail. At that time, I also started to look analytically at the design of role-playing games. Some of the results are published *in Character Design Fundamentals for Role-Playing Games* (Lankoski, 2004). This paper was my first attempt to use a cognitive emotion theory to explain the importance of goals in the playing experience in order to explain some links between the game design and the playing experience. This research does not take into account the systemic features of computer games, and thus is only partly applicable to computer games.

CHARACTERS AS FACILITATORS OF THE PLAYING EXPERIENCE?

My earlier work (Lankoski, Heliö, 2002; Lankoski, 2004) was based on the assumption that game characters are important for the playing experience. However, some theorists have been critical toward the idea that computer game characters have more than a functional role (Aarseth, 2004; Eskelinen, 2004; Frasca, 2004). For example, Espen Aarseth claims that the representation of a character he controls is irrelevant, because the appearance of the character does not make him play differently. He states "When I play, I don't even see her [Lara Croft's] body, but see through it and past it" (Aarseth, 2004). However, it is common to find game reviews as follows:

> Character development is important for any game, but the emotional investment in Uncharted's three heroes is strong. Nathan's "everyman" look might not appeal to some at first glance, but his character is likeable and sympathetic, again thanks in part to the great cast of voice actors. By the end of the game, you genuinely care for him and want to see him succeed. Likewise, Elena is a great cohort. She's never an annoying damsel in distress, and like Nathan, you're concerned for her by the end of the game. (McGarvey, 2007.)[1]

1 See also, Gerstmann (2003), Hurme (2008), Puha (2004), Puha (2008) and Salminen (2008).

There is an interesting tension between the above-cited critic and theorists. Why does this disagreement exist? The reason, I propose, is that reactions to characters are relatively automatic and subconscious (e.g., Morrison, Ziemke, 2005), and the approaches used by Aarseth, Eskelinen, and Frasca might not be adequate to discriminate all the nuances of a play experience. While one can be aware of one's own emotional state, in many cases, according to Damasio (2005, pp. 187–196), emotions influence experience and behavior without one being consciously aware of it. In addition, one's preferences and skills are likely to have some role in the kind of games one likes.

Game designers have noted that games promote a rather limited range of affects. Warren Spector writes "We can re-create, in very limited ways, emotional states, especially the 'easy' ones—fear and adrenaline. (We do terribly at more subtle emotional replications—sadness and humor.)" (Cited from, Scholder, Zimmerman, 2003, p. 87.) Richard Rouse also notes "Unfortunately, many games' emotional ranges are limited to excitement/tension during or conflict, despair at repeated failure at a given task, and then elation and a sense of accomplishment when the players finally succeed." (Rouse, 2005, p. 6.)

I propose that an answer to widening the range of gameplay related emotions lies in the use of game characters; the use of social conflicts instead of violent ones, for example, might widen the range of the affective responses to game events.

The Context of This Study

This study is about *computer game design*, especially designing *single-player character-based games*.

Early computer games did not utilize game characters, because the drawing capabilities of the early computers were very limited. According to Andreas Lange, the first fully computerized game was *Nim,* a very simple strategy game, developed in the UK in 1951 and was presented in trade exhibitions in London and Berlin (Lange, 2002). The computer games[2] surfaced again in the 1960s. Among the first was *Spacewar!* developed in 1961 at MIT by Steve Russell. Commercial computer games surfaced in 1971. Among the first commercial computer games were *Computer Space* by Nolan Bushnell et al. (see, King, 2002; Wolf, Perron, 2003).[3] Graphically presented human-like characters evolved within the development of computers and computer graphics, and contemporary *character-based games* surfaced in the 1990s with games such as *Alone in the Dark* (Infogrames Europe, 1992), *Tomb Raider* (Core Design, 1996), and *Grim Fandango* (LucasArts Entertainment Company, 1998).

While, for the purpose of this study, formal definitions[4] of the term *character-based game* are not needed, some clarifications are necessary. *Character-based games* are games in which a player controls a character such as Lara Croft in *Tomb Raider: The Angel of Darkness* (Ubisoft Entertainment, 2003) or Gordon Freeman in *Half-Life* (Valve Software, 2001). Typical character based games include *Beyond Good and Evil* (Ubisoft Montpellier Studios, 2003), *Deus Ex* (Ion Storm, 2002), *Silent Hill 3* (Team Silent, 2003), *Uncharted: Drake's Fortune* (Naughty Dog, 2007), and *Thief Deadly Shadow* (Ion Storm, 2005). God games, such as *Black and White* (Lionhead Studios, 2001) and *Sims* (Maxis, 2000), are borderline cases of character-based games, and I do not include them in this study, because the player–character relation is different to the player–*player character* relation. In these games, the player's control over characters is more indirect (i.e., the player is giving commands to characters rath-

2 I use the terms *computer game* and *video game* interchangeably. Both terms are used to include games run in a game console or arcade.

3 While computer games are a young phenomenon, games are ancient. An Egyptian painting dated to 3000 BC pictures a man playing a board game (Piccione, Peter A., 2007). The earliest game board discovered so far has been dated to 2500 BC (Trustees of the British Museum).

4 Ludwig Wittgenstein used the concept of "game" as an example in his critique of defining the meaning of a concept using common features. Wittgenstein argues that there is no common denominator of things called games, but only a network of similarities. (Wittgenstein, 1973.)

er than controlling them) than in typical *character-based games*. Even if *Civilization IV* (Firaxis Games, 2005), the *UFO Afterlife* (ALTAR interactive, 2007), *Crusade Kings* (Paradox Entertainment, 2004) are analyzed in *article 4*, I do not consider the strategy games as *character-based games*. These cases are included as the games that model social structures and relations in interesting ways. Multiplayer games are excluded from this study, because, for example, taking into account the player–player relations would require another lengthy study of its own.

As my focus is in the design of character-based games, game characters have an important role in this study. Game character can be categorized as *non-player characters* (NPC) and *player characters* (PC). A NPC is a character that is controlled by a game system and a PC is a character that is controlled by a player.

This study is about game design. I next give a brief overview of the area.

Game Design

Early computer games were designed and developed by a single person or a few persons, but when games became bigger (in terms of needed assets and code), the craftsman or trial-and-error methods were not suitable any more, because they tend to be too expensive. In addition, a single designer cannot anymore develop a complex design, and hence, the design needs to be communicated to others (e.g., programmers, modelers, animators and sound designers). (See, Jones, 1980). In the 1980s, Chris Crawford (2007) explicates the need for design methods to fulfill its potential as an art form. Greg Costikyan (1994) argues for the need of an analytical understanding of games in *I Have No Words & I Must Design*.[5] Doug Church (2007) also argues for a rigorous understanding of games:

> The primary inhibitor of design evolution is the lack of a common design vocabulary. Most professional disciplines have a fairly evolved language for discussion. […] Whether or not a game is fun is a good place to start understanding, but as designers, our job demands we go deeper.

Game design can be seen as a branch of product design, and game design research can be seen as a part of design research. When comparing game design with product design there is a notable difference.

Product and system design is typically concerned with designing things such as hammers, spread sheet programs, and traffic systems that are integral to the task (e.g., a hammer in task of building) of some surrounding system (e.g., Jones, 1980), whereas games typically have no such outside purpose.[6] (Caillois, 2001; Costikyan, 2002; Huizinga, 1967). This means that tools can be designed to suit a specific task, but games are designed to engage in play through their features. For this reason, the goal of design changes, for example, from efficiency to en-

5 A revised version of the paper was later published in *CDGC Conference Proceedings* (Costikyan, 2002).

6 This does not rule out that games could not be used as a tool, for example, in teaching. On the other hand, tools can be used in play.

tertainment. While methods in product design can offer valuable insight into game design, their direct utility for answering the research questions of my study is limited.

As proposed above, the role of game characters in play experience is not yet adequately understood. A multidisciplinary approach is needed to tackle my research questions, because the tools and methods of different disciplines can help to understand different aspects of game characters and design and their interrelations. Game design can be seen as a part of game research, which I introduce next.

Game Research

Some researchers are exploring partly the same questions as game designers: what do games consist of? They have proposed different definitions (e.g., Juul, 2005; Järvinen et al., 2002; Tavinor, 2008), typologies (Aarseth et al., 2003), and frameworks (Björk, Holopainen, 2005) of games that are intended to show their core features and that enable us to discuss games in subtler ways.

The study of computer games is a rather young practice. The study of play and games has a longer history. Studies of play by Johan Huizinga (1967), Roger Caillois (2001),[7] and Erwin Goffman (see Fine, 1983) have been influences in the area of game research. The idea that games are unproductive and separate from everyday life has especially been influential in the study of computer games.[8]

A branch of game research called ludology[9] focuses on understanding games as systems using the method of close analysis (see, Järvinen, 2008). Some ludologists have taken a very radical stance regarding the most important features of games, for example, Markku Eskelinen writes:

> In this scenario stories are just uninteresting ornaments or gift-wrappings to games, and laying any emphasis on studying these kinds of marketing tools is just a waste of time and energy. It's no wonder gaming mechanisms are suffering from slow or even lethargic states of development, as they are constantly and intentionally confused with narrative or dramatic or cinematic mechanisms. (Eskelinen, 2001)

Yet, for example, Jesper Juul (2005) has used a ludological approach to study the interrelation between fiction and game systems, and Aki Järvinen (2008), among other aspects, has studied rhetoric. The analytical approach in my study relates to the ludological approaches used by Juul and Järvinen.

Various researchers have pointed out the need for language describing gameplay. For example, Jose Zagal and Michael Mateas (Zagal et al., 2005; Zagal, Mateas, 2009) have been working on game ontology that "is a framework for describing, analyzing and studying

7 Huizinga's *Homo Ludens* was originally published in 1938 and Roger Callois's *Man, Play, Games* in 1958.

8 However, a study by Gary Alan Fine (1983) on (non-computerized) fantasy role-playing games contests the idea of separateness and provides detailed descriptions on how the game and everyday life interact.

9 See Gonzalo Frasca's (2003) account on the history of ludology.

games. It is a hierarchy of concepts abstracted from an analysis of many specific games." Staffan Björk and Jussi Holopainen (2005) have developed another framework. Their *gameplay design pattern* approach is inspired by the book *A Pattern Language: Towns, Buildings, Construction* by Alexander et al (1977). Adopting the use of patterns to games, Björk and Holopainen (2005, p. 34) assert "game design patterns are semiformal interdependent descriptions of commonly reoccurring parts of the design of a game that concerns gameplay."[10] A feature of game design patterns is that adding new patterns does not break the system, but expands it. This is because a pattern describes a particular area of gameplay with its typical implications. Adding new patterns create new interrelations that need to be considered when expanding the system. In *articles 3, 4,* and *6,* I use gameplay design patterns to refine analytical findings to a form that is usable in design. Below, in the section, Methods, I describe gameplay pattern approach and notation in more detail.

10 Instead of game design pattern, I use the term *gameplay design pattern* to refer to patterns, due to the current use of that term by Björk and Holopainen (e.g., Holopainen et al., 2007).

Though, understanding games as a formal system has advanced, studies focusing on understanding the relation between a game system and a playing experience are still scarce. Research in the area has been emerging (e.g., Järvinen, 2008; Ravaja et al., 2006) and this research implies that in order to understand the playing experience, a multidisciplinary approach is needed (see also, Järvinen, 2008; Sotamaa, 2009). The theories I mostly depend on come from fields of game research, cognitive sciences and dramatic writing. Cognitive scientists have been studying how people understand other people, and a branch of film studies has been using cognitive sciences in conjunction with formal analysis. How to design and write believable characters is being studied in dramatic writing.

Cognitive Sciences and Film Studies drawing on Cognitive Sciences

Torben Grodal (2003) uses cognitive science and the concept of story (as a mental structure) to explain parts of the playing experience. I have proposed, in the context of role-playing games, that cognitive emotion theories can help to understand the playing experience (Lankoski, 2004; Lankoski, 2005). In addition, Aki Järvinen (2008) uses theories of cognitive science to explain parts of the playing experience. Next, I introduce briefly the theoretical approach I use in this study.

Film theories drawing on the cognitive science propose that understanding events in film depends on an understanding of the characters and their motivations (Currie, 1995; Nichols, 2004; Smith, 1995). Murray Smith (1995) and Gregory Currie (1995) use an explanation called *simulation theory* in their approaches. In simulation theory, understanding of others is based on an as-if reasoning in which a person considers what he or she would feel and think in another's person shoes. Murray Smith (1995) argues that the basis for this simulation is in the automatic

and involuntary mimicry of the affects of the perceived person. I return to relation of game characters, affective mimicry and simulation theory in *chapter 2.* In *article 2,* I propose a PC engagement model that, then, is used to ground my design approach.

The *theory of mind theory* is a competing explanation to the simulation theory that proposes that understanding others is based on the theories made about another person (Leslie, 1994). Disagreement is partly conceptual, what constitutes as a theory or simulation divides opinions (see, Goldman, 2006; Nichols, Stich, 2003). On the other hand, Shawn Gallegher (2005) argues that imitation and habits provide enough access to another's thoughts and affects for the successful interaction with the other in everyday situations. Gallager does not rule out the possibility of simulation or theory based understanding of the others, but highlights that those are rarely used in everyday encounters (Gallagher, 2005). While these aforementioned approaches disagree on some issues, the design implications are similar, because simulation theory and the theory of mind theory propose different explanations, in terms of the structure of the brain or the cognitive processing, to explain the same phenomenon of human behavior (see also article 3).

I explore the question of understanding characters in *chapter 2* and *article 2* (which explore aspect relating to PCs), and *article 3* (that deals with issues of NPCs) in more detail.

Dramatic Writing for Theatre and Film

Characters have been central for the methods in dramatic writing. Already, Aristotle (1996) saw character as an important component of classical tragedy, and argued that tragedy is about telling a story about characters whose fates are believable. Modern script writing has its roots in the principles of Aristotle.

Christopher Vogler (1992), building on Joseph Campbell's[11] work and the Aristotelian three act structure, proposes that the mythical structure of folk tales can be used as a model for story and guide writing. Mythical structure includes utilizing character prototypes (e.g., hero, mentor, and trickster) and a structure in which a reluctant hero leaves for an adventure and returns after facing an ultimate challenge. Vogler has been cited in game design literature (Dunniway, 2000; Jacobs, 2007; Krawczyk, Novak, 2006; Rollings, Adams, 2003). However, these kinds of prototypes and the adventure structure might not be the best way to open up the design base of the character-based games, because those structures are adventure structures that are pervasive in the character-based games.

11 Joseph Campbell (1993, pp. 3–46) proposes that there is a core structure of stories that he calls monomyth and argues that religious myths (e.g., Buddha, Moses) and fairy tales around the globe are based on this same monomyth.

I do not utilize modern film writing methods because they are mostly film-specific. Syd Field (1994), for example, focuses on structuring the linear flow of events in the script. Another branch of theater theory that I have opted not to employ is the Brechtian approach. Brecht con-

sidered that having emotional responses would tone down the intellectual and critical responses (see, Smith, 1996). I do not utilize Brecht, because his theoretical premise is incompatible with the cognitive theories used in this study (see *article 2* and *3)*.

Lajos Egri (1960) proposed that the characters are central for drama and argued against Aristotle's (1996, p. 12) claim that "the plot is the source and (as it were) of the soul of tragedy; character is second." Egri's method has been utilized in the context of game design (e.g., Krawczyk, Novak, 2006; Sheldon, 2004). Egri's method highlights social conflicts. I have chosen to use Egri's approach, because the method is possible to adapt to work with the character engagement model proposed in *article 2*. I return to Egri's method in more detail at *chapter 3* and *articles 3, 5,* and *6*.

GOALS

In this research I look at designing games, gameplay, and game characters. The main goal of my study is to present an approach for designing *character-based games,* which can widen the design-space of the character-based games and can make game designers more aware of the implications of the design choices they make. I assume that by taking into account how game characters influence the playing experience and utilize the whole design-space it is more likely that the game designers will be able to create more varied game characters and playing experiences.

This study seeks to answer the following questions:

1. What is the role of game characters in the playing experience?
2. How do PCs facilitate and regulate the playing experience?
3. How are the perceived traits of the PCs and the gameplay connected?
4. How PC design can be utilized in the gameplay design?
5. How can conflicts and gameplay be based on the social qualities of the game characters?

In this study I provide a design method and a game that has been designed using the proposed design approach.[12]

12 There cannot be one single correct design method. Instead, each method has its strengths and blind spots. Changing a method in the middle of the design process might force the designers to consider the design problem from a different perspective that might lead to a new solution. (Jones, 1980.)

METHODS

I present analyses and descriptions of various games through this study. The games covered in this thesis do not include all the games analyzed during my study. A full list of games analyzed during this study is presented in *appendix 1.* The games presented in the chapters and articles have been selected to demonstrate certain aspects that are relevant in understanding and designing character-based games. In ad-

dition, the games are selected in order to cover the notable genres of character-based games.

Qualitative Analysis

My aim of engaging in a qualitative analysis is to isolate features of the gameplay that can be used to describe certain phenomena within the games. As the goal of my study is to understand game design, this type of formal analysis can be used to distinguish the features and components of the system in order to understand the behavior of the game.[13]

The analysis in this thesis is guided by the theories and concepts from the cognitive science. I use these theories in order to form hypotheses on the affective impact of gameplay and game events. This kind of approach has been used in film studies (e.g., Bordwell, 1985; Grodal, 1999; Smith, 1995) and most lately in game studies (Järvinen, 2008). These approaches have their roots in the works of Russian formalism (e.g., Vladimir Propp) and French theorists such as Ferdinand de Saussure, Claude Lévi-Strauss, and Barthes (see more, Bordwell, 1985, pp. 48–62; Järvinen, 2008, pp. 22–25; Larsen, 1991).

When semiformal descriptions can help in the understanding of design implications, the results derived from the analyses are refined into *gameplay design patterns*. Next, I describe the gameplay design pattern method in more detail.

13 I do not use quantitative methods, as the strength of quantitative methods is in hypothesis testing, making estimates based on limited samples, finding relations, and modeling. Quantitative methods are not well suited for this kind of explorative study, because, according to Thomas Kuhn (2002), quantitative studies typically require large amounts of qualitative work before it is possible to quantify. While Kuhn's argument is based on research on physics, the same reasons for the need of qualitative research prior to quantitative research exist in the context of this study.

Gameplay Design Patterns

The description of a gameplay design pattern, as introduced by Björk and Holopainen, is as follows:

- *name:* a pattern having a short descriptive name;
- *core definition* is a brief sentence providing an overview of the pattern;
- *description* is a short general description of the properties of the pattern (including possible examples);
- *using the pattern* introduces description of the common choices that the designer faces when using the pattern;
- consequences discusses about the gameplay implications of using the pattern;
- *relations* accounts for the typical relations between patterns;
- the *references* section points to earlier work in which the pattern has been derived. (Björk, Holopainen, 2005, pp. 38–39.)

An important feature of the pattern is that each pattern can have relations with other patterns. Björk and Holopainen introduce five kinds of relations between patterns:

- A pattern can *instantiate* another. This means that if a pattern X instantiates a pattern Y, whenever, the pattern X is present pat-

tern Y is also present. Björk and Holopainen give an example of a pattern *DICE*[14] that instantiates *RANDOMNESS*.

- A pattern can be *instantiated by* another pattern or patterns.
- A pattern can *modulate* the influences of another pattern on gameplay. For example, a pattern *LIMITED MOVEMENT* modulates how *MOVEMENT* behaves.
- A pattern can be *modulated by* other patterns.
- A pattern can be *potentially conflicting with* another pattern. This implies that conflict patterns might not be usable with each other, or the patterns require specific setup to be usable together. (Björk, Holopainen, 2005, pp. 35–36.)

14 In this thesis, the name of a pattern is marked as small caps italics. The name is followed by a citation pointing to the source of the pattern if the pattern is not introduced in this thesis.

STRUCTURE OF THIS THESIS

In *chapter 2*, I review the theories of cognitive science and film studies that I draw on later to build a model for understanding how the PC and playing experience relate. I look at PCs and introduce the problem of the PC, which is about the incompatibility between the personality of a character and player control. I propose, by using examples, that the problem of the personality of a PC is only artificial.

In *chapter 3,* I continue to explore issues relating to game characters from the point of view of game design. At the beginning of the chapter, I present a look at the game design process. After that, I discuss the dominant game design approach—immersion-driven game design—and look at some inherent limitations of the approach. I also present a short literature review on character and game design. Based on the literature review, I conclude that understanding character-based game designing is still scarce; especially the linking of character design to the gameplay design needs to be explicated in more detail.

Chapter 4 presents summaries of the publications this study consists of. The original publications are included in the *appendix 4*.

In *chapter 5,* I present the conclusions of this study. I summarize results on how the game characters relate to the playing experience and discuss about the proposed design method and its implications.

Appendix 1 provides a full list of the games analyzed for this study and *appendix 2* provides a full description of the most important patterns introduced in this study.

Game Characters

Characters are an important part of contemporary games. For example, most of *PlayStation 3* game boxes released in 2008 included game characters in some role and many of those are character-based games.[1] Leo Hartas writes in the book, *The Art of Game Characters:*

> Game characters are rapidly growing up, from a handful of pixels to fully three-dimensional being capable of lifelike moves, even lifelike thoughts. As technical restrictions fall away, game designers find they are free to create whomever they imagine, and, like a digital Frankenstein, bring them to life. (Hartas, 2005, p. 6.)

While technical restrictions are falling away, game designers will face new challenges: how to create characters that are likely to have the designed impact on the players. To propose a theoretically grounded approach for designing character-based games, building an understanding of the role of the PCs and the NPCs in the playing experience is needed.

1 See the list in *Playstation 3* games on Wikipedia (Wikipedia contributors, 2009). First and third person shooters, soccer, hockey, adventure games, *Buzz*, *Singstar*, *Rock Star* and *Guitar Hero* games all use characters. Driving games is the largest genre that typically does not utilize characters.

In this chapter, I look at game characters and propose that understanding characters is based on the same cognitive mechanisms that are used when we interact with real people. First, I present theories from the cognitive sciences explaining how people understand others. After that I focus on game characters, especially PCs, with examples, and provide some initial notes on how PCs guide the playing experience.

Understanding Other People

When we hear someone cry we understand that the person is sad; when we see someone smiling, we understand without effort that the person is happy. (Ekman, 1999.)

It is argued that understanding the intentions, affects, and actions of other people depends on *imitation* and *empathy* (Decety, Jackson, 2004; Goldman, 2006; Jackson, Decety, 2004; Meltzoff, Moore, 1998; Niedenthal et al., 2005). India Morrison and Tom Ziemke (2005) argue that mimicry and empathy is crucial in understanding game characters, because the same neural mechanisms (mirror neurons) are activated in the both cases. Empirical research using functional neuroimaging (Saxe, Carey, 2004; Schulte-Rüther et al., 2007), in human computer interaction (Nass, Lee, 2001; Reeves, Nass, 1998), and in virtual reality(Pan, Slater, 2007; Pertaub et al., 2002) seems to support these

claims. Next, I introduce *mimicry* and *empathy* in more detail, because they are the main concepts in my argument.

Mimicry and Empathy

Affective expressions are contagious: when a person sees an emotional expression, the perceiver tends to imitate that expression. This imitation can be a small muscle activation or a perceivable expression. (E.g., Ekman, 1993; Zajonc, 1985.) Imitation seems to be rather involuntary and automatic (Dimberg et al., 2000). In addition to the imitation of the expression, it seems that the perceived affects are also mirrored (Niedenthal et al., 2005). Mimicry of the expressions and mirroring affects form the basic mechanism for empathy (e.g., Decety, Jackson, 2004).

Decety and Jackson (2004) describe *empathy* as follows:

> [E]mpathy involves not only some minimal recognition and understanding of another's emotional state (or most likely emotional state) but also the affective experience of the other person's actual or inferred emotional state.

In addition, Shaun Gallagher (2005, pp. 65–85) posits that another person's actions—motor behavior—are understood in terms of one's own action possibilities, and this understanding is partly instinctive in human beings. George Lakoff and Mark Johnson (1999) present a related idea, when they argue that empathy is an extension of our ability to imitate, project, and conceptualize oneself to the body of another.

Mimicry and empathy can explain, at least partly, why people react to game characters affectively, and why people project human traits on to the characters. Self-impelled and distinct affective expressions are likely to trigger the parts of the brain that are used in social interaction, and therefore trigger relatively involuntary empathic affects and motor mimicry.

While imitation and empathy can be used to explain why and how people react to characters, they are not enough to explain all the implications of viewing something as a human agent. In addition, we need to look at the general conception of the person or the human agent.

Person Schema

Schema (or prototype) theory is an attempt to explain concepts, and how human beings judge that an entity belongs to a certain category. Defining concepts using necessary and sufficient conditions seems to fail in explaining categories people use (see, e.g., Wittgenstein, 1973). Therefore, other theories are needed. The schema view assumes that a category has representative examples or a set of typical features. The theory proposes that when the people, for example, categorize an entity as a bird, the category invokes assumption that the entity have wings,

can fly, and lays eggs. In addition, the entity can be considered as a bird even if it cannot fly if it shares other features that are typical of birds. (Kunda, 1999, pp. 25–52.)[2]

Murray Smith (1995) proposes that the person schema includes following expectations:

- a discrete human body (each human has a different body that is continuous through time and space, two bodies cannot inhabit the same space);
- perceptual activity and self-awareness;
- intentional action (actions are goal-driven and self initiated);
- emotions;
- the ability to use and understand language;
- persistent traits (Smith, 1995, pp. 20–31).[3]

An entity is categorized as a human agent if its features are close enough to the expected features. The entity does not need to have all the listed features to be considered as an agent (e.g., a comatose patient, a ghost, or Mickey Mouse can be categorized as human agents). People expect a character to have a body unless this expectation is contested explicitly (e.g., a ghost). Culturally specific expectations add to the expectations of the person schema. (Smith, 1995, pp. 20–31.)

According to Murray Smith (1995, p. 114), the construction of a person or character rests on perceived traits of the agent such as its face, voice, body, actions (including what is said), as well as what is told about the person or character. Significantly, each person has habitual ways of behavior and judgment (Gallagher, 2005).

Player Characters

These theories reviewed above can explain the players' reactions to the NPCs (c.f., Lankoski, 2007), but are they applicable to PCs? Can a PC have its own personality and habitual behavior when a player controls the PC? Gonzalo Frasca argues that the PC is merely a cursor, something that is be moved in the game world and used to initiate actions:

> While videogame characters do have certain particular traits, it is hard to argue that they have a personality. The more freedom the player is given, the less personality the character will have. It just becomes a "cursor" for the player's actions. (Frasca, 2001.)

While Frasca's argument "[t]he more freedom the player is given, the less personality the character will have" is correct, he seems to ignore the fact that a game system limits and affords choices. For example, Grant Tavinor acknowledges that games always limit player choices:

> What guides the action in videogames are [...] *material possibilities for interaction* and *objectives* that must be

2 There are other theories explaining concepts, such as concepts that are theory based or are based on associative networks (Kunda, 1999). Paula Niedhental et al. (2005) propose that concepts are based on our motor capabilities, and George Lakoff and Mark Johnson (1999) argue that concepts are based on bodily metaphors. From the design perspective, the implications are very similar.

3 See also Charles Tailor (1985) discussion on an agent and person.

> achieved—and often discovered—given these possibilities. (Tavinor, 2008, my italics.)

Jesper Juul (2005) highlights the relation of the game system to the fictional world of a game. Juul argues that the game space and fictional world have a special relation that other game elements do not have:

> The level design of a game world can present a fictional world and determine what players can and cannot do at the same time. In this way, space in games can work as a combination of rules and fiction. (Juul, 2005, pp. 163.)

I agree that the game space determines what players can do in the game. I propose that the PCs have similar features. An avatar can present a fictional character and determine what players can and cannot do. In addition, the system can make some things easy or hard to perform. For example, the game system in *Thief Deadly Shadows* (Ion Storm, 2005) promotes sneaking past guards and demotes fighting one's way through the guards. This means that when the game system affords and promotes some choices, the game system can fix the personality traits of the character. These techniques support a certain kind of interpretation of the PC.

In the following sections, I look at examples through the aforementioned theories that are derived from the game systems and how the characters are represented. The examples are *Half-Life* (Valve Software, 2001) and *Hulk* (Radical Entertainment Inc., 2003). *Half-Life* is selected because there is a lack of consensus on whether the PC, Gordon Freeman, has a personality or not. *Hulk* exemplifies how the game system can be matched with the personality of the character.

Half-Life

Half-Life is a first-person game; the player sees everything from the point of view of the PC. Notably, the player cannot make the PC say a word during the game or in any of the games in the series. These facts may have had a role in Richard Rouse's (2005, p. 219) assertion "if one looks at […] Gordon Freeman in *Half-Life,* one will find no personality whatsoever." An opposite interpretation is presented by the authors of hl2world wiki:

> What separates Gordon Freeman from other games heroes is that he is a scientist—a rather unlikely kind of hero when compared to past characters such as Duke Nukem, or the generic soldier types in many other games. (hl2world contributors)[4]

4 The comment refers to *Half-Life 2*. The games are similar in many ways, and, thus, comparable.

The fact that Gordon Freeman has a Ph.D. in theoretical physics seem to be important to some players, and distinguishes Freeman from the other PCs. However, if Gordon Freeman (as a character) does not matter, why is the character included in *Half-Life 2* (Valve, 2007) at all?

Let us take a closer look at the game. The game starts with a se-

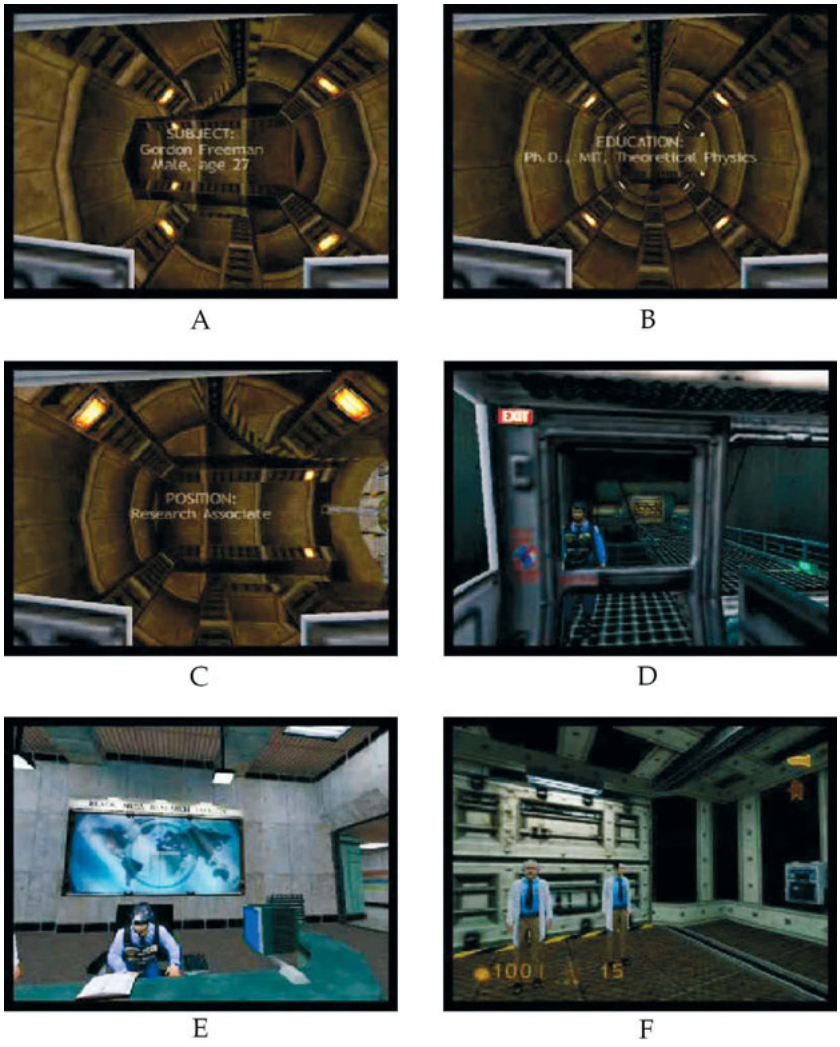


Figure 2.1: *Half-Life* (Valve Software, 2001): the opening scene.

quence in which the PC is approaching the Black Mesa research facility where he works. A player has a limited control over the PC, namely controlling where to look. While a train is approaching the facility, the player is given information on the PC. This information includes the name and educational background (see Figure 2.1 A–C). In this manner, the game starts to set up the PC's traits.

When the train reaches its destiny, a security guard welcomes him: "Morning mister Freeman. Looks like you are running late",[5] and opens the security doors for Freeman (Figure 2.1 D). The player can guide the PC to the lobby of the Anomalous Materials facility.

When the player guides the PC to approach the information desk the guard greets him (Figure 2.1 E):

SECURITY GUARD: I have a bunch of messages for you,

5 All *Half-Life* dialogues in this section are my transcriptions.

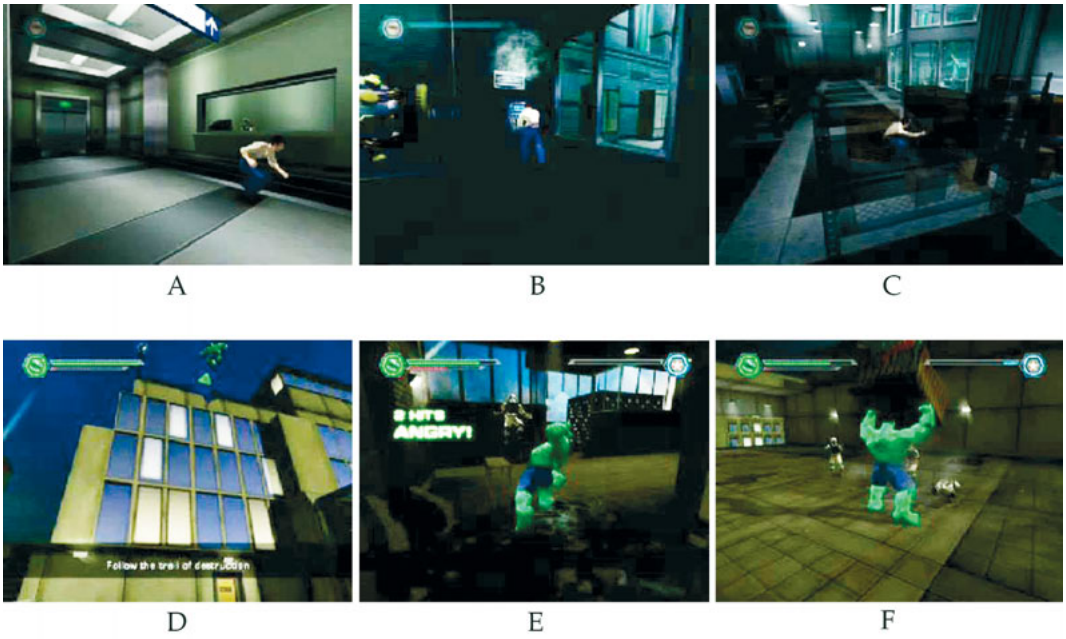


Figure 2.2: Bruce Banner (A–C) and Hulk (D–F) in *Hulk* (Radical Entertainment Inc., 2003).

> but we had a system crash twenty minutes ago and I am still trying to find my files. Just one of those days, I guess. They were having some problems in a test chamber too, but I think that is all straightened out. They told to make sure that you are headed down there as soon as you get in your hazard suit.

The personnel of the facility react to the PC, as they know him and comment on him being late.

After the player has dressed the PC in a protective suit and guided him down to meet his colleagues they discuss about the experiment that Freeman is set to conduct (Figure 2.1 F). Once this discussion ends, one of the scientists opens a door to a test chamber and the player can guide the PC there and start the experiment. The colleagues give instructions to Freeman on how to conduct the test and make comments.

The above descriptions demonstrate how the game correlates the goals of Gordon Freeman and the player. The game proposes here that the intentional agent is not the player, but Gordon Freeman.

While the player can avoid discussing with the NPCs, it is hard to evade all information the game offers about Gordon Freeman. As seen, the game, nevertheless, feeds some information about the PC to the player. In addition to the name, education and profession, the NPCs reactions and comments give the impression that the PC has been working in the facility for some time and that the other characters know him. These one-sided communications from the NPCs are directed to a person, Gordon Freeman.

David Houghton writes "In fact, Gordon Freeman is the most psychologically rounded, nuanced, and realistically multi-layered character currently in existence in the videogame format" (Houghton, 2008). His point is made in the context of *Half-Life 2*, but his argument extends to *Half-Life,* as the depictions of Gordon Freeman are fundamentally the same in both the games.

The expectations set by the *person schema* imply that players will expect Gordon Freeman to have, for example, a body, intentions, and emotions even when a player controls the actions of the character. I propose that *person schema* can explain why Gordon Freeman is considered a distinct person whilst the character is only seen on the cover of the game box.

Hulk

Although the example, *Hulk*, is blatant, it demonstrates how the personality and features of an already existing character can be reflected in gameplay. Hulk is a character from the graphical novels published by Marvel Comics. Bruce Banner, a scientist, and Hulk, a monster, are the same character. Bruce Banner changes to Hulk when he gets angry and Hulk changes back to Banner when his rage dies.[6]

When controlling Bruce Banner, a player guides the PC to sneak past enemies and use items, for example, hack computers controlling doors (Figure 2.2, A–C). The player can utilize four different attacks, but fighting is risky: when Bruce Banner is damaged he grows angry and eventually transforms into the Hulk. If this happens within a section that is meant to be played through as Banner, the change leads to 'game over'. The affective expressions and motor actions are perceivable by the player; hence, *Hulk* depends on *empathy* and *motor mimicry* in building the character.

The distinction between Hulk and Bruce Banner is evident in their powers. For example, when controlling Hulk, the player has more than thirty different attacks available. In addition to make Hulk attack, it is possible to make the character jump or pick up a heavy object as well as the NPCs. Objects then can be thrown or used as a weapon. (Figure 2.2, D–F.) Hulk can lift large objects without problems whereas Bruce Banner needs to push or pull them (Figure 2.2, C & F).

In the game, Hulk and Bruce Banner[7] are presented consistently with its graphical novel counterpart. Moreover, the action possibilities offered are also consistent with their counterparts. However, the relation might be more complex than this, because the theory of intertextuality argues that the interpretation of a source depends on all other sources (e.g., Fiske, 1987, pp. 108–127). Ziva Kunda also argues that expectations may be used to fill the gaps about a person (e.g., Kunda, 1999, pp. 174–187, 202–209). If these claims hold, players' knowledge about Hulk and Bruce Banner is likely to influence how the character

6 Hulk is obviously inspired by the *Strange Case of Dr Jekyll and Mr Hyde* (originally published in 1886) by Robert Louis Stevenson.

7 *The Chronicles of Riddick: Escape from Butcher Bay* (Starbreeze, 2009) is based on a character acted by Vin Diesel in the films *Pitch Black* (Twohy, 2000) and *Chronicles of Riddick* (Twohy, 2004). The game character model is based on the actor Vin Diesel. In addition, Vin Diesel is the voice of Riddick in the game. Both the model and voice link the game character with the films. Both voice and model can trigger interpretation and associated affects while watching the films. Sloboda and Juslin (2001) call the affects triggered this way as "associative emotions".

is constructed.

In *Hulk* the gameplay changes to reflect the basic qualities of the characters: playing Hulk is about controlling a strong and resilient fighting machine, whereas playing Banner is about problem solving and avoiding fights. In this case, the game system obviously regulates play; in addition, the visual presentation of the body and movement of Hulk afford fighting whereas the body of Bruce Banner does not.

Is the visual presentation of the body irrelevant? The theories of *empathy* and *motor mimicry* propose that the PCs will prompt similar automatic and involuntarily reactions as with the other persons or characters when motor actions and affective expressions are perceived. The idea of the *person schema* predicts that certain kinds of features promote categorizing an entity or object as a human agent. In conclusion, I suggest that the *person schema* can explain why characters presented in the first person perspective are considered as characters. I return to the themes introduced in this chapter in more detail in the *articles 1* and *2*.

Game and Gameplay Design

First, I look at high-level game design approaches that can complement the design approach that is proposed in this thesis. After that, I review a pervasive premise of design approach, immersion-driven game design, for the character-based games and show some limits that the premise of immersion centricity introduces. Then I proceed to examine the proposals for character design for games. I conclude this chapter by arguing that there is a need to look for methods to bridge character design with gameplay design.

Game Design Approaches

Game design and development flow can be described roughly as follows:

1. Brainstorming a game idea. The starting point can be based on game play (e.g., race game), license (e.g., James Bond), or technology (e.g., the design team have a certain game engine available, or the target platform is specific).
2. Creating the focus, i.e., describing the core of the game briefly.
3. Fleshing out the design (e.g., by writing a design document).
4. Creating a playable prototype. This can mean a physical prototype in early phases of the design or a software prototype consisting of merely a single gameplay feature up to a fully playable level or game.
5. Play testing the prototype.
6. Production. (Davies, 2007; Fullerton et al., 2004; Rollings, Adams, 2003; Rouse, 2005)

This process can be iterative in various ways.[1] Design processes may differ, for example, due to the approval process of a publisher (e.g., Davies, 2007). Notably, the core idea of my character-driven game design approach can be integrated with different variations of the design process.

The design process is considered to consist of gameplay design and story design (Davies, 2007; Fullerton et al., 2004; Rollings, Adams, 2003; Rouse, 2005), in the areas in which this work belongs.[2] The focus of the character-driven game design approach is especially in steps 2 and 3.

Gameplay design is about designing the game system. According to Järvinen (2008) the game system consists of the following parts:

1 An alternative for the presented process is agile game development methods. In agile game development (see, e.g., McGuire, 2006) the process changes and there is no separate production phase, but each iteration contributes towards the final product.

2 Depending on the writer, different subareas are identified. Davies (Davies, 2007) and Rouse (Rouse, 2005) discuss also, for example, level design and AI design.

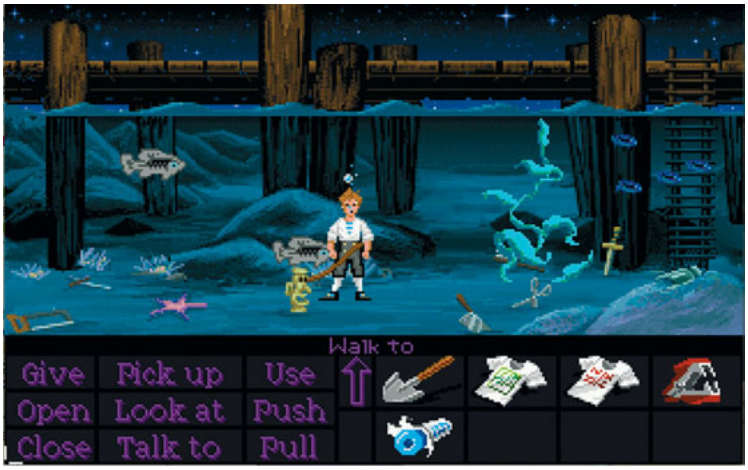


Figure 3.1: Guybrush Threepwood, the player character of *The Secret of Monkey Island* (Lucas Film Games, 1990), thrown to the sea tied to a statue.

- components (e.g., a Chess piece);
- relations between components;
- procedures (e.g., the definition of what is checkmate and how the system behaves when checkmate happens);
- goals of the game;
- game mechanics (the actual means available to players to interact with the game).

Story design consists of designing, in Richard Rouse's (2005) words, "a series of predetermined dramatic events." This can mean writing cut-scenes, designing a surprise attack, or playable dialogue. Story design includes character design (Davies, 2007; Fullerton et al., 2004; Rollings, Adams, 2003; Rouse, 2005).

Separating gameplay and story design, especially character design, conceptually, is likely to bring apart these two areas in practice. Moving focus to the characters as a design driver can introduce an alternative in which gameplay and character design (and, hence, story design) are more tightly coupled.

GAME DESIGN AND CHARACTER DESIGN

A pervasive premise of design approaches for character-based games is that all games should be immersive.[3] However, the premise is problematic in terms of its design implications. Before I can propose an alternative to this immersion-driven design, I need to discuss some of limitations that the concept of immersion implies to design.

3 Salen and Zimmerman (2004) have named that assumption *immersive fallacy*.

In the *Introduction* chapter of the book *Game Writing Narrative Skills for Videogames* (Bateman, 2007), Richard Dansky writes:

> Immersion is arguably the ultimate goal of videogames. Immersion is making players forget that they're sitting on their couch twiddling joysticks with their thumbs, and

Figure 3.2: Four screen shots from a playable scene in *Fahrenheit* (Quantic Dream, 2005). The game uses a split screen to warn a player about the threat in order to increase tension.

> instead making them believe they're mowing down Nazis, leaping from platform to platform over boiling space sludge, or exploring a mansion full of masticating mutants. (Dansky, 2007, p. 16.)

How is immersion the ultimate goal for video games? Dansky does not present any argument that raises the question whether there is any support to the claim.

François Dominic Laramée continues with a similar argument:

> Because game players become their characters, game writers should confine themselves to single-person, limited point of view. This means that the player should never be shown or told anything that the character has not experienced directly. (Laramée, 2002, p. 266.)

It seems that Dansky is excluding a wide variety of possible effects by setting up immersion as the ultimate goal of the game design. I do not intend to argue that immersion-driven design is wrong. For certain design goals, the goal is perfectly valid. Instead, I am criticizing the overly totalizing claims sited above.

Irony or comic effects can be created by other non-immersive means as seen, for example, in *The Secret of Monkey Island* (Lucas Film Games, 1990). In the game Guybrush Threepwood, the PC, is thrown from a pier with a statue tied to Guybrush (see figure 3.1). A player cannot guide the character out of the water, because the statue is too heavy.

The solution to get Guybrush out of the sea is to pick up the statue. Since the items in the inventory are weightless in the game, the player can save Guybrush this way. The solution to save Guybrush makes a joke out of the tradition of adventure games prior to *The Secret of Monkey Island*. However, figuring out the solution forces the players to think of the game as a game and to distance themselves from its fictional world. This offers an example that contest Dansky's and Laramée's above-mentioned generalizations.

Another example worth mentioning here, that deliberately does not limit the view to a single character is the *Fahrenheit* (Quantic Dream, 2005). The game uses a split screen technique (see Figure 3.2) to warn players about the threats in order to increase tension. However, the split screen technique also reminds players that they are playing the game. The split screen technique in the game has another important function: making a threat visible (that can cause abrupt 'game over') can prevent a situation that feels unfair because of a surprise.

Theatre writer and teacher Lajos Egri (1960) has stressed the importance of characters acting in a believable way. Egri argues that believable behavior of the characters will improve the quality of theatre. Egri's method has been adapted to game story design by Shedon Lee (2004) and Marianne Krawczyk and Jeannie Novak (2006). Egri's conception of believable behavior relates to the discussion in *chapter 2* that each character has habitual ways of behavior and intentional actions. Hence, Egri's method provides a promising starting point for designing character-based games.

Egri (1960) describes a character as a sum of physiological, sociological, and psychological qualities, and provides a checklist of the various aspects of the character that will influence its behavior (for example a very short character will use different means to get his hat on a hat rack than a normal-sized one). Egri stresses that it is important to note that every aspect of the character should be dealt with in the light of the other aspects of the character.

Egri introduces the concept *orchestration* to explain the writing of dramatic conflict. Orchestration means selecting and creating well-defined and uncompromising characters in opposition whose actions will lead to conflict that will intensify in a believable way. For Egri, it is important that a pivotal character and an antagonist both have strong motives to reach their goals so that compromise is impossible. The writer should work to find the most interesting course of action that is believable.[4] According to Egri (1960, pp. 106–136), believable conflict originates from the personality traits and the qualities of the character.

In the book *Better Game Characters by Design: Psychological Approach,* Katherine Isbister (2006) studies game character design. Her approach to designing characters is based on social psychology. She proposes that the dimensions of dominance, friendliness, and personality can be used in game character design. She lists how friendliness and dominance can be cued via the face, body, and voice of a character. For facial expression design, Isbister reviews facial muscles briefly and different action units that are the base of facial expression. These action units can be utilized in character animation to give suitable emotional expression to the character.[5] When discussing the body, Isbister stresses the importance of interpersonal distance (how near the characters are to each other when they interact), social grouping, and posture and how these can be used to communicate what kind of person the character is and

4 This premise has important implications for dramatic writing, but it might be problematic in context of game design. I return to how Egri's method can be used in game design in *articles 1, 3, 4,* and *6,* despite this problematic premise.

5 See Hager and Ekman (2003).

what kind of relations there are between the characters. She also lists how emotions modulate the voice of a character. (Isbister, 2006.)

Missing Link: From Character Design to Gameplay Design

While the connection between the character design and the story design in games has been studied in some extend, the studies focusing on to the connection between the character design and the gameplay design are scarce. A book edited by Bateman (2007) focuses on story design, and the chapter authors say little about gameplay design. This seems to be common situation in current game design literature. Richard Rouse discusses the personality of a PC in the context of linear writing pitfalls. Rouse maintains that character personality and immersion are in opposition. Rouse acknowledges that well-defined personalities can entertain players, but seems to think that personality demands linear gameplay in which players uncover a predetermined story. (Rouse, 2005, pp. 217–222). Steve Meretzky recognizes the importance of the personality of a PC, but alleges reservation as to whether players can indeed uncover the personality of the player character (Meretzky, 2001). It seems that Rouse's premise is that the personality of the PC is constructed solely from the pre-scripted narration such as appearance, dialog, and cut-scenes.

In addition, Rouse maintains that "the player's character should be sufficiently amorphous and unformed that players can think of that character in whatever way they see fit", and that "you can suck the player into the game much more if you keep the main character iconic and allow players to feel like they are in charge of determining that character's personality" (Rouse, 2005, p. 221). In contrast, Anders Tychsen et al. (2007) present empirical evidence that similarity to or difference between the personalities of the player and the PC have no impact on the playing experience, whereas their study links complex characters to a positive playing experience.[6]

Unlike Rouse, Meretzky (2001) and Mark Davies (2007) stress the importance of the moves that a PC can perform and how the moves are performed, and how those moves construct the personality of the character. Catherine Isbister (2006) looks at the link between the personality and the gameplay mainly through examples. For example, in relation to *Half-Life* and *Max Payne* (Remedy Entertainment Ltd., 2002), she illustrates how the kinesthetic properties of the PCs are well chosen to match their personalities. (Isbister, 2006.)

Lee Sheldon (2004) as well as Marianne Krawczyk and Jeannie Novak (2006) propose yet another approach for character design and storytelling. Both approaches, independently, utilize Lajos Egri's (Egri, 1960) method. An important premise in all these is that a character can reveal itself in action. Lee Sheldon mentions that physical skills and

6 My intention here is not to argue that all the characters need to be multidimensional and complex. That would be the other kind of fallacy.

profession can be revealed in this way: for example, a gracefully performed martial arts kick, a dialogue, or "Sly Cooper's special moves like sidling along a narrow ledge" can be used to depict the player character (Sheldon, 2004, p. 94). Marianne Krawczyk and Jeannie Jeannie Novak (2006) discuss how character appearance, clothing, dialogue, and movement character traits should reflect the traits of a character.

I believe that it is possible to provide techniques that are more explicit to transfer the designed character traits into features of a game system that regulate gameplay. The approaches presented above can be used to complement the following approach I introduce. Isbister (2006), in particular, provides complementing means to portray characters (by designing body, face, and voice) to the design approach that I propose in this study. In general, one needs to be aware of the premises (e.g., design goal assumed to be immersion) when judging whether the approaches are compatible or when combining parts of the approaches.

I propose an alternative to immersion-driven design that is based on cognitive science, especially, the cognitive emotion theories in *articles 3–6*. Importantly, the premises of those theories do not rule out the modes of attachment, such as, immersion and hypermediacy[7]. My intention is not to provide a design approach that is useful in all situations, but to explore the design space in a less normative manner: by describing the designable features and the probable implications of design choices for the gameplay and the playing experience.

7 Jay David Bolter and Richard Grusin (1999) use the concept of *hypermediacy* to describe the practice in which the known the feature of a medium is used to promote connection between the audience and the content. An example of this would be the split screen technique used in some television series or intertextual jokes in the *Monkey Island*. Immersion uses the strategy of *immediacy*, according to the terms of Bolter and Grusin (1999), trying to hide the features of a medium.

Character Engagement and Game Design

This thesis consists of six publications and the game *Lies and Seductions*. The first looks at character interpretation and its implications to game design. The second has an analytical focus and presents theoretical premises that are used to ground the design part. The next two articles look at designing the NPCs and the social networks and conflicts. After that I discuss about the game design of *Lies and Seductions.* The presented game design game builds on the studies presented in articles 1–4 and exemplifies a character-driven social conflict. The concluding article integrates the presented ideas into a character-driven game design approach.

Characters in Computer Games: Toward Understanding Interpretation and Design

Petri Lankoski, Satu Heliö, Inger Ekman

The focus of this article is on the aspects of a game that influence and guide how players interpret a PC. This article argues that the personality of a PC is inferred from the actions of the PC, and proposes that the interpretation can be guided by the design as follows:

1. building predefined functions;
2. setting goals;
3. making actions possible, and leaving some actions impossible;
4. characterization.

These methods influence the kinds of actions the PC can perform, and how the PC performs those actions. The characterization does not differ from other media and there are guidelines for that (e.g., Meretzky, 2001) This article proposes that the *bone structure* of a character by Lajos Egri (1960) and that of Berman's (1997) can be used in designing the above presented factors. Designing the gameplay based on the bone structure is dealt by using the examples *Thief II: The Metal Age* and *Hulk*.

Player Character Engagement in Computer Games

Petri Lankoski

In this article, I argue that a player character plays a central role in the playing experience, because people instinctively respond to human-like

entities through *empathy*. In general, the basis of empathy is in an *affective mimicry* (Decety, Jackson, 2004; Gallagher, 2005). Affective mimicry refers to automatic and involuntary reactions to the affective loaded expressions of others. Another aspect of empathy is *character simulation* (Goldman, 2006; Smith, 1995). Simulation refers to *as-if* reasoning where one tries to figure why the character is behaving in a perceived way.

I argue that the way in which players can control their character regulates and facilitates the engagement with a game via a PC. I propose that the engagement with the player character can be goal-related or empathic. Empathic engagement and goal-related engagement are connected with the goals of a PC.

In goal-related engagement the players' affects are prompted by the goal-status evaluations as well as by *as-if* reasoning (Oatley, 1992; Power, Dalgleish, 1997).

In conceptualizing empathic engagement I follow Murray Smith (1995) who argues that engagement can be divided into *recognition*, *alignment*, and *allegiance*. Empathic engagement requires recognition, positing traits to the player character. The recognition of a PC depends on the following factors:

- appearance, voice, and style;
- goals and sub-goals of the PC;
- possible and impossible actions (including actions that are hard and easy);
- predefined functions (such as action animations);
- cut-scenes.[1]

Alignment describes how access to a character's actions, knowledge, and affects is structured within the game and what kind of information is available to the player. Allegiance describes aspects of a game that prompt positive or negative evaluation of the character.

1 The categorization of the factors presented in article 1 is modestly changed in article 2 in order to clarify the qualities of the presented factors. For example, *cut-scenes,* receives its own category in *article 2,* and after this change *predefined functions* contains only factors that relate directly to gameplay.

GAMEPLAY DESIGN PATTERNS FOR BELIEVABLE NON-PLAYER CHARACTERS

Petri Lankoski and Staffan Björk

In this study we analyze the behaviour of a NPC, Claudette Perrick in *The Elders Scroll IV: Oblivion* (Bethesda Game Studios, 2006), in order to isolate features that contribute to the believability of the NPCs. The concept of *believability* is taken to mean that the actions of the NPC are coherently structured in terms of narration and gameplay. This means that the player is able to understand the actions and intentions or the non-player character; the actions of the non-player character can be explained by inferred intentions based on the assumption of a rational

agent (see, Dennett, 1996).[2] The notion of believability relates to the concept of person schema as presented by Murray Smith (1995). The person schema is an assumption that all persons share certain qualities such as human body, intentional states, self-impelled actions, expression of emotions, ability to use natural language and persistent traits (pp. 20–35).[3]

When analyzing the behavior of Claudette Perrick in the game attention was given to details that break or support the believability and help maintain the assumptions of the person schema. The findings are presented in the form of simplified gameplay design patterns (see, Björk, Holopainen, 2005 and *chapter 1)*.

Based on analysis we propose gameplay design patterns *Awareness of Surrounding*, *Visual Body Damage*, *Dissectible Bodies*, *Initiative*, *Own Agenda*, *Sense of Self*, *Emotional Attachment*, *Contextual Conversational Responses*, and *Goal-Driven Personal Development*, which describe design choices promoting the believability of NPCs. The list of patterns should not be seen as complete, as the patterns are the result of this particular case study.

In some cases, it might be more important to satisfy players' expectations based on genre rather than to aim for believability (as corresponding expectations based on our everyday experiences). Examples of these kinds of cases are superhero and horror games. However, to keep a game playable, gameplay still needs to have coherence, as too incoherent game systems tend to be unplayable.

2 In many cases, believability is more reliant on the fact that the actions of an agent do not break the expectations of a player in such a way that the player cannot create an explanation of the behavior.

3 Again, a missing feature or contradicting features do not always break believability: e.g., a person in coma still constitutes a person even if the person has no intentional states and emotional expression.

Gameplay Design Patterns for Social Networks and Conflicts

Petri Lankoski and Staffan Björk

In this study we analyze the games *The Elders Scroll IV: Oblivion* (Bethesda Game Studios, 2006), *Ico* (Sony Computer Entertainment, 2002), *UFO Afterlife* (ALTAR interactive, 2007), *Crusade Kings* (Paradox Entertainment, 2004), *Civilization IV* (Firaxis Games, 2005), *Canis Canem Edit* (Rockstar Vancouver, 2006), *Splinter Cell: Double Agent* (Ubisoft Shanghai Studios, 2007), and *Façade* (Procedural Arts, 2006) in order to isolate gameplay design patterns for social networks and conflicts. Concepts from social network analysis (see, e.g., Wasserman, Faust, 1994), actor-network theory (see, e.g., Latour, 2005), and dramatic writing (Egri, 1960) were used as the foci of analysis in order to derive uses of the social structures and the social conflict structures in the games.

The pattern, *Faction,* describes basic social structure. *Faction* is a social network of character, which has specific rules as to what is allowed, disallowed, and required by its members. These rules can be described as another pattern, *Social Norm*. Breaking a *Social Norm* influences the behavior of other members of a group; for example members can stop

interacting with the character that breaks a social norm and thereby the character is unable to acquire goods from the members of the faction. In general, the pattern *ACTIONS HAVE SOCIAL CONSEQUENCES* is a core building block of games that stress character–character relations. The core of the pattern is that the actions of a character influence how other characters perceive and they react to the character. For example, if the PC is guided to neglect a friendly and helpful character, that character turns unhelpful (this can be described as a pattern *SOCIAL MAINTENANCE* meaning that actions are needed to uphold a relation with a group or character).

The main means to set up a conflict between the characters is to create characters who are in opposition: if character A reaches the goal, character B's goal fails. Importantly, believable conflict is derived from the qualities of the characters (see, Egri, 1960). Social conflicts that are more complex can be introduced using patterns *TRAITOR* and *INTERNAL RIVALRY*. The pattern *TRAITOR* is about pretending to belong to a group while acting against it. The pattern *INTERNAL RIVALRY* consists of being an enemy with a character belonging to the same group.

LIES AND SEDUCTIONS

Petri Lankoski and Tommi Horttana

This paper presents the game *Lies and Seductions* (Lankoski et al., 2009) that is a design experiment on a character-driven game. The design utilized research presented in the *articles 2* and *3*.[4] The game design of *Lies and Seductions* was loosely based on the characters and the main conflict from a novel *Dangerous Liaisons* and its film adaptations: *Dangerous Liaisons*, *Cruel Intentions*, and *Untold Scandal*. A player controls Abby, who has made a wager to seduce a rock stark, Chris, promised to stay a virgin until marriage. The gameplay is built around the pattern *ACTIONS HAVE SOCIAL CONSEQUENCES*. Each character reacts differently to the actions of the PC.[5] Certain actions are associated with impressions that influence how much the NPC likes Abby. For example, proposing sex is associated with the impression 'slut'. While Chris dislikes persons that are openly sexually active, other characters might find that quality enticing. The gameplay evolves around finding out the preferences, dislikes and other information that can be exploited in social manipulation.

4 The draft version of the design approach presented in article 6 was developed simultaneously with *Lies and Seductions*.

5 This could be described as the pattern, *TRAIT REGULATED BEHAVIOR* that is introduced in *article 6*.

CHARACTER-DRIVEN GAME DESIGN: CHARACTERS, CONFLICT, AND GAMEPLAY

Petri Lankoski and Staffan Björk

In this paper we present an approach for designing characters and conflicts and deriving gameplay from character qualities and their rela-

tions. Gameplay design patterns (Björk, Holopainen, 2005) and character engagement model (see article 1) are used as bridges between the character design and the gameplay design.

We utilize the character and conflict design part of an approach presented by Lajos Egri (1960) for dramatic writing. Egri proposes that a dramatic conflict arises from characters that are in opposition. The characters want something so badly that they are not willing to give up. Believable conflict requires that the characters' goals and actions are believable. Egri argues that each character has their unique way of behaving. The behavior of a character, according to Egri, is influenced by its physiological, sociological, and psychological qualities:

- *physiology* includes features such as sex, age, height, weight, appearance, distinct features, and physique;
- *sociology* includes features such as occupation, education, family life, friends, enemies, and hobbies;
- *psychology* includes features such as moral standards, goals, temperament, obsessions, and intelligence. (Egri, 1960.)

In terms of gameplay, a pattern *TRAIT REGULATED BEHAVIOR* can be used to link character traits and character behavior. In the case of the NPCs, *OWN AGENDA*, *GOAL-DRIVEN PERSONAL DEVELOPMENT*, and *CONTEXT-DEPENDENT REACTIONS* can be used to link character traits and behavior in terms of gameplay.

This paper builds from the character engagement model, in which engagement is discussed in terms of *recognition, alignment,* and *allegiance* (see article 1) to look at the connection between a PC traits and gameplay.

In terms of gameplay, *recognition* is guided by regulating actions and choices available to the player via *goals*, *possible and impossible actions*, and *predefined functions*. When designing gameplay, goals, possible and impossible actions and predefined functions can be derived from character design.

Importantly, it is not possible to fix all aspects of the player character. The players' choices and interpretations always have an impact on how the players see the PC. In general, the more choices the players have, the less the traits of the character are fixed. On the other hand, even when players can create their player characters, the characters are not totally open.

In designing *alignment*, a high level choice is whether to use *DETECTIVE STRUCTURE* (the player's information is restricted to the point of view of a PC), *MELODRAMATIC STRUCTURE* (the player knows more than any single character), or some combination of them and whether to use single or multiple player characters. A choice relating to *alignment* is as to what kind of access to player character thought, affects, body states, and intentions is offered, and how the access is structured.

In terms of *allegiance*, the question is how to guide players to evalu-

ate player character positively. Typical techniques are:

- designing the character as physically beautiful;
- affective expression of affection and fear;
- making the character morally better than that of the other characters;
- via gameplay
- using patterns *PLAYER DESIGNED CHARACTER*, *CHARACTER DEFINING DECISIONS*, and *TABULA RASA*, which give players the possibilities to construct the character to match their preferences.

An iterative character-driven design is proposed to have following steps:

- Determining focus or premise to guide the character design, which can be a single statement such as "great love defies even death."[6]
- Orchestration, which is about creating a set of characters that are in conflict because of their natures.
- Operationally the ambitions and goals of characters. This step includes drafting the goal structure of the game and identifying possible gameplay actions to be used in pursuing the goals (e.g., listing *possible and impossible actions).*
- Drafting the main features of the alignment structure and that which intend to promote allegiance with the PC.
- Analyzing the design through gameplay design pattern.

The proposed method is intended to highlight the potential that relations between characters and the PC–NPC conflict have for the design of the gameplay.

6 Premise example has been taken from Egri (1960).

Conclusions

My study has two primary sections. First, I have analyzed the playing experience of the character-based games. A game does not *determine* the playing experience, but *guides* it. For example, the monsters of horror games, such as *Silent Hill 2* (Team Silent, 2002), are designed so that they are likely (but are not inevitable) to prompt fear and disgust (Ekman, Lankoski, 2009), partly due to the character and monster design.[1] Second, I have proposed a design approach for character-based games. The proposed character-driven game design approach can be seen to be related to story writing of character-based games as proposed in the book, *Game Writing: Narrative Skills for Videogames,* edited by Bateman (2007), because I have also identified factors that are relevant to story writing. However, instead of story writing, I focus on designing characters, character–character relations, and conflicts between characters, as these concepts translate to gameplay design rather easily.

In the next section, I compare the goals of this dissertation presented in chapter 1 and the results of this study. My goals can be divided into two categories: The first category is about understanding *characters and the playing experience*. The second category is about game *design and character design* and their relations.

Characters and the Playing Experience

Questions relating to the goal of understanding characters and playing experience are:

1. What is the role of the game characters in the playing experience?
2. How do the PCs facilitate and regulate the playing experience?
3. How are the perceived traits of the PCs and the gameplay connected?

As the answers to these questions relate to each other, I summarize answers without addressing the questions separately, because the answers are interrelated and it is considered preferable to provide a more holistic view.

I argue that players are likely to empathize with the game characters when a game offers the basis for empathy. Empathy here means that the affects that the players perceive in, or infer from, the expressions of a

1 Here, I am arguing that players are more likely to experience certain games, for example, as scary, more than others, because the game contains features that are likely to prompt that affect. I am not implying that there is some simple, direct causality from design intentions to play experience. Neither am I arguing that certain features cause the affect; the relation between the affects and the game is more complex.

character will influence the affects of the players. For example, happiness, sadness, fear, disgust, or anger[2] in the voice, facial expressions or gestures modulate the affective state of the players toward that emotion.

Empathy consists of *mimicry* and *character simulation*. Mimicry describes phenomena in which a perceiver automatically and, at least partly, involuntarily mirrors the perceived expressions and gestures of another. This mirroring can vary from very small muscle activations that the eye cannot perceive to clearly perceivable gestures. This mirroring includes mirroring the perceived affective state. Simulation is the *as-if* reasoning in which persons consider how they themselves would feel and behave in a given situation. This *as-if* reasoning triggers affects. Empathy is argued to play an important role in understanding character (i.e., what the intentions of a character are and what kind of personality the character has).

While *affective mimicry* requires perceiving emotionally loaded expressions, *character simulation* is a more complex process. The prerequisite for simulation is *recognition*, the construction of the character. This construction is based on affective and motor mimicry and interpretations of the information about the character including the appearance, name, descriptions, and how other characters react to the actions of the character. In addition, I argue that gameplay influence *recognition* of the PCs via *goals*, *possible and impossible actions*, and *predefined functions* as well as *how other characters react to the player character*. A summary of factors influencing player character *recognition* is shown in the tables 5.1 and 5.2.[3]

In terms of *character simulation*, what information is available to a player is important, because *recognition* and mimicry depend on that information. Hence, the recognition of a character might not be static, but changing based on what information is available at any one time.

The concept of *alignment* is used to describe what kind of access to the character is given to a player and how the access is structured in terms of the goal and event structure of the game. Access can be provided by different means (see tables 5.1 and 5.2), but the access can be regulated to be scarce or plentiful. If little or no access is provided, as in *Doom* (id Software, 1993), it is unlikely that players will perceive the 'space marine' they are controlling as a person.

A factor that influences the playing experience and the character engagement is *allegiance*. When players evaluate the PC positively, they are more likely to value the goals of the game. This valuing, in turn, can have impact on character simulation and the goal-status evaluations, for example, progression toward a valued goal triggers happiness, and failure to reach a valued goal triggers sadness (see also Lankoski, 2007). *Allegiance* relates to how a game prompts positive or negative evaluation of a player character. Positive evaluation is typically prompted

2 There is evidence that people seem to mimic at least these emotions (e.g., Eimer et al., 2003; Ekman, 1999) and expressions of pain seem to be mimicked (see, Morrison, Ziemke, 2005). Having said this, I need to point out that people differ; an extreme example is people with psychopathic tendencies who seem to be have empathy impairment that makes them unable or incompetent to recognize the expressions of sadness and pain (e.g. Blair et al., 2001).

3 Categories may overlap, and they are connected.

Factor	Description
Perceivable features	How the character looks (e.g., body, face, and posture) and sounds.
What is told about the character	This factor includes what the game manual and what other characters tell about the character.
Other sources	Players may have become familiar with a character from other sources such as advertisements, films, or television series. In those cases, it is likely that that information learned from those sources influence how the player character is seen. (E.g., Kunda, 1999, pp. 174-187, 202-209.)
Cut-scenes	Players see the actions of a PC in cut-scenes without able to (have substantial) control over the PC. The construction of the character (both the PC and NPC) is based on mimicry and simulation. Cut-scenes can block goals that the player has inferred which may lead to anger and frustration (Lankoski, 2007). On the other hand, cut-scenes can be used to build up tension and set up the playable sequence (Klevjer, 2002).

Table 5.1. Factors that influence PC recognition. These factors relate to the presentation of the PCs and NPCs.

Factor	Description
How the character reacts to the PC	How other characters react to a PC and her actions tells about the PC and her relations with the other characters. An example of this could be that the NPCs are respectful if the social standing of the PC is high. Reactions can also depict the moral standards of the game world (e.g., beating a slave causes no reactions).
The goals of the PC	Goals depict the PC in two ways. First, goals tell about the character directly (e.g., a goal of stealing or a goal of saving a friend can fix the characteristics of the PC). Second, goals guide gameplay: what are feasible choices and what are not.
Possible and impossible actions	What actions a PC can and cannot perform. What actions are made easy and what are made hard for the player.
Predefined functions	How (e.g., speed and style) a PC performs the actions chosen by the player. How the PC reacts to the game events (e.g., certain events can trigger voice over-narration or trigger certain facial animation).

Table 5.2. Factors used to influence player character recognition. These relate to gameplay.

with the features as follows:

- physical beauty (beauty relates to symmetry, v-shaped body of male, hourglass body of female, and cultural features associated to beauty);
- expressions of affection or fear;
- character is evaluated to be better than the other characters;[4]
- gameplay that makes a character seem physically, socially, or mentally adept.

An alignment structure of a game can make a character to be evaluated initially positively and later negatively or vice versa.

4 Sidekicks are sometime used for this. For example, foulmouthed Dax in *Jak and Dax III* (Naughty Doc, 2001) can emphasize the positive qualities of the PC. In *Chronicle of Riddick: Assault on Dark Athens* (Starbreeze, 2009) other inmates and guards make Riddick seem a rather noble person.

GAME AND CHARACTER DESIGN

Questions relating to game and character design are as follows:

4. How the PC design can be utilized in the gameplay design?
5. How can conflicts and gameplay be based on the social qualities of game characters?

Regarding question number four, a part of the answer is to design the features contributing to character *recognition* intentionally to promote a certain kind of interpretation of the PC (see, table 5.2). (This said, I should point out that there would almost always be disparity between the designers' intention and the players' playing experience and character interpretation. However, a game guides interrelation and engagement as argued in the previous chapters.)

I have proposed that Lajos Egri's (1960) method for character design is useful in designing character-based games. Egri's dimensions, for example, give information for designing perceivable features of the player character. Here, I am concerned about using the dimensions in gameplay design. Possible approaches for linking character traits with the features of a game system includes the use of gameplay patterns as follows:

- Use the pattern *TRAIT REGULATED BEHAVIOR* and trait system and then translate the character design to numeric values and utilize those in the designed system.
- Use the pattern *ENFORCED CHARACTER BEHAVIOR* and map different traits to *goals*, *possible and impossible actions*, and *predefined functions*.

These approaches are not mutually exclusive.

Regarding question number five, the most straightforward way to set-up a character driven conflict is to design a PC and other characters that have ambitions or goals in such a way that only one character can reach the goal. In practice, this can be accomplished by using the gameplay design pattern *PREDEFINED GOALS* (Björk, Holopainen, 2005) and defining sought-after game states based on the goals and ambitions of the

PC that lead to success. Following this, the designers need to define the behaviors for the NPC based on their goals that put the characters in opposition with the PC and create the wanted challenges.

To give an example of setting up a conflict, I use the characters and social structure of the *Romeo and Juliet* by Shakespeare, as the story contains well-known characters and the conflict is nicely grounded to the character's qualities (conversely, I take some liberties in the translation of the conflict in order to simplify the description). Using the well-known characters reduces need to explain the characters in detail and allows me to concentrate on describing how to translate the character design and conflict into the gameplay.

Two Families (a family is a *Faction)* the Montagues and the Capulets have a dispute. Romeo is a Montague and Juliet is a Capulet. Romeo and Juliet fell in love. The head of the Capulet family has arranged a marriage of Juliet to count Paris. However, Juliet wants to be with Romeo, but at the same time she wants to maintain her membership to the *Faction*. This is the source of the main conflict. Romeo has similar desires that forms the *Internal Conflict*.

In order to complicate the situations further, Juliet has a protective brother, who will obtain a *Continuous Goal* (Björk, Holopainen, 2005) to prevent Juliet and Romeo from seeing each other if he finds out that they are in love. As the brother is hot blooded, he is likely to challenge Romeo to a duel to prevent their affair. As the local ruler has forbidden any duel between the two *Factions* (this can be described using the pattern *Social Norm*), the duel will lead to declaring the duelers as *Outcasts* if the ruler finds out about it. This is a form of the pattern *Actions Have Social Consequences*. The use of the pattern would be important in translation on a more general term, as the conflict looses impact without the choices having an impact to the gameplay. The head of Montague also has a *Continuous Goal* (Björk, Holopainen, 2005) of keeping his promise to count Paris, which is equivalent to the goal of keeping Romeo and Juliet separated.

This setup can be utilized in different ways. Romeo is an obvious choice as the PC, because the story provides more for the design of the possible actions for Romeo, whereas making Juliet the PC requires more considerations of her possible actions. Game progression can be guided using goals and a goal structure. Depending on how tightly the designers want the flow of the game progression to follow the story of Romeo and Juliet, the goal structure needs to be set up in differently. Possible set-ups include:

1. If the designers want to follow the progression of the story, a goal structure can be used to regulate play. In this way, the player needs to reach a goal, which is *Predefined Goals* (Björk, Holopainen, 2005) in a predefined order that follows the goal structure of the story.
2. A sandbox style game can be supported by defining the winning

condition with the *PREDEFINED GOALS* (Björk, Holopainen, 2005) and loose conditions by the *PREVENTING GOALS* (Björk, Holopainen, 2005).

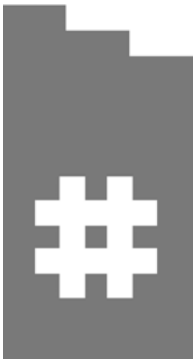
3. Structuring the game using *LEVELS* (Björk, Holopainen, 2005) that are based on the scenes of the play (note that all the scenes of the story might not be needed in the game and the game might require additional playable scenes). Each level can be designed to be based on setup 1 or 2.

The design of a PC needs to be considered. In the above-described setups, goals are used to create and structure the conflict. In addition to the goals, the designers need to consider *possible and impossible actions* and *predefined functions*. These can be used to communicate the PC's personality and to shape the gameplay.

CONCLUDING REMARKS

Empirical evaluation of the proposed design approach or PC engagement model has not been included as a goal of this study, because such evaluation would require a lengthy study of its own. Empirical evaluation is a possible follow up for this research. However, some reflections are needed. The character-driven game design approach has been used in designing a character-based game, *Lies and Seductions,* and hence the successful use of the method provides some supporting evidence for the utility of my method. While this assertion has an obvious weakness, namely the relation between the method and a designed game, the method has been used in practice. On the other hand, the method exposes a set of features and their implication within the character-based games for the designers as demonstrated in the articles, which should be valuable as such.

While the *Lies and Seductions* and *Romeo and Juliet* examples above have been adapted from literature and theater, the presented approach is not intended only for the adaptations. Lately, *Grand Theft Auto IV* (Rockstar North, 2008), while being an action game, integrates relations in gameplay; it is possible to seduce women and make friends in addition to completing missions. *Grand Theft Auto IV* demonstrates that social relations work as a part of an action game. I hope that the character-driven method I have presented can give tools that help to think about and integrate gameplay and social conflicts at the very fundamental level. An interesting example to explore would be games in which a plain-clothes cop is set to infiltrate a criminal organization. Gameplay, then, could utilize making friends and maintaining trust rather than completing action-based missions.



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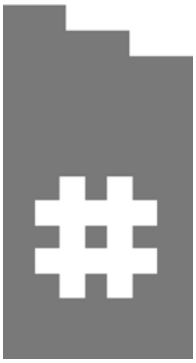

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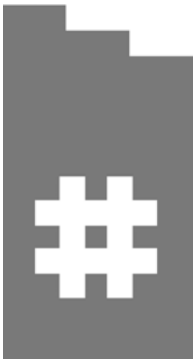

Gameplay Design Patterns

In this Appendix, I provide full descriptions of the selected patterns from this study. Patterns relating strictly to non-player character behavior have not been expanded, because those patterns are described rather verbosely in the paper *Gameplay design patterns for believable non-player characters*. In addition, the NPC patterns seem to be connected to artificial intelligence design and more detailed NPC patterns would likely require expanding the collection in that direction. Instead, I focus on the patterns relating the qualities of PCs, social networks, and conflicts, as those patterns have more gameplay implications that are the most relevant for my research questions. The patterns in this chapter are iterated versions of the patterns presented in papers, and therefore they can differ from those versions.

Actions Have Social Consequences

An action by a character influences on how others perceive and how they interact with the acting character.

Perceived actions influence how a non-player character will act toward the acting character. Different types of actions have different consequences: stealing will trigger hostile behavior while doing a favor friendly behavior.

Using the Pattern: Acting against the *Social Norm* of a *Faction* or a NPC is associated with negative behavior and should relate to a suitable *Emotional Attachment*. Acting against a *Social Norm* of a *Faction* may trigger positive social consequences in the members of another Faction. For example, breaking a *Social Norm* (stealing) of a *Faction* might be required in order to become a member of a *Faction* (thief guild).

Consequences: *Actions Have Social Consequences* creates a dynamic between the PC and the NPC and can introduce new conflicts or potential threats to the goals. In addition, *Actions Have Social Consequences* contributes towards the believability of NPCs.

Relations:

- **Instantiates:** none
- **Instantiated by:** *Social Norms*
- **Modulates:** *Character Defining Actions*, *Internal Conflict*, *Social Maintenance*
- **Modulated by:** *Player-Designed Character*

- **Potentially conflicting with:** none

References:

— article 1

CHARACTER DEFINING ACTIONS

The choices that a player makes define what kind of character the character is.

The character largely is how it behaves in terms of the interpretation. In addition, the character can get better in performing actions after repeated use.

- **Example:** With the successfully use of a skill or ability in a table-top role-playing game *CORPS* (Porter, 1994) one gets experience in those skills, and the skill will increase after enough use. A similar system is used in *The Elders Scroll IV: Oblivion* (Bethesda Game Studios, 2006).

Using the Pattern: *CHARACTER DEFINING ACTIONS* can be implemented by using patterns of *CHARACTER DEVELOPMENT* (Björk, Holopainen, 2005) where the performed actions determine the areas of *GAINING COMPETENCES*—via *SKILLS* (Björk, Holopainen, 2005), *IMPROVED ABILITIES* (Björk, Holopainen, 2005), and *NEW ABILITIES* (Björk, Holopainen, 2005). Alternatively, actions can change the relations between the PC and NPC via *ACTIONS HAVE SOCIAL CONSEQUENCES*. The use of characters introduces pattern *CHARACTER DEFINING ACTIONS,* as to how the player or the game system guide the character influence on how a player interprets the character.

Consequences: The choices of a player influence the perceived personality of the character. Moreover, the choices the player makes shapes the gameplay to match the traits of the character.

Relations

— **Instantiates:** none

— **Instantiated by:** *CHARACTER* (Björk, Holopainen, 2005), *ENFORCED CHARACTER BEHAVIOR*

— **Modulates:** none

— **Modulated by:** *CHARACTER DEVELOPMENT* (Björk, Holopainen, 2005), *GAIN COMPETENCIES* (Björk, Holopainen, 2005), *SKILLS* (Björk, Holopainen, 2005), *IMPROVED ABILITIES* (Björk, Holopainen, 2005), *NEW ABILITIES* (Björk, Holopainen, 2005), *ACTIONS HAVE SOCIAL CONSEQUENCES, PLAYER-DESIGNED CHARACTER, INTERNAL CONFLICT*

— **Potentially conflicting with:** *NARRATIVE STRUCTURES* (Björk, Holopainen, 2005), *CUT-SCENES* (Björk, Holopainen, 2005)

References:

— article 2

— article 6

DETECTIVE STRUCTURE

Information available for a player is limited to the information of one character.

The player experiences the game event aligned with a single character. The *DETECTIVE STRUCTURE* is typical pattern used in games, for example, in *Half-Life* (Valve Software, 2001), *Deus Ex* (Ion Storm, 2002), and *Silent Hill 3* (Team Silent, 2003).

Using the Pattern: *DETECTIVE STRUCTURE* is a form of *IMPERFECT INFORMATION* (Björk, Holopainen, 2005). The information available to the player is limited to what is available to one character; the player does not need to have unlimited access to what the character knows, feels, and perceives. *DETECTIVE STRUCTURE* can use *FIRST-PERSON VIEWS* (Björk, Holopainen, 2005) or *THIRD-PERSON VIEWS* (Björk, Holopainen, 2005). *DETECTIVE STRUCTURE* with *CLUES* (Björk, Holopainen, 2005) can be used to support *NARRATIVE STRUCTURE* (Björk, Holopainen, 2005), for example, solving a mystery by finding *CLUES* (Björk, Holopainen, 2005) to reach the *PREDEFINED GOALS* (Björk, Holopainen, 2005) such as *GAIN INFORMATION* (Björk, Holopainen, 2005).

Consequences: As *DETECTIVE STRUCTURE* limits the player's information. a certain point-of-view, pattern *IMPERFECT INFORMATION* (Björk, Holopainen, 2005) and *UNCERTAINTY OF INFORMATION* (Björk, Holopainen, 2005). This means that it can be used more freely (than with *MELODRAMATIC STRUCTURE*). This is likely to add to *TENSION* (Björk, Holopainen, 2005) and create possibilities for *SURPRISES* (Björk, Holopainen, 2005).

Relations:

- **Instantiates:** *IMPERFECT INFORMATION* (Björk, Holopainen, 2005), *UNCERTAINTY OF INFORMATION* (Björk, Holopainen, 2005)
- **Instantiated by:** none
- **Modulates:** *NARRATIVE STRUCTURE* (Björk, Holopainen, 2005), *TENSION* (Björk, Holopainen, 2005), *SURPRISES* (Björk, Holopainen, 2005)
- **Modulated by:** *CLUES* (Björk, Holopainen, 2005), *GAIN INFORMATION* (Björk, Holopainen, 2005), *FIRST-PERSON VIEWS* (Björk, Holopainen, 2005), *THIRD-PERSON VIEWS* (Björk, Holopainen, 2005)
- **Potentially conflicting with:** *PERFECT INFORMATION* (Björk, Holopainen, 2005), *MELODRAMATIC STRUCTURE*

References:

- article 2
- article 6
- Smith, 1995

ENFORCED CHARACTER BEHAVIOR

The game takes a control of certain or all actions from a player in order to maintain the character's personality.

ENFORCED CHARACTER BEHAVIOR is used to maintain character personality by limiting the player's choices or taking control way from the player.

- **Example:** Dialogue systems of games
- **Example:** *Thief: Deadly Shadows* (Ion Storm, 2005) uses goals and game system enforce certain behaviors. Goals are used to make sure that a player will steal valuables. Game system, in general, will promote sneaking over fighting.
- **Example:** *Call of Cthulhu* (Monroe, Petersen, 2004) introduced rules for insanity. When the insanity check is failed, if the character sees some horrific monsters or heinous acts, the character, for example, freezes or flees despite the player's will.

Using the Pattern: *ENFORCED CHARACTER BEHAVIOR* can be introduced with *CUT SCENES* (Björk, Holopainen, 2005) portraying player character and *PREDEFINED GOALS* (Björk, Holopainen, 2005). Also using *predefined functions* and *LIMITED SET OF ACTIONS*[1] (Björk, Holopainen, 2005) and *TRAIT REGULATED BEHAVIOR* are forms of *ENFORCED CHARACTER BEHAVIOR*.

1 A concept of *possible and impossible actions* is used in the paper *Character Engagement with a Player Character* and *Character-Driven Game Design: Characters, Conflicts, and Gameplay* can seen to include the pattern *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005), but also patterns such as *PRIVILEGED ABILITIES* (Björk, Holopainen, 2005), *ASYMMETRIC ABILITIES* (Björk, Holopainen, 2005), *SKILLS*, and other means to guide promote certain kinds of action using system design.

Consequences: *ENFORCED CHARACTER BEHAVIOR* takes some control from the player to maintain the character's personality. However, the pattern can conflict *ROLEPLAYING* (Björk, Holopainen, 2005) if the character design is not transferred consistently to the gameplay.

Relations

- **Instantiates:** *CHARACTER DEFINING ACTIONS*
- **Instantiated by:** *CUT-SCENES* (Björk, Holopainen, 2005), *PREDEFINED GOALS* (Björk, Holopainen, 2005), *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005), *TRAIT REGULATED BEHAVIOR*
- **Modulates:** *CHARACTER* (Björk, Holopainen, 2005)
- **Potentially Conflicting with:** *ILLUSION OF INFLUENCE* (Björk, Holopainen, 2005), *ROLE-PLAYING* (Björk, Holopainen, 2005), *FREEDOM OF CHOICE* (Björk, Holopainen, 2005), *PLAYER DESIGNED CHARACTER*

References

- article 1
- article 6

FACTION

A specific social network where membership is defined by what actions are allowed, disallowed, and required.

A *FACTION* is a group that has members, criterion on membership, and

accepted and disallowed behaviors. Different kinds of groups, such as a family, gang, army, are *FACTIONS*.

Using the Pattern: Each *FACTION* has a set of *SOCIAL NORM*s that define what is acceptable to the members of the *FACTION*. Unacceptable behavior has *SOCIAL CONSEQUENCES*; in some cases consequence can be that a character is declared as an *OUTCAST*. In addition, the members of the *FACTION* imply *LOYALTY*. *LOYALTY* can be a *PREDEFINED GOAL* (Björk, Holopainen, 2005) or an *INFERRED GOAL* (Björk, Holopainen, 2005) (in the latter case, the membership of the *FACTION* needs to have some benefits).

Consequences: *FACTION* introduces simple social constructs that can be used to introduce social interaction to gameplay. Joining the *FACTION* may require befriending with or making favors to the *SOCIAL GATEKEEPER*, whereas keeping ones status in the *FACTION* may require *SOCIAL MAINTENANCE*. *INTERNAL RIVALRY* is regulated by the *SOCIAL NORMS* of *FACTION* or consequence of breaking the *SOCIAL NORMS* can complicate the *INTERNAL RIVALRY*.

Relations

- **Instantiates:** *SOCIAL NORM*, *LOYALTY*, *CHARACTERS* (Björk, Holopainen, 2005)
- **Instantiated by:** *TRAITOR*
- **Modulates:** *SOCIAL GATEKEEPER*, *INTERNAL RIVALRY*
- **Modulated by:** *OUTCAST*
- **Potentially conflicting with:** none

References:

- article 3

INFORMATION PASSING

The passing, from a character to another, of information having influence on the gameplay.

One or more characters are talking. The information perceived could trigger new goals, add action possibilities, or improve changes to make good choices.

- **Example:** In *Lies and Seductions* finding out that a non-player character, Ed, is a good poker player, but becomes legless when drunk, reveals the possible strategy to win money from Ed.
- **Example:** New goals are triggered or the current goals are cancelled based on an overheard discussion in *Thief Deadly Shadows* (Ion Storm, 2005).

Using the Pattern: Conversation can include *CLUES* (Björk, Holopainen, 2005) or trigger *PREDEFINED GOALS* (Björk, Holopainen, 2005) to link information in the conversation to the gameplay.

Consequences: Conversation becomes more tightly integrated with the

gameplay and they can be used to tie the gameplay and the *NARRATIVE STRUCTURES* (Björk, Holopainen, 2005) together.

Relations

- **Instantiates:** *CLUES* (Björk, Holopainen, 2005)
- **Instantiated by:** none
- **Modulates:** *PREDEFINED GOALS* (Björk, Holopainen, 2005)
- **Modulated by:** *NARRATIVE STRUCTURES* (Björk, Holopainen, 2005)
- **Potentially conflicting with:** *PERFECT INFORMATION* (Björk, Holopainen, 2005)

References:

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INTERNAL CONFLICT

Having a set of desirable goals where the progress in one typically makes the others more difficult or impossible.

INTERNAL CONFLICT arises when a player character has multiple conflict goals from which a player needs to choose goals to pursue or prioritize.

- **Example:** In *Tom Clancy's Splinter Cell: Double Agent* (Ubisoft Shanghai Studios, 2007) the PC is set to infiltrate a terrorist organization. At one point of the game, the player needs to make a choice of whether to kill a captive to please the terrorists and displease the NSA (his employer) or not to kill the captive to please the NSA and loose the trust of the terrorists.

Using the Pattern: The *INTERNAL CONFLICT* requires two or more *PREDEFINED GOALS* that are incompatible. Reaching one makes reaching the others impossible or harder. Moreover, the *PREDEFINED GOALS* can be linked to *ACTIONS HAVE SOCIAL CONSEQUENCES*.

Consequences: The player needs to choose which goal to pursue and this choice has an impact on the game flow. When the *PREDEFINED GOAL* is linked to the *ACTIONS HAVE SOCIAL CONSEQUENCES*, the impact of the choice can be increased and the choice of which goal to pursue becomes more meaningful in term of the gameplay.

Relations

- **Instantiates:** *PREDEFINED GOALS* (Björk, Holopainen, 2005), *VARIED GAMEPLAY* (Björk, Holopainen, 2005)
- **Instantiated by:** *TRAITOR*
- **Modulates:** none
- **Modulated by:** *ACTIONS HAVE SOCIAL CONSEQUENCES*
- **Potentially conflicting with:** none

References

- article 3
- Lankoski, 2004
- Egri, 1960

INTERNAL RIVALRY

Being an enemy with a character within the same social network

INTERNAL RIVALRY is a conflict in which the progress of a conflict is regulated by the norms of the social network.

Using the Pattern: Typically the conflict is set up by the *PREDEFINED GOAL* (Björk, Holopainen, 2005) of a PC that put the PC in opposition with the NPC and both the character are members of the same *FACTION*. Different *SOCIAL NORM*s can be used to regulate the progression of the conflict via *ACTIONS HAVE SOCIAL CONSEQUENCES*, penalties such as the risk of becoming an *OUTCAST* or rewards.

Consequences: In *INTERNAL RIVALRY*, the conflict is complicated as the player needs to take into account the social network of a *FACTION* and its *SOCIAL NORMS*. This can lead to *VARIED GAMEPLAY* (Björk, Holopainen, 2005), as the consequences of the *ACTIONS HAVE SOCIAL CONSEQUENCES* can vary depending on how the player tries to reach the goal and in what kind of circumstances.

Relations

- **Instantiates:** *FACTION*, *PREDEFINED GOAL* (Björk, Holopainen, 2005), *VARIED GAMEPLAY* (Björk, Holopainen, 2005)
- **Instantiated by:** none
- **Modulates:** none
- **Modulated by:** *FACTION*
- **Potentially conflicting with:** none

References

- article 3
- Egri, 1960

LOYALTY

A goal to maintain a membership of a group.

- **Example:** In *The Elders Scroll Oblivion* (Bethesda Game Studios, 2006), if the PC becomes the member of Thief's Guild, being loyal to the guild requires complying with rules that bans stealing from another member, killing while carrying out a task, and stealing from the poor.

Using the Pattern: *LOYALTY* is a *CONTINUOUS GOAL* (Björk, Holopainen, 2005) to maintain membership of a *FACTION*. Maintaining membership

may require *SOCIAL MAINTENANCE* and performing quests, which are *PREDEFINED GOALS*. *LOYALTY* include *PREVENTING GOALS* (Björk, Holopainen, 2005) not to infringe the *SOCIAL NORMS* of the *FACTION*. Failure to comply the *SOCIAL NORMS* leads to penalty such as declaring a character as an *OUTCAST*.

Consequences: The membership of a *FACTION* has more value, as maintaining the membership is not automatic.

Relations

- **Instantiates:** *CONTINUOUS GOALS* (Björk, Holopainen, 2005), PREVENTING GOALS (Björk, Holopainen, 2005)
- **Instantiated by:** *FACTION*
- **Modulates:** none
- **Modulated by:** *SOCIAL MAINTENANCE*
- **Potentially conflicting with:** none

References

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MELODRAMATIC STRUCTURE

A player knows more than any single characters about the game situation.

When *MELODRAMATIC STRUCTURE* is in use a player is controlling several characters or have (limited or unlimited) access to the whereabouts of (some or all) the NPCs.

- **Example:** In *Fahrenheit* (Quantic Dream, 2005), a player controls different characters in different stages of the game.
- **Example:** In *Fahrenheit*, split screen technique is used, time to time, to reveal actions of other characters to forewarn about the approaching threat.
- **Example:** In *Forbidden Siren* (Sony Computer Entertainment, 2004), a player can actively sight-jack, which makes the player see from the point of view of some nearby character or enemy. While sight-jacking the player is not able to control the PC.

Using the Pattern: Typically, the character-based games combine *MELODRAMATIC STRUCTURE* with *DETECTIVE STRUCTURE*, for example, giving at certain points of the game possibility to choose which character to use. The possibility to change a character or a point of view can be controlled with *LIMITED RESOURCES* (Björk, Holopainen, 2005) or change can contain *TRADEOFFS* (Björk, Holopainen, 2005). The game can also force to change the character that the player controls or reveal what other characters are doing using the split screen or the *CUT SCENES* (Björk, Holopainen, 2005).

Consequences: A player has a better understanding about the game situation that promotes understanding *NARRATIVE STRUCTURES* (Björk, Holopainen, 2005) and planning. Providing *UNLIMITED INFORMATION* (Björk, Holopainen, 2005) via the *MELODRAMATIC STRUCTURE* can reduce the pos-

sibility of *SURPRISES* (Björk, Holopainen, 2005), whereas making a threat visible can create *TENSION* (Björk, Holopainen, 2005) .

Relations

- **Instantiates:** none
- **Instantiated by:** none
- **Modulates:** *TENSION* (Björk, Holopainen, 2005), *NARRATIVE STRUCTURE* (Björk, Holopainen, 2005), *UNLIMITED INFORMATION* (Björk, Holopainen, 2005)
- **Modulated by:** *LIMITED RESOURCES* (Björk, Holopainen, 2005), *TRADEOFFS* (Björk, Holopainen, 2005),
- **Potentially conflicting with:** *SURPRISES* (Björk, Holopainen, 2005), *LIMITED INFORMATION* (Björk, Holopainen, 2005), *DETECTIVE STRUCTURE*

References

- article 6
- Smith, 1995

OUTCAST

The members of a faction have specific behavior toward a character that is excluded from the faction.

A character that is thrown out from a group so that the group members ignore or attack the *OUTCAST* character if they meet, for example, failing to meet social norms of a faction will remove the character from the faction and make that character as an *OUTCAST*.

Using the Pattern: A *FACTION* has specified behavior towards the characters that are not members of the *FACTION*. An *OUTCAST* can be used as a penalty for not obeying the *SOCIAL NORMS* of the *FACTION*.

Consequences: The pattern *FACTION* introduces dynamics to the behavior of the NPC based on a *FACTION* membership that can have a drastic impact on the gameplay, for example, gameplay can change just based on whether a PC is a *FACTION* member or an *OUTCAST*.

Relations

- **Instantiates:** none
- **Instantiated by:** none
- **Modulates:** *FACTION*
- **Modulated by:** none
- **Potentially conflicting with:** none

References

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PLAYER-DESIGNED CHARACTER

A player is given choices to define the character.

- **Example:** In *Fallout 3* (Bethesda Game Studios, 2008) the player choose the abilities, skills, and perks of a PC within the limits set by the game system. The choices made influence to the gameplay.

Using the Pattern: The player should only have *LIMITED PLANNING ABILITY* (Björk, Holopainen, 2005), *RESOURCES* (Björk, Holopainen, 2005), *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005) to modify the character.

Consequences: *PLAYER-DESIGNED CHARACTER* influences the gameplay via *TRAIT REGULATED BEHAVIOR* and the gameplay changes depending on the choices the player makes. Players are able to customize character to suit their skills and playing style. Hence, the *PLAYER DESIGNED CHARACTER* promotes allegiance with the PC.

Relations

- **Instantiates:** *CHARACTERS* (Björk, Holopainen, 2005),
- **Instantiated by:** none
- **Modulates:** *TRAIT REGULATED BEHAVIOR*, *CHARACTER DEFINING ACTIONS*
- **Modulated by:** *LIMITED PLANNING ABILITY* (Björk, Holopainen, 2005), *RESOURCES* (Björk, Holopainen, 2005), *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005)
- **Potentially conflicting with:** *CUT SCENES* (Björk, Holopainen, 2005) *NARRATIVE STRUCTURES* (Björk, Holopainen, 2005), *ENFORCED CHARACTER BEHAVIOR*, *PREDEFINED GOALS* (Björk, Holopainen, 2005)

References:

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SOCIAL GATEKEEPER

The arbiter of membership for a specific social network.

The membership of a faction is perceived to be determined by a specific character.

Using the Pattern: The *SOCIAL GAMEKEEPER* is a character that determines whether another character belongs to a *FACTION* or Not. To gain membership to a *FACTION* the *SOCIAL GAMEKEEPER* might determine that reaching a *PREDEFINED GOAL* is required.

Consequences: A *SOCIAL GATEKEEPER* concretizes the procedure for joining to a *FACTION*.

Relations

- **Instantiates:** none
- **Instantiated by:** none

- **Modulates:** *CHARACTERS* (Björk, Holopainen, 2005)
- **Modulated by:** *FACTION*
- **Potentially conflicting with:** none

References:

- article 3

SOCIAL MAINTENANCE

Requirement to perform actions to redefine and refine the relation to a group or a character.

Maintaining a membership of a group or friendship of non-player character requires continuous or regular positively toned interaction with the group or the character.

Using the Pattern: Requirement for *SOCIAL MAINTENANCE* is introduced to a game by defining *CONTINUOUS GOALS* (Björk, Holopainen, 2005) such as the player character needs to have a discussion with the non-player character at least once a week. *SOCIAL NORMS* and *ACTIONS HAVE SOCIAL CONSEQUENCES* that can be used to counter effects of *SOCIAL MAINTENANCE* and introduce more nuanced dynamics between the characters.

Consequences: The player needs to make choices in order to maintain a relation with other a character or a faction. With the *SOCIAL MAINTENANCE* highlighting the character–character relations as a part of the gameplay, and relate to decision-making within the gameplay in social domain.

Relations:

- **Instantiates:** *CONTINUOUS GOALS* (Björk, Holopainen, 2005)
- **Instantiated by:** *TRAITOR*
- **Modulates:** *LOYALTY*
- **Modulated by:** *SOCIAL NORMS* (Björk, Holopainen, 2005), *ACTIONS HAVE SOCIAL CONSEQUENCES* (Björk, Holopainen, 2005)
- **Potentially conflicting with:** none

References:

- article 3

SOCIAL NORMS

A rule; breaking the rule will be punished.

Breaking the SOCIAL NORMS rules will change the behaviors and attitudes of the perceiving NPC. Behavior triggered by breaking a *SOCIAL NORM* will be punished by, for example, ignoring, imprisoning, or killing the character.

Using the Pattern: *SOCIAL NORMS* requires that *ACTIONS HAVE SOCIAL CONSEQUENCES*, such as penalty when acting against the norms and possible rewards when complying with them.

Consequences: *SOCIAL NORMS* can be used to introduce more nuanced social conflicts.

Relations

- **Instantiates:** *ACTIONS HAVE SOCIAL CONSEQUENCES*
- **Instantiated by:** *FACTION*
- **Modulates:** *SOCIAL MAINTENANCE*
- **Modulated by:** none
- **Potentially conflicting with:** none

References

- article 3

TRAITOR

Traitor requires pretending to be loyal to a social network while acting against it.

- **Example:** In *Tom Clancy's Splinter Cell: Double Agent* (Ubisoft Shanghai Studios, 2007) the task is to infiltrate the terrorist organization and destroy it. In the game the player needs to make decisions in order to maintain the trust of the terrorist and the employees of the PC.

Using the Pattern: *TRAITOR* is always associated with an *INTERNAL CONFLICT* pattern that makes a player to balance between the PC to achieve its real goals, acting against a *FACTION)*, and maintaining the trust of the *FACTION*. The actions needed to perform *SOCIAL MAINTENANCE* can be a source OF *INTERNAL CONFLICT* when the actions needed are against the *SOCIAL NORM* of the player characters real *FACTION*.

Consequences: *TRAITOR* pattern creates multilayered conflict in which the player needs to balance between different goals in order to fulfill the player character's actual goal.

Relations

- **Instantiates*:*** *SOCIAL MAINTENANCE, INTERNAL CONFLICT, FACTION*
- **Instantiated by:** none
- **Modulates:** none
- **Modulated by:** none
- **Potentially conflicting with:** none

References

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TRAIT REGULATED BEHAVIOR

The traits of a character regulate the behavior of that character.

Character behavior is influenced by the traits, such as *bone structure*

(Egri, 1960) of a character or the abilities and skills selected for a certain character.

- **Example:** The stat, skill and perk system of *Fallout 3* (Bethesda Game Studios, 2008) promotes certain kinds of actions in which the success is more likely and denotes actions that are more likely to fail. Stealth play style is a viable option when the PC has high perception and agility stats, and stealth and lock-picking skills whereas trusting negotiation and diplomacy requires high charisma stat and speech skill.
- **Example:** In *Lies and Seductions,* the personality of the NPC determines whether some event (e.g., the player guiding Abby to flirt with Emma) is seen positive or negative by the other NPC. This evaluation influence how much a certain NPC likes Abby. For example, Chris is highly religious and does not consider woman–woman relations natural, thus the above-mentioned flirting would reduce how much Chris likes Abby.

Using the Pattern: Trait such as introvert or a character with low charisma stat trait can have different *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005) than the extrovert or a character with high charisma. Some traits can be connected to specific *ENFORCED CHARACTER BEHAVIORS*. An example of this is freezing for a while when fired, if a trait check fails. Changes to success can be influenced by *SKILLS* (Björk, Holopainen, 2005) and abilities.

Consequences: *TRAIT REGULATED BEHAVIOR* offers possibilities to connect character traits (e.g., personality or physical traits) to the gameplay.

Relations

- **Instantiates:** *ENFORCED CHARACTER BEHAVIORS*
- **Instantiated by:** *LIMITED SET OF ACTIONS* (Björk, Holopainen, 2005), *SKILLS* (Björk, Holopainen, 2005), *CHARACTER DEVELOPMENT* (Björk, Holopainen, 2005), *IMPROVED ABILITIES* (Björk, Holopainen, 2005), *NEW ABILITIES* (Björk, Holopainen, 2005)
- **Modulates:** none
- **Modulated by:** *PLAYER-DESIGNED CHARACTER*
- **Potentially conflicting with:** none

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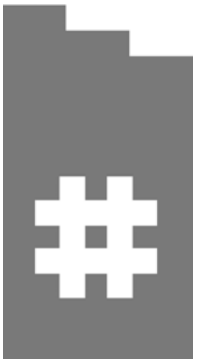

Lies and Seductions Credits

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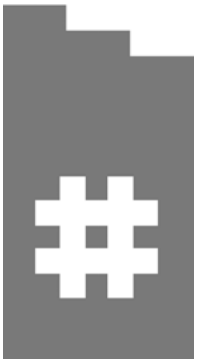
Audio track of the game includes audio samples courtesy of amione, Leady, pagancow, luffy, deathpie, ermine, FreqMan, crispy527, Hard-PCM, freesound, digifishmusic, crk365 and Luftrum taken from freesound.iua.upf.edu. Kid Kosmic font by Blambot Comic Fonts & Lettering, www.blambot.com. The playing card images by Jesse Fuchs, Tom Hart & David Bellot, www.eludication.org/playingcards.html. Pathfinding based on Pedro Teixeira code, code.google.com/p/ninjaxnagame/.



ARTICLE 1

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CHARACTERS IN COMPUTER GAMES: TOWARD UNDERSTANDING INTERPRETATION AND DESIGN

Petri Lankoski, Satu Heliö & Inger Ekman

ABSTRACT

Interpretation of characters is a fundamental feature of human behavior. Even with limited information available, people will assign personality—even to inanimate objects. Characters in computer games will be attributed personality based on their appearance and behavior. The interpretation of these characters affects the whole game experience.

Designing the protagonist character in computer games is different from the design of static characters (e.g., film or literature), because the player's actions will affect the nature of the character. There are, however, many ways to control and guide the actions of the protagonist and thus the character's nature. By setting goals, scripting pre-defined actions and choosing what kind of actions to implement, the game designer can restrict the player's freedom. This, together with the characterization of the character, will affect the interpretation of the character.

Keywords: Characters, Design, Interpretation

INTRODUCTION

Many computer games involve the use of characters. The careful design of these characters is a powerful way to strengthen the gaming experience. Although there is plenty of research on characters including their function and design, this area has been more or less neglected in computer games research. This article analyses the importance of characters. Characters are seen as motivators of action. Additionally, this article proposes ways of using dramatic writing of characters as a game design approach.

Steve Meretzky points out the importance of the main character in his article *Building Character: An Analysis of Character Creation*. He accentuates the importance of knowing the character thoroughly and of making good characterizations of it, i.e., designing everything observable about the character. He argues that a good primary character in a game is the one most likely element to leave a positive lasting impression on the player. [12] *The History of Tomb Raider* also highlights how import an aspect the character design was of the game series' success:

> Lara Croft enjoys a very detailed and well-developed

> character profile. Lara Croft's virtual personality helps draw you into the game, setting up your relationship of sorts with the game's central character and her resulting plight. [3]

Still, one issue surrounding computer game characters has been, whether they actually are important as parts of a game.

According to Forster, literary characters can be divided into flat characters and round characters. Flat characters are simple and they can usually be described with one sentence. Their actions are predictable. Round characters are believable even when they surprise the reader. A round character should indeed be capable of surprising the reader. [7] Based on Forster's classification Gonzalo Frasca has noted that most game characters would be judged as flat. Moreover, Frasca questions whether the protagonist (the character that the player controls) in a game even is a real character, as it will act merely as a vessel of functions, a cursor for the players actions. [8]. In addition, Frasca claims that game characters are flat (or inexistent) for a reason: "[t]he question that needs to be answered next is 'what happens next?' and not 'why the character behaved in such a way?'" [8].

We believe that characters in games are usually flat due to the sad fact that no one bothered to design them well. While Frasca's argument that "[t]he more freedom the player is given, the less personality the character will have" [4] (and Steve Meretzky's similar concerns [12]) is valid, he seems to have overlooked the fact that players never have limitless freedom in the game. Indeed, a system without restrictions and rules would not be a game anymore [5,10,4] The rules, on the other hand, will always limit the player's freedom (or, at least restrict the players progress in the game, should he choose to act against them). As we will show, limiting a player's freedom is an effective and frequently used method of creating personality to the protagonist character.

It is easy to agree that players are probably most interested in the question "what happens next?" It is perfectly reasonable that the question "why did the character behave that way?" loses some of its importance, as the player who just made the character act knows exactly why it acted as it did.[1] However, we don't believe that this viewpoint excludes the need of good characters. We will show how the design of the character can be used to help the player identify what s/he can do, how s/he can act and—essentially—find the answer to the question "what happens next?"

1 Providing the controls of the game work; e.g. in *Tomb Raider: Angel of Darkness* (Eidos Interactive 2003) bad controls make Lara seem clumsy.

This paper will discuss the design of computer game characters, mainly the protagonist. We will show how the nature of the protagonist is interlinked with the mechanics of the game and vice versa: how the functions of a game will affect how the character will be interpreted. By applying methods from dramatic writing and literary theory, we provide useful tools for writing and designing computer games around the nature of the protagonist.

It is important to note that characters in games appear in very different roles and their function in a game is dependent on their surroundings (like in literature or film). For example the function and role of a character is different in a computer football game, a role-playing/adventure game (e.g., *Tomb Raider,* Eidos Interactive 1996-2003 or *Deus Ex,* Eidos Interactive 2002) or a beat-em-up game (e.g., *Tekken 4,* Namco 2001/2002). Although many of the examples of the text focus on role-playing/adventure games, in which characters usually portray a very broad spectrum of features and characteristics, the methods presented are not exclusively applicable to this type of games. The examples have been chosen only in order to highlight the aspects considered. The methods we present can equally beneficially be used to script the protagonist of any game that has one (i.e. the player is controlling a person of sorts). For example *Tekken* characters are defined by their fighting style more than anything else. Thus the focus of the design should change accordingly with the sort of character one is designing.

THE INTERPRETATION AND FUNCTION OF CHARACTERS IN COMPUTER GAMES

Literary theory argues that characters are constructed in three different ways: 1) The character can tell other characters (and the audience) about him/herself. Alternatively 2) another character can describe the character of interest. Finally, 3) the actions of the character define and describe the nature of the character. [14]

It is evident that all of these ways can be used and are used in computer games to describe the characters of the game to the players. As long as the player has no direct control over the character, the methods can be used just like in literature, drama or film.

The protagonist (that is, the character that the player controls) is an exception. Action in part is what defines a character [14, 1] What this means in the context of computer games is that as the player controls the character, the actions the player takes in the game also define what the character is like. However, actions can be restricted and directed and so can interpretations[2].

2 E.g., Hirsch [9] discusses methods for directing interpretation in detail.

In this section we explore, by analyzing computer games, how a player's possible actions can and should be restricted and directed to support the consistent nature of the protagonist. In games, these methods can be divided as follows:

- building *pre-defined functions* of the character,
- setting the *goals* of the game,
- choosing and implementing *possible and impossible actions,*
- *characterization*.

Predefined functions

Predefined functions are the parts of a game where the designers have control over the protagonist and it's actions. This control can take different forms (this list is not meant to be exhaustive):

- Cut-scenes: Static, pre-designed movie-clips take the control away from the player.
- Dialogue: The player can have some control over the dialogue, but the lines are always predefined. (Dialogues can be alternatively presented fully in cut-scenes.)
- Character animation: The style of the character's movement and its mannerisms and facial expressions.

For example, *Thief II* (Eidos Interactive 2000) uses cut-scenes in the beginning of every mission where Garrett recounts the details and background of a mission (and the reasons why he chose to do it) in a personal way. The cut-scene hints at Garrett's cynicism and also teaches the player details about the character's thinking, his attitude and point of views. The cut-scenes are thus used to construct the nature of the protagonist similarly as in film or literature.

In *The Secret of Monkey Island* (LucasArts 1990) parts of the dialogue of the protagonist are presented in cut-scenes or cut-scenes where the player is offered choices on what kind of stance s/he wants to take or what direction s/he wants the game to take. The structure of the dialogue and the choices offered to the player in The Secret of Monkey Island present Guybrush Threepwood, the protagonist of the game, in a consistent way. The player is not offered choices that would be alien to Guybrush at any point.

Ico in *Ico* (Sony Computer Entertainment 2002) needs to encourage Yorda to follow him. He can either call her or lead her by holding her hand and moving. These actions are always animated and in them Ico seems kind and patient towards Yorda.

In *Dead or Alive 3* (Tecmo 2001) the characters have a set of different

Figure 1. Ico calling for Yorda to follow him up the stairs.

attacks, which are all predefined functions. These also portray the character in certain ways. E.g., some of the Drunken style Kung Fu master protagonist's movements will end in him lying leisurely on the ground even in the heat of the fight. These movements make him seem like a very relaxed and easy-going person—or perhaps annoyingly arrogant to the opponent.

Some people may claim that the thought of people attributing personality to every character seen on the screen is overstated. Some game characters can certainly seem quite distant from proper characters. E.g., in *Pac-Man* the "protagonist" is a ball with a mouth. It doesn't seem to have much of a personality. However, Byron Reeves and Clifford Nass have showed strong evidence that people have a powerful tendency of assigning personality traits to fictional characters—and even inanimate objects invoke a sense of personality. This applies, even if an object doesn't have a special set of psychological traits. They argue that assigning personality traits is automatic and something very basic for people. Even if personally is assigned with very limited information, inconsistencies in the presentation can diminish purity of the personality [10]. Thus consistency of presentation is important in any type of game, using any type of characters.

A particular form of predefined action is the way other characters in the game act towards the protagonist. At it's simplest; characters can describe (talk about, refer to etc.) the protagonist. E.g., in *Silent Hill 2 – Director's Cut* (Konami 2003), the player will come upon a letter/dialogue describing the protagonist. Other characters' actions or reactions to the protagonist's actions also describe aspects of the protagonist. E.g., in *Ico,* Yorda's reaction towards Ico is trusting and obedient. This will further establish the nature of the character as friendly and caring.

Goals

Goals are one way to reduce a player's freedom in a game: If a player wants to make progress in a game s/he needs to achieve goals set by the game. Goals are a very powerful tool of presenting the nature of the character. Goals can be presented to the player directly (e.g. as a list of goals) and this makes them a very straightforward objective towards which the player will guide the character. Alternatively goals can be given less directly, as in *Silent Hill 3* (Konami 2003), where they are implied by the back-story and setup of the beginning of the game. Goals, when given explicitly, will imply a lot about the character. The goal to smash a city will imply that the character actually is strong enough to do that and, that s/he doesn't care whether a whole city is put to ruins. Vice versa, the character affects how reasonable the goals seem and how the player will attempt to solve the problems s/he is presented with. The use of implicit goals requires solid characters that make the goals seem natural and reasonable. If the goals (whether given or implicit) and the interpretation the player makes of the character are in-

consistent, it will affect how the whole game is interpreted.

One example of the use of goals to communicate character is the goals in *Ico*. The game ends if Yorda is captured (before the predefined point at the end of the game, where capture is unavoidable). This means that in order to succeed in the game, the player must take good care of Yorda. Without Yorda, Ico cannot open the magic doors, so he will need to keep the girl with him or get stuck in the game. Together with character animation (e.g. Yorda is scared of the shadows, but not of Ico) these two game mechanics illustrate Ico as a caring character.

As another example let's take Garrett, the protagonist in *Thief II*. The goals present him as a professional thief, with some concerns for other people and some respect for human life. The goals of the game, during its progression, present an anti-hero that in the end is forced to stop the villains' evil plans. An interesting detail is that game difficulty levels are affected by restricting the amount of killing Garrett is allowed to do while fulfilling his missions. Garrett is a potentially much more brutal person on the moderate difficulty level than he is in on the expert level, as challenge is added by restricting the amount of killing allowed (missions on the expert difficulty have the additional goal "don't kill anyone").

An important aspect in *Thief II* is that every goal presented is very well motivated. This means that the goals are a product of the situation where Garrett is and, because of this, the goals also always seem to be a very plausible and reasonable approach to handling the problem or situation Garrett is in at each time.

Possible and impossible actions

Implementing certain types of actions is another way of constructing a character. One extremely straightforward example is *Hulk* (Universal Interactive 2003), where the protagonist(s) Bruce Banner/Hulk have totally different abilities. Hulk has an ability to damage or break

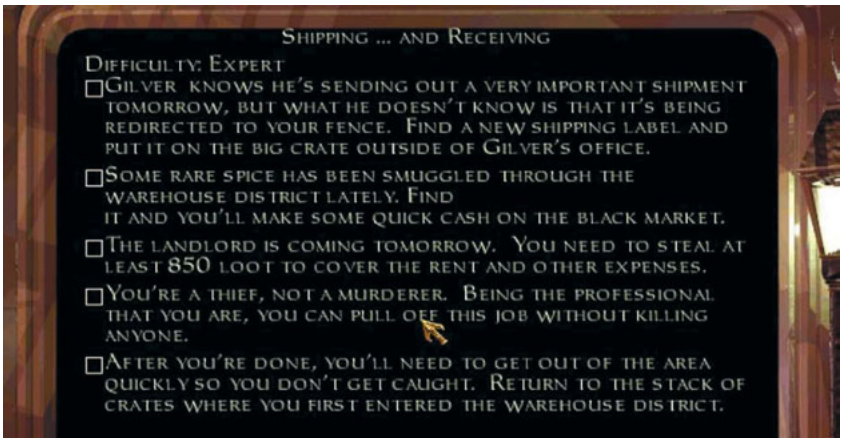

Figure 2. Goal list (expert level) from Thief II.

almost anything in the game world. While playing Hulk, the player can only combat against enemies, pick up objects and use them as weapons, move around the game word or break things. When Hulk in transformed back to Bruce Banner the actions available to the player change. Banner has evasive maneuvers that he can use to move unnoticed. Banner can also use and manipulate various objects in the game world (but not break them with physical force). The game presents a very simple way to sketch two totally different kinds of characters and their personalities by making some actions possible or impossible. This in conjunction with predefined functions, i.e., how Banner's and Hulk's facial expressions and mannerisms are animated construct two different characters or two sides of one character.

Similarly, in *Thief II* (Eidos Interactive, 2000) aspects of Garrett, the protagonist of the game, define what Garret can do, what he is good at and what not. The player of Garrett cannot freely initiate conversation with other characters. He can, however, listen to other characters having discussions or talking by themselves. The profession of a thief further implies some of his abilities, like stalking, climbing and picking locks, which he can use to achieve a goal.

Garrett can also use a bow, sword or blackjack to knock out guards. However, Garrett is not very good with a sword, hence fighting through guards is not usually a very good approach. Yet he can easily knock out guards if the player can manage to get Garrett close enough to the guards by stalking. Garrett's strengths and weaknesses define some aspects of the characters and his nature. By looking at his skills, you can tell that Garrett prefers cunning solutions to problems over the use of force. He can for example sneak past several guards unnoticed but if the player tries to fight his way through, he will probably end up dead.

In *Grand Theft Auto III* (Rockstar Games 2001), the player's lack of communication is brought to extremes. The protagonist can go to meet other characters, mainly his criminal contacts to get jobs, but even then the protagonist usually just listens to other characters talking. The only "communicative" actions left to the player are either sounding the horn of the car or picking up a whore and having action with her. This guy doesn't even talk to himself.

Actions made possible in *Grand Theft Auto III* are moving by foot or by car (and of course hurting people with the car) and using weapons. The character can steal a car, but not buy one. Although the game offers some possibilities to perform tasks other than the missions from crime bosses (like driving taxis, police cars, ambulances or fire trucks), these new occupations are available only by first stealing the car in question. These possible and impossible actions present an amoral character that is an outsider from society. His only choice is to lead a criminal life.

"47" in *Hitman 2* (Eidos Interactive 2002) also presents a limited set of options regarding which kind of actions are available. The name of the game is informative enough: the aim is to kill certain people, not

engage in social activities. Hence, there are lots of different ways of killing people but not many possibilities for other action. In addition, 47 can stalk people, disguise himself by stealing other people's clothes and pick locks. In the garden of his home base, he can practice killing on a scarecrow—but not tend to the plants. This could be seen as inconsistency between the character's presented background (trying to give up a life as an assassin), or as an indication of change in the character: he has fallen back to his previous life

Characterization

Characterization, which is designing the observable aspects of a character, is an important part of building a character. This is because of the fact that physical abilities and features contribute to assigning personality traits to the character. Several aspects of the character can be communicated to a player by characterization. In Hulk, the sheer difference in size implies different traits to Hulk from those held by Bruce Banner.

Characterization is strongly linked with the definition of pre-defined functions like animation of facial gestures and movement. These are all visible features and hints of the nature of the character and they should be used to indicate possible actions and intentions. Together, these turn the character into a potential for action, in a sense the cursor Frasca indicates. Moreover, the functionality of the character is strongly dependent on the integrity of the character. Inconsistent hints can lead to situations in which the intentions and possibilities of the character are not clear enough and the player gets confused.

In conclusion, characterization in computer games doesn't differ from the design of any character in other media and there are guidelines on how to do this (e.g. [12]). In essence, designing the visuals of a character is part of the fine-tuning work done, after the designer has come up with an inherently solid character.

DESIGNING FUNCTIONS OF THE PROTAGONIST

Our analysis shows how games construct natures to protagonists and other characters. By designing the characters of the game in detail and using the character design as a fundamental part of game design it is possible to create complex and well designed protagonists for the games. In this chapter we present a method for designing characters and integrating them as a fundamental part of a game.

Robert Berman lists six important aspects of dramatic personae:

- Dramatic need provides a purpose, focus and direction of story; it is the reason why the protagonist is in the story.
- Point of view how does the character see the situation(s).
- Attitude explains the stance the character takes to the

situation(s)

- Change makes the character intriguing and realistic.
- *Weakness/negative trait* makes the character realistic and is also a convenient way of building obstacles. This is also perhaps the aspect that the character will be able to change in her/himself.
- *Mannerism/habits* Identifiable parts of the character that differentiate it from other characters. [2]

These aspects are all important parts of game design, too. Dramatic need is crucial in order to give the character a good reason to be in the game. Conflict and struggle, which are the basics of dramatic need, will translate directly into character goals. These describe to the player what to do in the game. If the dramatic need isn't there, the player will feel no need to act and the goals of the game will feel superimposed and shallow.

The point of view and attitude of the character give the player a reason plus means and methods to act. These explain why and how the character is likely to act and thus guide the player to act within the limits of the character (and the game). Game mechanics should support this kind of action.

The character's weakness or negative trait is an ideal way of guiding the player towards a certain type of action. If something is clearly lethal or impossible to achieve, players will certainly try other options to solve the problem. Disadvantages are also useful for making possible actions sufficiently difficult. They also make characters more interesting than characters without flaw; how boring would Superman be without his weak spot kryptonite.

Mannerisms and habits highlight the characters personality. Actually, any predefined animation may be interpreted as a mannerism of the character. These can be used to make the characters lifelike and interesting, or annoying as hell.

Although deliberate dramatic change can be difficult to implement in a game, some game designers, like Warren Spector [15], consider it important. In some games the only change in the character will be the player learning to control the character better and master the game (e.g. *Tekken, DOA* and other manually demanding games). In other games, change is used to keep the action interesting and to present the player with new methods of acting. Often this is achieved by adding to the character's skills along the road. The development of skills can, however, affect the game more drastically. For example JC Denton, the protagonist in *Deus Ex* (Eidos Interactive 2002) will develop during the game. The choices the player makes (which skills to invest in) will probably also direct the behavior of the character in the rest of the game, as the player probably prefers these skills when handling problems in the future. The development of skills and abilities offers a possibility to change the character and play the game in slightly different ways.

Moreover, dramatic change can explicitly be expressed through the goals of the character. If the change is natural, so will the goals be. In *Deus Ex,* JC Denton's goals in the beginning of the game express his commitment to his employers. In the course of action JC's goals change as he (and the player) finds out details that contradict his earlier beliefs concerning his employers and his own values. This change is explicated as new goals.

Designers should know their characters in detail before they start to design characterization, rules and game mechanics. Lajos Egri has presented a methodology for writing dramatic personae with depth. He sees a character as the sum of her/his physical, psychological and sociological qualities [6]. We believe that Egri's method is usable in the context of computer games: his focus is on the conflict that rises from the personality and the goals of the characters in the story. This approach is analogous to building conflict between the characters in the game.[3]

3 We have previously shown, how the opposing needs of characters will introduce conflict in a game. We see conflict as a basis of any game design. In our point of view, a game's structure can be seen as a repetition of the following form: As the character's goals are met with obstacles, the situation will lead to conflict and struggle. Solving the conflict ends the struggle and the player reaches achievement. [11].

The three-dimensional character

Egri presents an outline for a "bone structure" for building what he calls a three-dimensional character. These dimensions are presented in table 1, with some additions and modifications made by us:

Every item listed in Table 1 is not always needed for a character. For example a small child will probably not have any formal education. The list is also not exhaustive and its function is merely to be a checklist about the areas a designer needs to think about when constructing complex characters. The skills and abilities of a character must reflect

Physiology	**Sociology**	**Psychology**
Sex	Class	Moral standards, sex life
Age	Occupation Goals,	Ambitions
Height and weight	Education	Attitude towards life
Color of hair, eyes, skin	Family life	Temperament
Posture	Religion	Complexes, obsessions
Defects (deformities, abnormalities, diseases)	Race, nationality	Frustrations, disappointments
Appearance and distinct features (tattoos, birthmarks, etc.)	Place/Standing in community (i.e. social status among friends, clubs, sports)	Imagination, judgment, wisdom, taste, poise
Hereditary features	Political affiliations	Extrovert, introvert, ambivert
Physique	Amusements, hobbies	Intelligence

Table 1: Bone structure for a three-dimensional character [6] with adaptations.

its physiological, sociological and psychological profile. For example, a gang member probably has different skills and abilities than a jet setter, even if they are the same otherwise, e.g., their physiological and psychological profiles are identical.

Egri's sociological profile will determine what kind of skills, abilities and professions are natural to the character. For example, a character with poor parents is more likely to become a thief than a wealthy character; or at least the character will need different motivations or reasons to why he is currently a thief than a poor character would. A character's profession, on the other hand, limits the skills and abilities s/he will have or what s/he will be good at. When a designer knows what a character should be able to do, this can be translated into game mechanics. For example a player can guide Garrett in *Thief II* through shadows. As long as Garrett remains motionless in the shadows, guards and other characters will not see him, except if they come extremely close to him (literally bump into him). Other characters will probably not spot him even if he moves in the shadows, as long as the surface doesn't cause noise. On the other hand, if Garrett stands in or moves through well-lit areas, other characters will spot him if he is in their line of sight. Character features motivate these mechanics. In the final product (the game) the mechanics will be interpreted as traits of Garrett's, that is, skills that are part of his profession.

The sociological profile also describes the character's family, friends and probable contacts and acquaintances. For example Garrett is likely to know a fence (dealer of stolen property), whereas some high-class character would not. The sociological and psychological profiles together with the situation the character is in translate into goals for the protagonist.

The basic idea is that every character does things in his personal way, which in turn is defined by the character's three dimensions. By adjusting the dimensions according to the desired goals of the games one can create both protagonists and other characters that fit in with the desired environment. Conflict in the game then arouses from opposing qualities of the characters or the environment of the game. As pointed out earlier, designing and implementing a non-protagonist character is quite similar in games as in other media. Next we focus on how the nature of the protagonist can be implemented in the form of game mechanics.

The Protagonist and Game Mechanics

The design of a game should reflect the needs of the protagonist. In spite of which idea was first; whether the character gave basis for the game or the character was written according to the needs of the game, the mechanics are what, in the end, constitute the nature of the character.

Let's get back to our earlier example about Hulk and take a brief look at the character dimensions of Bruce Banner and Hulk. Bruce Banner is an intelligent and well-educated scientist. He is not particularly strong or athletic. If Banner gets angry he changes into Hulk. Hulk is extremely strong, resilient and he is notably bigger than normal humans (and Bruce Banner) and very muscular. When Hulk gets angrier he also gets stronger. He is not very clever and most skills Banner has Hulk does not have. Hulk's most prominent skill is that he is able to break almost anything.

To be interpreted in the game, these qualities must be implemented in game mechanics. As we argued earlier, this can be done in many ways. However, it is best done by designing and implementing what actions are possible and impossible and on what terms. Other ways of expressing these aspects of characters will be only cosmetic and have no impact on the game experience itself. E.g. implicitly telling the player that Hulk actually is incredibly strong (through cut-scenes or character dialogue) but not making him that in the game will only contradict the way the player interprets the character. Hulk in the game will be interpreted as weak and puny, if he acts that way.

Next we will inspect closer, how character design translates into specific game mechanics. The following presents some requirements that differentiate between Hulk and Bruce Banner.

Hulk:

- Is able to break or damage everything with pure force.
- Is not able to use equipment (except as a weapon and hit somebody with it or throw it at them).
- Gets stronger when enemies hit him.

Bruce Banner:

- Is not able to break or damage most things with pure force.
- Is able to use equipment.
- Is able to move unnoticed easily.

These features are then implemented in the game structure: Hulk's attacks make N amounts of damage—enough to damage or destroy most things. Bruce Banner's attacks are only half that efficient and usually not enough to break or damage things. Bruce Banner can interact with or manipulate objects in the game word, whereas pressing the same buttons on the control makes Hulk attack the object. The player will have more powerful attacks available for a while after Hulk has received damage. Most other characters (the game engine/AI) won't pay attention to Bruce Banner when he walks in the city and Banner has the ability to hide and sneak. Hulk cannot go unnoticed if there are other characters nearby.

Of course these mechanics are emphasized and brought forth to the player by the physical appearance and mannerisms of Hulk and Bruce

Banner. Obviously, it is important that the visuals and their prescribed actions present two different characters instead of one. The beautiful design would get totally lost without the visual change between characters. Additionally it is important that the change of mental state within a character is transmitted to the player e.g. Hulks facial expressions will show more anger when he receives damage (and imply that he consequently is getting stronger). Characterization is discussed in more detail elsewhere [12].

CONCLUSIONS

Designing protagonist characters for computer games is a difficult task, but necessary. Although it is true that the player controls the character in the final game, game designers have no reason to give up on the construction of character. Even if the player is the one who holds the joystick, the game designer still controls the character.

A perceived character will direct a player's decisions to act. Character interpretation can be involuntary, even subconscious, but still affect a player's attitude towards a game. Therefore, if a game has a protagonist character, designing with its needs in mind should be a fruitful approach. In this paper, we have pointed out explicit ways of affecting the perception of characters. The design section exemplifies how character aspects can be translated into game mechanics.

The needs of the protagonist define the needs of the player and will guide them towards the goals of the game. We propose the use of a three-dimensional approach of aspects to build rich and well-founded protagonist characters. By then fine-tuning the game mechanics accordingly, the game will reflect and support the solid nature of the character.

Making actions and goals natural for the character doesn't mean that the solutions will be trivial or easy to achieve. On the contrary, natural-seeming goals provide a good background upon which to build intricate and demanding conflicts—the basis for an enjoyable game.

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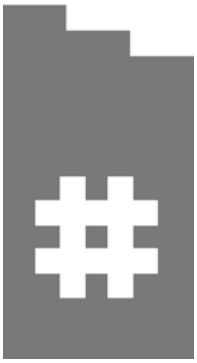

ARTICLE 2

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PLAYER CHARACTER ENGAGEMENT IN COMPUTER GAMES

Petri Lankoski

ABSTRACT

This article argues how players can control a player character influence interpretation and facilitate engagement within a game. Engagement with player characters can be goal-related or empathic, where goal-related engagement depends on affects elicited by goal-status evaluations whereas characters facilitate empathic engagement. The concepts of recognition, alignment, and allegiance are used to describe how engagement is structured in games. Recognition describes aspects of character interpretation. Alignment describes what kind of access players have to a character's actions, knowledge, and affects. Allegiance describes how characters elicit sympathy or antipathy through positive or negative evaluation of the character.

Keywords: game characters; player character; engagement; empathy; goals

What is it that makes certain *player characters* so memorable? The popular character Lara Croft in the *Tomb Raider* series (first by Core Design, 1996) mainly runs, jumps, and shoots. Players do not even see Gordon Freeman in *Half-Life* (Valve Software, 2001), but still, they seem to form an attachment to him. Game designer Meretzky (2001) asserts that a good *player character* (PC) is the most likely feature in a game to make a positive impression on the player. The importance of the PC is echoed in the study of Finnish children conducted by Ermi and Mäyrä. They report that children regularly describe game characters as one of the most important features of a game, and the children view both the abilities and the appearance of characters as important (Ermi & Mäyrä, 2003b). Even so, there are few studies that focus on the role of player characters in computer games. Notably, while some studies (e.g., Isbister, 2006; Krawczyk & Novak, 2006; Mateas, 2004; Meretzky, 2001), focus on character design and development, a comprehensive investigation on the role of a player character in the playing experience is still lacking.

Indeed, the PC is conceptually problematic, because the player has control over the actions of the PC. There have been doubts if PCs can even have personality. Meretzky (2001) presents reservations about whether the PC can reveal her inner self by reacting to events because a player is controlling the character. Frasca (2001) presents a similar argument: "The more freedom the player is given, the less personality the character will have." While these kinds of arguments are valid, they

seem to miss how game systems work. A game will always limit the players' choices, define what is possible (see, Järvinen, 2008, pp. 69-74), and restrict the players' progression in the game, should they choose to act against the restrictions (see, Lankoski, 2007). For example, the system of *Thief Deadly Shadows* (Ion Storm, 2005) guides players to play the game in a certain way, so that guiding the PC to sneak past guards is always a feasible option whereas fighting is not. On the other hand, *Fallout II* (Black Isle Studios, 1998) or *The Elder's Scroll: Oblivion* (Bethesda Softworks LLC, 2006) allow players to develop their player characters rather freely. However, even in these cases choices influence how the game can be played. In order to understand how the game system and PC influence the playing experience in character-driven games, a holistic approach is needed. It is not enough only to look at how PCs are represented—the investigation should include how the whole game as a system contributes to the perception of the PC.

Previously, I have proposed a model that can explain engagement with a *non-player character* (NPC) (Lankoski, 2007). This essay extends my earlier work by taking the player–PC relation into account. Particularly the framework is developed to take into account the player's active control over the behavior of the PC. The framework is inspired by a branch of film studies drawing on cognitive sciences. It is noteworthy that player characters differ from protagonists in film and literature. On a general level one could argue that there is no point in comparing them, as the player controls the player character, whereas the viewer of a film typically has no control over the depicted actions of the protagonist. However, I propose that certain aspects of existing theories are useful even if we want to understand engagement with characters that a player can control. These parts are applicable because they are not film-specific, but relate to human qualities and cognition in general.

Immersion has been proposed to be as the most important aspect of the playing experience. Moreover, immersion in character-based games has been linked to the first person point of view (e.g., Rouse, 2005, pp. 218–219). Dansky (2007) claims: "Immersion is arguably the ultimate goal of videogames. Immersion is making players forget that they're sitting on their couch twiddling joysticks" (p. 16). The influence of *immersion* on game design is well reflected in Laramée's proposal:

> Because game players become their characters, game writers should confine themselves to single-person, limited point of view. This means that the player should never be shown or told anything that the character has not experienced directly. (Laramée, 2002, p. 266.)

However, in closer scrutiny, immersion is quite problematic. Laramée's stance is based on the ideal of immersion[1] in the game world. This means putting a player in the shoes of a PC and letting her experience the game world from the point of view of that character. According to Murray (1997), immersion is "the experience of being transported to an

1 A related concept (attributed to Coleridge), *willing suspension of disbelief,* is used to describe why fiction can have affective impact on readers or viewer. The idea that people willingly and actively maintain a state in which they believe characters and events in the fiction is not a very good explanation. As Carroll puts it: "We cannot will our beliefs. Just try. Take a proposition, say—'5+7=1497'; now try to will yourself in believing it. It can't be done." (Carroll, 1990, pp. 63–68.)

elaborately simulated place" and "the sensation of being surrounded by a completely other reality" (p. 98). Similar interpretations have been adopted by several game designers (Dansky, 2007, pp. 16–17; Krawczyk & Novak, 2006, p. 93; Rouse, 2005, pp. 12–13, 218–219, 131). Nevertheless, the concept of immersion (as used by Murray and Dansky) does not seem to explain a player's attachment to every game or even apply to the different aspects of the player's attachment throughout some games.[2] Immersion cannot address why games, such as *Fahrenheit* (Quantic Dream, 2005), engage the player. The game uses a split screen to raise tension by showing approaching threat in one part of the screen and the player character in another. In addition, certain effects, such as enjoying humour, require that the player is able to take some distance from the work. This is exemplified in *The Secret of Monkey Island* (Lucas Film Games, 1990), which makes jokes about genre conventions. Understanding these jokes requires that players view the game as a game in order to appreciate the humour, rather than immersing themselves in it.

Clearly immersion[3] is not enough and something else is needed to describe a player's relation to games and to PCs. I propose using the concept of *engagement* as it is utilized in aesthetics (Berleant, 1991; Kupfer, 2003). Berleant (1991) writes that engagement "stresses the active nature of aesthetic experience and its essential participatory quality." Engagement does not exclude the possibility of immersion or appreciation of humour, and as such it serves as a suitable foundation for this study.[4]

For the purpose of this paper, I limit my analysis to single-player computer games that represent a game world, characters, and (most of) their actions in images. This is in contrast to text-based adventure games where characters and actions are represented in writing. *Dead*

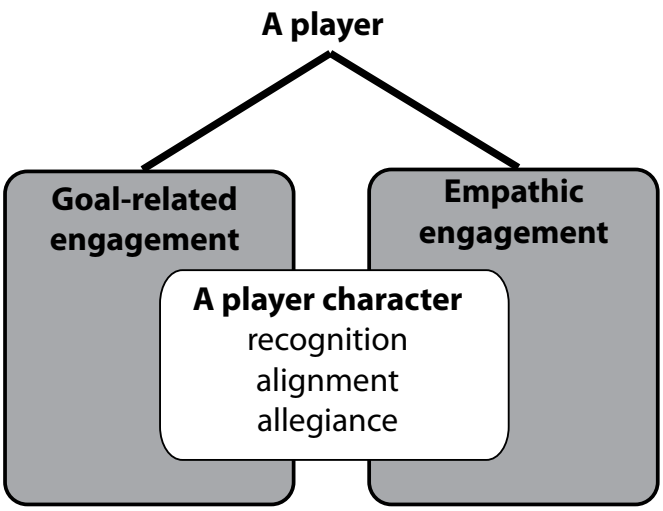

Figure 1: Engagement with a PC

2 One can be immersed in the action of playing a game. It might be more accurate to describe this kind of immersion as a flow experience (see, Csíkszentmihályi, 1990).

3 For defense of immersion, refer to Ryan (2001) or Ermi and Mäyrä (2005).

4 In addition, the concept of presence and presence metrics have been used in virtual environment research (e.g., Witmer & Singer, 1998) to describe "the subjective experience of being in one place or environment, even when one is physically situated in another." Hence, the concept is similar to the concept of immersion. The concept of engagement highlights the active role of the perceiver or player in the experience; for that reasons I choose to use the concept of engagement.

or Alive 3 (Team NINJA, 2001), *Deus Ex* (Ion Storm, 2002), *Fahrenheit* (Quantic Dream, 2005), *Ico* (Sony Computer Entertainment, 2002), *Silent Hill 3* (Team Silent, 2003), and *Thief Deadly Shadows* (Ion Storm, 2005) are examples of the types of games that are considered in this study. The games analyzed here have been selected in order cover popular contemporary character-based genres.

God games like *Sims* (Maxis, 2000) and *Black and White* (Lionhead Studios, 2001) where a player is more like an outside force that commands characters are not considered. Neither are *massively multiplayer online worlds (MMO)* discussed. The rationale behind this choice is readability and space constraints of this essay. My hypothesis is that the proposed model, at least partly, would be useful in understanding MMOs; however, it might be that the aspects of role-playing, and world defining actions that relate to it, would be more important in online worlds than in single player games (see, Montola, 2007).

The next section, *Centrality of characters,* presents a literature review, which helps explain why characters are so central to the playing experience. After that I present a framework of character interpretation and engagement. I argue that character interpretation and engagement depends on two processes: *goal-related* and *empathic engagement*. These processes are not separate in character-based games, but a PC connects the processes (see Figure 1). *Goal-related engagement,* looks at goals, affects, and their relations to game system, focusing on aspects that relate to PCs. In the section on *Empathic engagement,* I present the concepts of *recognition*, *alignment*, and *allegiance* to explain the connection between the game and engagement.

CENTRALITY OF CHARACTERS

Why do players consider player characters to be important? Why do players react affectively to player characters? Empirical studies by Ermi and Mäyrä (2003a) and Mallon (2007) both indicate that game characters have an important role in the playing experience. Based on an empirical study of multiplayer role-playing games, Tychsen et al. (2007) conclude that "complex characters appear to be linked to the quality of gaming experience."

The centrality of game characters might be explained by considering the fact that people are social animals. In biological terms this means that parts of the brain are specialized for decision-making in social situations (see, Damasio, 2005). The evidence suggests that anthropomorphic agents, such as game characters, also trigger these specialized brain functions used in everyday people-to-people interactions.

The understanding of other people's actions and expressions seem to be tightly coupled to one's own action and expression possibilities. The same areas of the brain are activated when one perceives affective expressions and goal-directed actions as when one is experiencing

affects and performing goal directed actions. (Carr, Iacoboni, Dubeau, Maziotta, & Lenzi, 2003; Gallese, 2005; Jackson & Decety, 2004; Keysers et al., 2004). This means, for example, that seeing somebody smile will activate the same areas of the perceiver's brain as if the perceiver would be smiling herself.

Empathy as a process can explain why this emotion coupling happens. *Empathy,* here, is used to refer to mechanisms that put a player's affective state in relation to the state of another agent (Decety & Jackson, 2004), namely a game character. Thus, empathy is not an emotion or affect. Empathy can be used to explain, for example, why we fear for a character when it is in danger.

In this work I distinguish *empathy* from *affects*. The term *affect* is used to refer to emotions, moods, and feelings. Emotion is a phenomenon with a brief duration where there is a distinctive signal followed quick and automatic appraisal of the signal. This appraisal will elicit a certain configuration of body state, expression of the emotion, and change in cognitive processing. Feelings are recognitions of the emotions or body states, and moods are long-term states in which certain emotions occur with lower threshold. (Damasio, 2005, chapter 7; Ekman, 1999; Power & Dalgleish, 1997.)

According to Smith (1995), *empathy* can be divided into *affective* (and *motor) mimicry,* and *simulation* (see also, Zillmann, 1994). Following Smith, *affective mimicry* is used to refer to the phenomenon where a person involuntary and automatically mimics another person's expressed affects. This means, for example, that people tend to smile and feel pleasure when they see another person smiling (or, conversely, experience affects relating to pain if they see someone getting hurt). *Simulation* relates to hypothetical reasoning where one engages in *as-if reasoning.* This means that when people simulate other people, they do not become them but they process certain predicates in *as-if* mode, imagining how they themselves would feel in that situation. This *as-if* processing includes simulation of affective states. (Smith, pp. 95–102).

Several theorists propose that understanding others is based on this action–perception coupling, affective and motor mimicry (Decety & Jackson, 2004; Gallagher, 2005; Goldman, 2006; Zajonc, 1985). Understanding that a person is happy when seeing the person smiling includes modulating one's own affective state toward happiness as the smile is imitated unconsciously (e.g., Dimberg, Thunberg, & Elmehed, 2000). Multiple studies support these claims (e.g., Carr et al., 2003; Eimer, Holmes, & McGlone, 2003; Hess & Blairy, 2001). Niedenthal et al. (2005) extends these results and further propose that understanding concepts is based on the same above-described mechanism: interpreting a word such as 'smile' triggers partly the same areas in the brain as smiling itself.

Research by Meltzoff and Moore further implies that the capacity of the body for imitation is hard-wired and inborn. They demonstrate

that very young infants (from 42 minutes to 72 hours old) can imitate facial gestures (Meltzoff & Moore, 1998). In addition, understanding the actions and goals of others seems to be functionally distinct from understanding beliefs of the other or understanding natural language (Saxe & Carey, 2004).

Dimberg, Thunberg, and Elmberg note another important characteristic of affective mimicry:

> A critical characteristic of automatic reactions [to emotional facial expressions], besides being spontaneous and rapid, is that they can occur without attention or conscious awareness (Dimberg et al., 2000).

If the aforementioned claims hold, understanding others is *based on* fast non-conscious inborn mechanisms that are independent from other lingual and conceptual capabilities.[5] If understanding game characters is based on the same mechanisms as understanding other people, *the actions and goals of game characters are important facilitators in understanding game events.*

5 Naturally, the concepts of natural language influence understanding and categorization, but the *basis* of categorization and understanding is not lingual (Lakoff & Johnson, 1999, chapter 3).

Currie argues that interpreting literary works and film is about interpreting the behavior of a perceived agent and explaining this in terms of goals and intentions. Currie proposes that the interpretation of literary works is closely related with the interpretation of behavior of people we meet in everyday life. (Currie, 1995, pp. 235–243.) Oatley (1992) also maintains that (just as in co-operation between people) emotions and empathy have crucial roles in understanding fiction (see also, Goldman, 2006; Grodal, 1999; Nichols, 2004; Zillmann, 1994). Various studies provide evidence that support aforementioned claims (e.g., Schulte-Rüther, Markowitsch, & Piefke, 2007; Saxe and Carey, 2004; Nass & Lee, 2001; Reeves & Nass, 1998, pp. 75–99; Pan & Slater, 2007; Pertaub, Slater, & Baker, 2002).

Research findings support the notion that people react to game characters in a similar way to the way that they react to real people. Moreover, the reactions to *facial affective expressions* of people and also with game characters are *automatic* and occur *without* or *with limited conscious awareness*.

GOAL-RELATED ENGAGEMENT

An important mechanism for engaging with games relates to goals. In character-based games, sharing goals with the PC can work as a mechanism or a device for *empathy*. To distinguish those aspects of affects that have a specific relation to goals, I discuss *goal related-engagement* separately from *empathic engagement*. As shown in Figure 1, the modes of *goal-related engagement* and *empathic engagement* are connected via the PC.

A typical game has goals. This is acknowledged in many definitions

(Björk and Holopainen, 2005; Järvinen, 2008), though in some definitions goals are present only implicitly through the concept of conflict or quantifiable outcome (Costikyan, 2002; Crawford, 1982; Juul, 2005; Salen & Zimmerman, 2004).

In everyday life, according to Damasio (2005) and Oatley (1992) goals have an important role in decision-making, as they provide a basis to infer which choice is more advantageous than an other in a given situation. Because goals are important for the playing experience and engagement with a game, it is important to understand the role of goals in how players engage with a game and PC.

Player's Goals and Character's Goals

Goals guide play. A game typically has some goals that regulate play; ignoring these *regulating goals* will prevent progression or lead to 'game over' (Lankoski, 2007). The game *Ico* (Sony Computer Entertainment, 2002) gives an example of this: if a player fails to protect Yorda, a NPC, the game ends. There is no alternative; if the player wants to continue playing the only option is to accept the goal, to protect Yorda. However, there are games, such as *Grand Theft Auto: Vice City* (Rockstar North, 2002), that do not enforce goals in this way, and a player can ignore the regulating goals of the game without much penalty. In these kinds of games, the goals players set for themselves are more relevant in understanding the playing experiences. Notably, these games also use regulating goals in the form of conditions that need to be reached in order to access additional areas in the game. In the following discussion, I only deal with regulating goals, because the goals that players set for themselves evoke emotions in a same way as the goals derived from the regulating goals.[6]

6 A complicating factor is that regulating goals and player goals can be in conflict.

Sub-goals are goals that are inferred from more generic goals, such as the regulating goals of a game level and a player's goals of playing the game (Lankoski, 2007). A player may need to generate and reach multiple sub-goals in order to reach the regulating goal. Saving Yorda is a regulating goal in *Ico* (Sony Computer Entertainment, 2002). For example, when Yorda is attacked by a group of shadowy creatures that try to capture her, the player needs to select which creature to kill before any creature escapes with Yorda. Killing each creature is a sub-goal. When the situation changes, such as if a shadowy creature captures Yorda, the player will need to generate a new sub-goal to ensure that Yorda is safe and to prevent the regulating goal from failing. In this *Ico* example, all players typically generate similar sub-goals, because the game leaves little room for alternative sub-goals and choices.

Regulating goals not only guide the actions of players by allowing the players only limited feasible choices, but also create a situation where choices will be biased by goals. In addition to regulating goals, the actions available (e.g., attack, move, jump, take object, and

use object) present hard limits upon what players can do in the game, and upon the means that can be used to reach a goal. Some choices can lead to situations in which failure is probable. An example of this is found in *Thief Deadly Shadows* (Ion Storm, 2005), in which a swordfight with guards easily leads to the death of the PC Garrett. On the other hand, an alternative solution, guiding Garrett to sneak past the guards, is easy compared to fighting. Hence, the game system and goals will most probably bias the player's sub-goal generation toward choosing actions that are easier to execute.

The way a PC executes the player's commands can also bias sub-goal generation. For example, in *Dead or Alive 3* (Team NINJA, 2001), each selectable PC performs attacks differently. This means that the attacks of different characters have distinctive reach and damage. Characters perform attacks with different speed and recovery time. Simply stated, how much time a character requires after an attack before the character is able to attack again differs from character to character. Because characters react to the player's commands differently, players need to adapt to their PC and to take into account the qualities and skills of the different characters. This is likely to lead to different sub-goal generation, e.g., whether a player will try to fight using counter-attacks, powerful attacks, or faster and weaker attacks. Consequently, a player will project intentions to the character, and those projected intentions are likely to influence the perceived personality of the character.

In addition to shaping gameplay, all of the above-discussed features have an impact on the empathic engagement and the perception of traits or personality of a character. I return to this in the section on *Recognition*. Next, I look at how goals relate to affects.

Goals, Decision-Making, and Affects

In general, people experience positive affects when moving towards or reaching a goal. Negative emotions are related to situations such as when reaching a current goal is in danger or after having failed to reach the goal. In addition, the consideration of one's future options can trigger affects. An example of this is worry and how it emerges when considering a risky option to reach a goal. (Damasio, 2005, pp. 134–139; Power & Dalgleish, 1997, pp. 413–421.)

In computer games, regulating goals guide what kind of sub-goals players are likely to set to themselves. This relation allows us to predict the probable affective reactions to game events by looking at the regulating goals. When regulating goals are presented as the goals of a PC, the emotions of the PC and the player will be correlated. This does not mean that the emotions or goals of the PC and player are always the same, but that the shared goal will lead similar goal status evaluation (e.g., success to a positive emotion). However, the goal status evaluations are not always similar: for example, if the spider phobic PC encountered a spider, the character would be feel great fear—whereas the

player would fear the spider only if the spider posed a real threat to the player's goals in the game. Another example is the PC might not always be aware of a threat which the player is aware of (e.g., *Fahrenheit* uses split-screen technique to exposes threats to the player that are not visible to the PC).

An important feature of goal-related emotions is that they are real and personal. Emotions relate to the player's own goals and choices. Hence, players can, for example, be afraid of a NPC in the game because the NPC threatens a goal that the players themselves value (Lankoski, 2007), whereas in the context of films, emotions are mainly based on affective mimicry and simulation of the characters (see, Grodal, 1999; Smith, 1995).

High cognitive load in controlling a character in a high-speed action situation (such as shooting at enemies) can prevent affective mimicry and simulation (see, Eimer et al., 2003; Lankoski, 2007). Conversely, if a task requires social decision-making and focusing on the character's expressions, NPCs can trigger affective mimicry or simulation even in situations that stress a player's cognitive capacities. When cognitive load prevents affective mimicry, gameplay affects rely exclusively on the goals of the player. This means that when decision-making and motor functions stress a player's cognitive capacity, the affects expressed by the PC has little or no role in engagement. On the other hand, an affectively loaded expression (e.g., with voiceover narration) in a situation in which the player's focus is on social decision-making, or the cognitive load is low, can prompt the focus upon the character and prime empathic engagement with the PC.

Above, I have proposed that the goals of PCs shape the playing experience. Moreover, games often require that players derive their goals by reasoning about the goals of the PCs. Shared goals are a mechanism for empathy, as goals and goal-status evaluations correlate the affects of the player with the PC. Next, I focus in more detail on empathic engagement that is based on affective mimicry and simulation.

EMPATHIC ENGAGEMENT

Smith (1995) argues that people interpret (film) characters using the same conceptual framework that they use to interpret other people. People also react emotionally to characters, in a similar way as they do with real people; they mimic (involuntarily and automatically) the expressed affects and cognitively simulate affects (Currie, 2004, chapters 8.5, 9.2., and 9.3; Smith, 1995, pp. 73–106).

Compared to cognitive film theories, PCs pose a few new questions. For example, when a player controls the character, is it plausible to assume that the player interprets the player character in a similar way to other characters? Or is the PC more like an extension to the self in which case interpretation of the PC would be more like self-reflection?

As pointed out before, engagement is partly goal-related. However, players need to adapt to their PC because of the restrictions set by the game system. On the other hand, many contemporary games also represent the PC using filmic methods, such as cut-scenes, voice-overs, and third person point of view. Through these, the game depicts the character and the character's expressions, to the player. In addition to these methods, games utilize rules in multiple ways to limit or guide the player's choice of actions, and therefore direct the player's interpretation of the PC. Importantly, these traits scripted, and thus outside of the the player's control. I return to these questions in more detail below.

I take the theory of character engagement by Smith (1995) and use it as the basis for modeling of character engagement in computer games. Whereas few aforementioned theories have detail enough to work from, Smith provides a detailed look at the responses of a spectator to fictional characters.

Below, I rely on Smith's theory which builds on the *mimicry* and *simulation* theory. This does not mean that I assume that the film structures and their connection could be used to describe engagement with PCs. Instead, I distinguish game features that can prompt character engagement.

Smith also suggests that character engagement and emotional attachment in film can be discussed in terms of *recognition, alignment,* and *allegiance* and their relations to *empathy* (Smith, 1995; Smith, 1999b). I now look into each of these separately and extend the concepts to take into account the player control over a PC.

Recognition

Smith's term *recognition* describes a viewer's construction of a character, including the interpretation of the personality of the character. Recognition depends on how the character is presented. Traditional audiovisual means include the external features of a character (body, face, and voice), proper and titular names, how other characters react to the PC, how the PC is described by other characters, other descriptions. In addition, pre-existing knowledge about the character influence *recognition*. (Smith, 1995, pp. 82–83, 114–116.)

In addition to the aforementioned methods, games rely, to a large extent, on methods of guiding and limiting players' choices. These methods influence how the PC behaves, and consequently contribute to the construction of the PC. Lankoski, Heliö, and Ekman categorize these techniques roughly as follows:

- *Goals* of a PC: goals limit plausible actions for players if they want to progress in a game and imply the motivations of the character.
- *Possible and impossible actions*[7]: what choices have been made

7 *Possible and impossible actions* can be analyzed only in relation to the 'laws' of the (diegetic) game world and possibly in relation to the conventions of the cultures of playing and production.

available and what possibilities are left out; how reasonable are the choices—what is easy and what is hard?

— *Predefined functions* of a PC: these are the procedures that are triggered by an event in a game or by the choices of the player (e.g., pre-designed dialogue, movement style, gestures, and facial expressions).

— *Cut-scenes*.[8] (Lankoski, Heliö, & Ekman, 2003.)

Let's look some examples. In *Silent Hill 3* (Team Silent, 2003), the major methods of conveying information about Heather (the PC) and revealing her personality are traditional audiovisual means such as appearance, clothes, and *cut-scenes* augmented with dialogue.

The user manual of the game describes Heather as an ordinary girl. Furthermore, *possible and impossible actions* are used to highlight this aspect. For example, in order to make Heather ready to attack, a player needs to activate a special mode by pressing a button down. This is making attacking relatively hard, compared to other games, such as *Ico* (Sony Computer Entertainment, 2002) or *Prince of Persia: The Sands of Time* (Ubisoft Montreal Studios, 2003) where a player can initiate an attack just by pressing one button.

Later on in the game, the player is taken to Heather's home. Here, the PC's room and clothes give hints about Heather's personality. Information about Heather's relationship to the spaces is also conveyed by using *predefined functions* in a form of written monologue; Heather talks about how certain rooms bring back childhood memories. Other characters also describe Heather through items. Players might, for example, find diaries or notebooks made by various NPCs that reveal information about Heather's past.

The portrayal of Heather as an ordinary girl is contradicted by Heather's ability to use firearms adeptly. In general, the information offered to a player about the game world is sometimes contradictory.[9] The dialogue of a NPC in some *cut-scenes*, for example, tells how the NPC has been experiencing the same nightmare world as Heather. The information offered by the game contains inconsistencies that make the game world feel dreamlike or nightmarish. Thus, the playable events in the game seem to represent more about Heather's mental states rather than about being 'real'. Associating the 'other world' to Heather's nightmare (the monsters and places are encountered later on in the game) strengthens this kind of interpretation and feeling; the game world starts to work metonymically and presents Heather's mental state.[10]

In contrast, *Thief Deadly Shadows* (Ion Storm, 2005) emphasizes the role of *goals* and *possible and impossible actions* in *recognition*: the PC's profession and aspects of his nature are revealed to a player by using explicit goals: the goals are mostly about stealing something. In addition, the game makes it possible to pick pockets and locks, or sneak past

8 I include cut-scenes here, because they are used commonly in games, even if they are not a part of gameplay. As Klevjer puts it: "A cut-scene does not cut off gameplay. It is an integral part of the configurative experience. Even if the player is denied any active input, this does not mean that ergodic experience is paused." (Klevjer, 2002.)

9 There might be some design reasons, like shooting should not be too hard, behind the inconsistencies. Here, however, I am not interested on the designers' intention, but on what kinds of interpretation and affects the used solution imply.

10 Grodal has argued in relation to film that incoherent and incalculable properties relate to felt subjectivity. Felt objectivity, on the other hand, depends on the viewers' ability to produce a coherent and unambiguous interpretation of the events. (Grodal, 1999, pp. 129–156.)

guards *(possible and impossible actions)* to emphasize that one is controlling a thief.

Dead or Alive 3 (Team NINJA, 2001) also relies heavily on *predefined functions* and *possible and impossible actions* (i.e., the kinds of attacks a character is able to do) to distinguish different PCs from each other.

Half-Life (Valve Software, 2001) demonstrates that players do not need to see the PC, Gordon Freeman, to perceive personality. The game invites a player to construct the Gordon Freeman via NPCs. The NPCs address the camera as "Gordon" and behave like they know this person, Gordon Freeman. Hence, the game uses the actions of the NPCs to build a view of the PC. This is in conflict with Richard Rouse's (2005) claim that Gordon Freeman has no personality whatsoever. On the other hand, another game using the first person point of view, *Doom* (id Software, 1993) offers almost no basis for *recognition* of the PC of the game; hence, Doom does not afford empathic engagement.

It is important to note that a game can anchor some traits of a character very tightly and let a player influence traits more freely within a given framework. For example, in *Deus Ex* (Ion Storm, 2002), there are a few fixed traits for JC Denton, the PC. In the beginning, the player learns details about JC Denton's history and abilities. JC Denton will be pursuing rather noble goals. However, the player can choose to use very questionable methods (such as murdering NPCs), or more subtle ways of handling opposition. These choices do not influence *predefined functions.* Dialogue trees and the third person portrayal of JC Denton in conversations stay the same no matter what choices the player makes.

In *Deus Ex,* the player can choose skills to obtain during the game within the possibilities and restrictions set by the game system. As JC Denton learns new skills and adds augmentations, the character changes. In addition to new skills and augmentations, the character arc, or evolution of the character during the game, is implemented via the *goal structure*.

The personality traits of a character are an amalgam of traits inferred from features fixed by the game (predefined functions and goals structure) and features the player has imposed upon the character (e.g., by selecting skills and augmentations).

Alignment

Alignment (see, Smith, 1995, p. 83) describes the process of how events and information unfold within the sequence of play. To give an example, *Silent Hill 3* (Team Silent, 2003), provides access by the means of predefined functions: when a player commands Heather to examine a strange symbol on the wall of a toilet, Heather comments that the symbol looks familiar from her childhood, but trying to remember makes her head ache. Here, the game space and players' choices *structure the access* to Heather's thoughts.

Many games also use cut-scenes to build a PC and structuring *alignment*. Cut-scenes and playable sequences follow each other and depend on each other. In *Thief II: The Metal Age* (Looking Glass Studios, 2000), each mission in the game starts with a cut-scene where the player hears Garrett's thoughts and feelings about the mission. The player is also given some access to the character's thoughts and feelings during the playable parts through voice-overs triggered by events in the playable parts.

Some cases use the vibration functionality of the PlayStation 2's game controller to give information about a PC's inner state: in *Silent Hill 3* the game controller starts pulsing like a heartbeat whenever the PC gets fatigued or receives damage. In *Project Zero* (Tecmo, 2001), vibration is used to make controlled pulse like heart beat when a ghost starts to approach or attack, and thus vibration gives an access to the PC's mental state. The structure of *alignment* in *Silent Hill 3* and *Project Zero* is tied to game state and game events.

In general level, structuring access follows common patters. While there are numerous different *alignment* patterns, the games analyzed for this paper use two main *alignment* patterns or combinations of these patterns:[11]

- *Detective structure:* the player's knowledge is restricted to the PC's point of view. The player is only given information about what a character thinks, feels and sees. This access to the PC, however, is not unlimited.
- *Melodramatic structure:* the player knows more about characters (their affects, thoughts, and ambitions) than any single character knows. The player may also control more than one PC.

Lets again look at some examples. *Half-Life* (Valve Software, 2001) and *Ico* (Sony Computer Entertainment, 2002) are examples of games that utilize primarily the detective pattern. However, these games differ from each other by the kind of access a player is given in relation to what the PC knows and feels.

In *Half-Life* (Valve Software, 2001), Gordon Freeman's point of view is used the whole time. Thus a player is offered access only to what the PC sees and hears. The game does not reveal any information about what Gordon Freeman thinks and feels, except for when he gets hurt.

In *Ico* (Sony Computer Entertainment, 2002), Ico is shown in the third person perspective and thus, a player can see and hear Ico's emotional expressions (predefined functions) while playing the game. Dialogue in cut-scenes reveals some aspects of what Ico knows and feels. The game also aligns the player with Yorda, a NPC that Ico is supposed to protect. This means that at the same time that a player is controlling Ico the player can see Yorda's reactions, such as her expressions of fear and joy.

Melodramatic structure is rarely used in games. Notable exceptions is

11 The idea of alignment patterns is based on Smith's structures of *alignment*. Smith differentiates *detective narration* and *melodramatic narration* as typical alignment structure. In detective narration, knowledge is restricted to a protagonist, while in melodramatic narration the viewer knows more than any single character. (Smith, 1995, pp. 152–153.)

Fahrenheit (Quantic Dream, 2005), for example:

1. A player is aligned to four different PCs (Lucas, Lucas's brother, detective Valenti, and detective Miles) in the different phases of the game. Lucas who is trying to solve why he did commit a murder and evading the police. Detectives are trying to find the killer. The game combines the use of the *melodramatic structure* on a global level with use of the *detective structure* on a local level.
2. When playing Lucas, split screen is used to expose a approaching, threatening NPC, such as a police officer, whose presence Lucas in unaware.

Both above-mentioned uses of *melodramatic structure* are likely to create tension by exposing threats in advance.

Another variation of *melodramatic structure* is used in *Forbidden Siren* (Sony Computer Entertainment, 2004). Players are given access to a psychic power, 'sightjacking', which allows the player to temporarily take the viewpoint of other characters. In this case, the game gives a limited control over *alignment* to the player.

Allegiance

The final concept of empathic engagement to be discussed is *allegiance* (from Smith 1995, pp. 167–227). *Allegiance* is connected to the moral and aesthetic evaluation of characters (Smith, 1995, pp. 167–227; Smith, 1999b):

> To become allied with a character, the spectator must evaluate the character as representing a morally desirable (or at least preferable) set of traits, in relation to other characters within the fiction. (Smith, 1995, p. 188.)

When players have a positive evaluation of a PC, it means that the players are more likely to accept the goals the game proposes. Typically, a PC is portrayed as having characteristics that the player can value. A representative example is JC Denton, the PC in *Deus Ex* (Ion Storm, 2002). JC Denton is depicted to be morally good and physically able to support *allegiance* with JC Denton.

It is not impossible to be allied with characters with undesirable traits, but the basis for *allegiance* is positive traits or positive evaluation in relation to other characters.[12] For a detailed discussion about perverse *allegiances*—sympathy for the devil for the sake of undesirable traits—see Smith (1999a).

It is worth to mention that *alignment* is not sufficient for *allegiance* (Smith, 1995, pp. 187-194). For example, the player can be aligned with a monster (as in *Forbidden Siren),* without positive evaluation. *Grand Theft Auto: Vice City* (Rockstar North, 2002) exemplifies further that *alignment* is not sufficient for *allegiance*. In the game a player controls a

12 According to Smith, one need not sympathize with Hannibal Lecter (Anthony Hopkins) in the film *Silence of Lambs* (Demme, 1991) because he is a serial killer and a cannibal; however, he is witty, charming, intelligent, well mannered, and educated. Moreover, Lecter's rather warm mentor relation with Clarice Starling (Jodie Foster) makes him attractive (Smith, 1999a).

petty criminal, Tommy Vercetti. In cut-scenes, Vercetti is portrayed as a violent bully with no traits that could typically be considered positive, thus making it harder for an ordinary person to have a positive evaluation of Vercetti.

Also, strong *allegiance* with a PC is not needed in all cases. The challenges that a game itself presents can make the playing engaging without a positive evaluation of the PC. As argued above, *goal-related engagement* can *block empathic engagement* via *simulation* and *mimicry*, so that affects such as pleasure and fear are based on successes and threats. In this case, *affective mimicry* and *simulation* has little role in engagement.

Because *allegiance* involves aspects such as moral standards, the players' reference can influence what kind of traits and features of a PC are evaluated positively. In order to support allegiance, some games, such as *Elder Scrolls IV: Oblivion* (Bethesda Softworks LLC, 2006), allow players to customize their player character. This is a way that allows the players to modify the traits of the character, so that the PC has desirable characteristics. The customization (with an exception of customization of appearance) also influences the gameplay within the limitations set up by the game system.

Next, I will describe an example that relies on positive evaluation of a PC and major NPC. In *Ico* (Sony Computer Entertainment, 2002), a player needs to protect a NPC, Yorda, from shadowy monsters. If the player fails in this the game ends. The goal of protecting Yorda can turn out to be frustrating, if the player does not evaluate Yorda positively and, therefore is not allied with Yorda. From the point of view of goal-related evaluations, when the goal—to protect Yorda—is in danger, the player is likely to experience fear. However, if the player does not value Yorda, being forced to protect her is likely to prompt anger.[13] Thus, the overall affective effect is regulated by *allegiance*.

Notably, some effects require manipulating *allegiance* with a PC from positive to negative or vice versa. *Silent Hill 3*(Team Silent, 2003), use effects based on manipulating allegiance with a PC throughout the game. In the beginning, Heather is portrayed with positive characteristics. The game starts with a playable nightmare where Heather is pitted against strange deformed monsters. After Heather's inevitable death in the nightmare sequence, she wakes up in a fast-food restaurant and it is revealed that the first part was only a nightmare. The game continues with a cut-scene, which represents Heather as a morally desirable character. Also, the death in the nightmare plays an important part in building a positive evaluation of Heather. Later in another cut-scene, a NPC claims that Heather has been killing real people, not monsters; but after seeing Heather's horrified look, he politely expresses that it was just a joke. This cut-scene is used to weaken (or reverse) *allegiance* with Heather and to amplify the horror atmosphere (she might not, after all, be as morally desirable as seen before). The information might also contaminate the player's goals: killing monsters and believing that they are

13 Power & Dalgleish (1997) argue that anger relates to situations in which a goal is blocked by a perceived agent (pp. 303–344).

people may trigger guilt. The importance of these scenes and playable parts can be understood best in the context of *allegiance:* the game amplifies the horror atmosphere by manipulating *allegiance*.

CONCLUSIONS

I have argued that PCs have a central role in regulating the playing experience. I have presented a framework that is grounded in theories of cognitive sciences and presented empirical studies that support the framework. Furthermore, I complemented that research with game analysis examples.

There are many other factors that the player's affects. As I have focused on PCs, I have not considered how the aesthetics of a game environment can influence players. It is also obvious that music and sounds have important roles in engagement; to experience this, one just needs to turn the sounds off in *Silent Hill 3* to see how drastically the game loses affective impact. Further research is clearly desirable to integrate these factors to the presented framework. In addition, further empirical studies addressing the implications and validity of the presented framework are needed. For example, the question when a game prompts goal-driven and when empathic engagement needs to be studied in more detail. Yet another aspect that is not touched in this essay are the design implications of the proposed character engagement model.

In conclusion, the essay's contributions are in two areas:

1. A game's structure and presentations guide character interpretation: I have expanded two concepts from film theory, *recognition* and *alignment,* and used them to explain the interpretation of player characters. The first, *recognition,* explains how players construct their perception of PCs based on perceivable qualities. To modify the concept of *recognition* to be usable with PCs I proposed that traits and qualities of a PC, in addition to the aforementioned perceivable qualities, are derived from *goals, possible and impossible actions* of the character, *predefined functions,* and *cut-scenes*. The second, *alignment* describes what kind of access a player has to a character's actions, knowledge, body state, and affects, and how this access is structured within the progression of a game.
2. The PC forms the contact point between the player and game. I have argued that *engagement with a game* can come though *goal-related* and *empathetic* engagement. In *goal-related engagement*, players derive their goals from a PC, and this in turn structures the affective experience of a player. Goal-related engagement is fundamentally an "I" experience: it is about the players acting to reach their goals. Empathic engagement, on the other hand, is essentially about reacting to the character's actions. A prerequi-

site for *empathetic engagement* with a character is *recognition* and *alignment*. In addition, I propose that *allegiance*, a concept from film theory, can expanded to explain how the character elicits sympathy or antipathy based on a player's positive or negative evaluation of the character. *Allegiance* depends on *recognition* and *alignment*, but aligning a player with a character does not ensure a positive evaluation of a character. However, positive engagement with a game does not require positive evaluation of a player character, because the source of the engagement with the game can be goal-related.

Recognition, *alignment*, and *allegiance* regulate and guide *empathic engagement* with a PC and goal status evaluations regulate the *goal-related engagement*.

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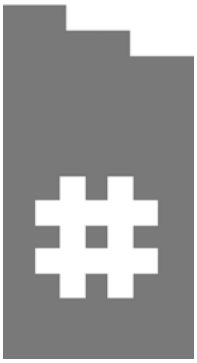

ARTICLE 3

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GAMEPLAY DESIGN PATTERNS FOR BELIEVABLE NON-PLAYER CHARACTERS

Petri Lankoski & Staffan Björk

ABSTRACT

Descriptions of humans require several qualities for people to experience them as believable: human body; self-awareness, intentional states, and self impelled actions; expression of emotions; ability to use natural language; and persistent traits. Based on these we analyze non-player character Claudette Perrick in *The Elders Scroll IV: Oblivion* to detect how these qualities can be created in the interactive environment of a game. We derive the gameplay design patterns *Awareness of Surrounding, Visual Body Damage, Dissectible Bodies, Initiative, Own Agenda, Sense of Self, Emotional Attachment, Contextual Conversational Responses*, and *Goal-Driven Personal Development,* which point to design choices that can be made when designing believable non-player characters in games.

Author Keywords: Gameplay design patterns, non-player character, game design, *The Elder Scrolls IV: Oblivion*

INTRODUCTION

The fields of literature, theatre, film, and other media studies have long argued the importance of characters to stories [2, 10, 11, 20]. Similarly, events in games can be interpreted as a story [6] and also here characters are important: characters and intentions are central in structuring events in intelligible form [14]. However, the inherent interactivity of games raises a question if new requirements exist. That is, how should characters be design for games in order to support the interactive experience of playing a game?

The focus of this paper is on character driven design related to gameplay. This to explore what specific requirements the field of gameplay design has to consider when doing character design. From the hypothesis that the believability of characters in games depends on how they are depicted in narration and gameplay we pay special attention to the lesser-developed area, the gameplay believability of characters. To reduce the scope of our exploration, we look at non-player characters (NPCs) since avoiding the design of player characters limits the need to discuss subjects of agency and self-expression. A long-term goal with the approach is to show how character design in games can become a vehicle for creating novel conflict structures, primarily social conflicts. This can offer a complement to the primarily physical forms of conflict

(i.e., solving game tasks by attacking, avoiding, following, or stealing from characters) associated with characters in current games. This is not to say that that all games containing characters needs, by necessity, guide players to infer them as multi-dimensional characters. *Doom* [13] is engaging without complex characters or narration; *Tetris* [18] does not present characters at all. Choosing techniques depends on what kinds of effects designers are seeking.

As we are focusing on designers' means to control their players and guide their gameplay we will in passing discuss and consider social and psychological forces that influence the players. As we are not studying how players interpret a game, we pay little attention to (possible to probable) disparity between designer's intentions and players interpretations or affects. It should be sufficient to say that a game can fail to convey intended effects.

BACKGROUND

This section presents the theoretical stance of the paper through a series of different perspectives. The first deals with concepts of narration, narratives, and gameplay. This is followed by models humans have for judging experienced phenomena as characters and how character traits or qualities are perceived in terms of narration. We also discuss criteria for believability based upon previously introduced concepts.

Narration, Narratives, and Gameplay

As a basis for our discussion we use "the structures of player interaction with the game system and with the other players in the game" [5] as a definition of *gameplay*. This definition is used to stress the part of playing a game that concerns seeing how it is possible to affect the game state. Further, it is meant to be disjunctive from narrative comprehension of game events and game aesthetics, so that it is possible to talk about the intended experience of playing a game from any of these perspectives. We do not wish to discuss the relative importance of the different perspectives in influencing the overall experience of playing a game; this probably being a very subjective for each individual player. Nor is it possible to say that they do not affect each other, e.g., it is difficult to see how planning is possible without any form of presentation. Likewise, the aesthetical experience and narrative comprehension of a game naturally consist of the actions done by the player and the motives for doing them. However, each of the perspectives can be given primary attention and for in the following we will change between the perspectives.

We use *narrative* to refer narrative interpretation of game events and *narration* to point to structures on how a game reveals (or left untold) information in relation to the progression or events. The game characters intentions and personalities, like real people or characters in film,

are constructed predominantly from their actions in contemporary computer games [8, 15]; narrative comprehension and character interpretation have close connection. Therefore, gameplay that contains characters is likely to be interpreted as story. Generally speaking, gameplay is interpreted, (mostly) in relation to narration the game offers. In this context, questions such as what does Tetris represent become irrelevant; abstract presentations can also have meaning in relation to social conventions—but that outside of our scope.

By believability we mean that game is consistently structured in terms of narration or gameplay so that it is possible to build and maintain coherent event indexes where each event or action is put in relation to each other, i.e., indexed by time, space, causality, intentionality, and actor/protagonist. [23]. In games with complex narration both gameplay and narrative believability need to be preserved. That is, gameplay believability does not override the need of narrative believability (although the game most likely can be played even if the narrative believability fails). In one sense, the requirements of gameplay believability implies that the narrative, and specifically the events caused by NPCs, must by in accordance with players' actions for narrative believability to hold. Notably, narration and gameplay can be somewhat incoherent, or incoherence is needed for certain effects like surrealistic feel and dream likeness (see [12, 15]).

Person Perception and Understanding Intentions

Our starting point for character believability comes from the claim within cinema studies that all persons share the following qualities:

- human body;
- self-awareness, intention states, and self-impelled actions;
- expression of emotions;
- ability to use natural language;
- persistent traits. [20]

When encountering these qualities it is natural to initially assume that a human character holds them, e.g., perceiving a human body or noticing communication through natural language implies a human character. These qualities are predominantly assigned from perceivable physical qualities like face, body, voice, and actions. Descriptions, name, and titular names have also role in assigning qualities. [20]. Smith argument is specific to film, but the principles are applicable to games also, as the basis of argument is derived from how people make sense of others (for detailed look in support of generalization of the claim, refer to [14, 17, 19]). Currie points out that genre and other filmic or literary conventions have also role in interpretation [7], which also transfers to games.

Taking a more general perspective, Daniel Dennett has described a model how people categories phenomena they encounter in the real

world in order to most efficiently predict their behavior and interact with them [9]. According to the model, for each category people take a particular stance to understand the potential actions and reactions the phenomena can take. The first category, *the physical stance*, describes the stance taken towards phenomena that accord to strict laws and has no apparent ability to actively affect its environment. The second category, *the design stance*, is used for phenomena that are too complex to understand from a set of rules[1] but one can predict how it behaves from assuming that someone has created the phenomena for a certain purpose. This purpose can then explain the possible events the phenomena can cause and how it will react to actions observable by it. Examples of phenomena that people usually take a design stance towards are computers and cars; one does not need to (and probably cannot) understand how all the components of these interact with each other but one can still use these effectively by assuming that they are created for a certain purpose and using them in accordance with this purpose. The last category, *the intentional stance*, is used when the phenomena is most easily predicted by assuming that it has goals and can actively perform actions to pursue these goals.

1 Note that the set of rules may be fully understood. The design stance is taken when the *effects* of their interactions are not possible to visualize in one's mind.

Although the model presented by Dennett originally described for phenomena experienced in the physical world (as opposed to a virtual world inside a game or computer system) and the laws being simply the laws of nature, the stance can be generalized to include computer programs and virtual game components. In fact, the field of intentional agents within computer science can be seen as creating programs to which humans take the intentional stance (see, e.g., [19] on how people treat representations or even computer as they are persons). Thus, the model can be used to describe the possible stances a player can take towards all phenomena encountered in a game. When creating a character and wishing the player to perceive this as a person in accordance to the qualities listed above, it follows that not only the thematic elements (like visual appearance) must be met but also the interactive qualities of self-awareness, self-impelled actions, expression of emotions and ability to use languages. We equal the perceiving of these latter qualities with taking an intentional stance.

Summarizing, when we think that something is an intentional agent we try to understand its' behavior in terms of what mental states can explain the behavior. Understanding intentions of the agent enables us to predict how the agent will behave in a given situation. [8]. However, in games players can interact with the models that represent the characters. This is in contrast with media where only the narration of characters' actions and reactions are described, and more importantly the events characters are reacting to are not controlled by readers or audiences. In these one cannot test assumptions of believability through experimenting by playing the same sequence several times and providing different stimuli to the characters each time. In games players can test such assumptions by interacting in different ways with the charac-

ter, especially in games where it is easy to use patterns *Save-Load Cycles* or games design for *Replayability* (for details about these patterns, see [5]). Therefore, the gameplay believability of a character is dependent one being consistent for all types of stimuli a player can expose the character to.

METHOD

The requirements of believability given above indicate that players may be susceptible to taking the intentional stance towards NPCs when first encountered if the thematic presentation is believable. As players then interact with NPCs this stance can change depending on how easily it is to reduce the complexity of the NPCs responses. For example, NPCs that always answers the same way in a conversation will invite the player to take a physical stance to the NPC (at least during conversations) while only having a few options of actions when haggling with a NPC may invite a design stance if the algorithm determining the outcome is sufficiently advanced.

As a method of deducing what patterns in the interaction can cause the believability to fail an analysis of a NPC by playing the game *The Elder Scrolls IV: Oblivion* [3], hereafter *Oblivion*, is presented. The assumption is that each identified potential failure points to a requirement on gameplay that is related to the believability requirements. The starting reference point of the analysis will be the qualities identified as being required for perceiving phenomena as people. Although many of the design choices causing potential failures can be explained through gameplay choices, e.g., of balancing, these will not be discussed since the focus of the analysis lies in how a potential intentional stance can be reduced to other stances due to the design of the interaction with a NPC.

The requirements will be introduced as gameplay design patterns [5, 21]. Gameplay design patterns "are semiformal interdependent descriptions of commonly reoccurring parts of the design of a game that concerns gameplay." [5]. A patterns consists of a name, definition, general description, description on how the pattern can be used, description of consequences of using the pattern, relations to other patterns, and references to previous work in the relation to the pattern. [5]. An example of the gameplay design pattern is Level, which is defined as: "[a] level is a part of the game in which all player actions take place until a certain goal has been reached or an end condition has been fulfilled." [5]. Unfortunately, no full account of the pattern can be given here due the limited the size of the presentation format.

The reasons for using design patterns as the format for the requirements are several. First, a significant collection of gameplay design patterns (near 300 individual patterns) together with their relationships to each other have already be documented [5], allowing the requirements

identified to be integrated into an already existing structure of game design knowledge. Second, the format of gameplay design patterns is explicitly designed to support both analysis and design, thereby being a potential tool for both academic analysis and practical design work. Third, unlike other similar approaches (such as the 400 rules [1]) the collection has the aims of not being normative. This is important for supporting design processes, since the rationale for arguing to aim at having believable NPCs depend on the type of game and the design goals of the designers.

Again, given the limited size of the presentation format, the identified patterns will not be fully described but only described through their names (in title cased italics), a one-sentence description, and their relation to other patterns identified in this paper. Although the names of the patterns could in some cases be directly taken from the required attributes this is avoid for two reasons. First, other names may be appropriate either due to being not having so strong connotations within another research field than game research or due to fitting the already implicitly established naming conventions in the existent pattern collection. Second, it allows a clear distinction between the attributes and the patterns.

ANALYSIS OF CLAUDETTE PERRICK

The choice of using the game *Oblivion* as a basis is due to the fact that the designers of the game have the outspoken design goals of making a open-ended game world inhabited with believable character [4]. Further, it is regarded by its' players as being one of the most successful attempts at this [22], and therefore the identified issues should not be viewed as negative criticism towards the game design but areas still needing solutions and *Oblivion* being one of the games that has come farthest in exploring this area of gameplay design.

The character *Claudette Perrick* (hereafter Claudette) was chosen mainly because she represents a typical NPC in the game with which the player may interact for several reasons: learning rumors, succeeding with quests, and trading. She is also a potential target for thieving characters since her goods are valuable. Other characters will be mentioned when they highlight additional traits supported by *Oblivion*.

The parts of the chapter are organized as follows: after a general overview each of the requirements introduced above are examined individually to find more specific details of how these can be supported in games. The observation made in the following section can be reproduced by playing the game and using save files; the only requirement is that the player character used can open locked doors (through lockpicking or magic) to recreate unlawful entries into Claudette's shop.

General overview

Claudette is a female Imperial (one of the human races in the game) owning the shop The Guided Carafe in the Imperial City, the capital of the country of Cyrodiil that the game takes place within. She lives by buying and selling alchemical ingredients, tools, and books and has her sleeping quarters on the second floor of the shop. She spends most of her waking hours, from about 8 am in the morning to sometime after 8 pm, running the shop but does go to a park-like area called The Imperial City Arboretum to spend her evening hours. She retires to her sleeping quarters after a couple of hours gossiping with other characters and sleeps soundly unless disturbed until about 8 am when she opens the shop.

Before looking at how Claudette fulfilled the qualities of gameplay believability, a general observation is first appropriate. For any action directed towards a character to be treated as interaction both parts must have the possibility to detect each other and the events caused by the others actions. This leads to a first pattern, *Awareness of Surroundings*, which not only refers to being able to detect players' avatars but all phenomena in the world which can be affected by players' actions since these can be seen as part of the interaction. Claudette turns to face a player character whenever it is openly[2] in the proximity of her, so she could be argued to manifest the pattern.

2 In contract to when the player character is successfully sneaking into her proximity.

Human Body

Besides the visual appearance, and the sounds Claudette causes by her actions or utterances, Oblivion provides basic physical attributes of Claudette's body, i.e., it takes up space and moves between locations in a consistent fashion. However, regarding what physical interaction the player character can have with her only the most rudimentary actions are possible: bumping into her, attacking her, throwing spell, and shooting arrows at her. Bumping into her moves her and stuff dropped on her bounces but this has no other detectable effects.

Looking at more macabre aspects, hitting her with a weapon causes blood to momentarily appear but leaves no visible wounds or scars. Such a feature in a game could be described as *Visual Body Damage*, i.e., that damage to a character is represented through changes in the character's appearance, and not only strengthen the similarity to real world human bodies but provide gameplay feedback on past and current injuries. This lack of *Visual Body Damage* in Oblivion is carried beyond death in that corpses of people and creatures in Oblivion have no visual indications of what killed them. Although corpses can be looted and removing of armor is indicated, the collecting of furs from dead animals does not change their physical appearance. There may be aesthetical, ethical, and moral reasons why *Dissectible Bodies*, i.e., that body parts can be removed from character bodies, are not part of the game but its

absence does make the impression of human bodies less realistic.

Self-Awareness, Intentional States, and Self-Impelled Actions

Beginning with the last attribute of self-impelled actions, Claudette can be observed to start moving on her own accord. Her daily routine includes moving between the counter in her shop, the Arboretum, and her bed. In addition, she avoids walking into other characters but more interestingly acknowledges their presence by greeting them. This can be described as a pattern of *Initiative*, i.e., that a game component can take an action that is not directly perceived as the consequence of an event. However, *Initiative* also relies on taking place in the appropriate context, e.g., ignoring customers in a shop to go to bed simply because it is the appropriate time to sleep. Thus, *Initiative* has a relationship with *Awareness of Surroundings* in that the former requires the latter. Claudette passively observes the requirement of proper context by waiting for player characters to leave her shop. Another way she manifests *Initiative* and *Awareness of Surroundings* is through moving within her shop to always be able to directly observe the player character.

That Claudette moves around to observe that nothing is stolen in the shop provides the basis for assuming she has the goal of avoiding losing goods to thieves. This can be further confirmed by that if she observed a theft she calls for guards and tries to take back the stolen goods. On a more fundamental level, she defends herself if attacked included equipping armor and using magic spells, indicating a goal of self-preservation. These goals are gives her an *Own Agenda*, i.e., a character can be observed to strive towards personal goals, that provides a basis for taking the stance that she has an intentional state. Claudette also displays goals through a quest related to her regarding the rogue trader Thoronir that initially refuses to join the local merchant society. However, the two first observable goals can be observed through the presence of the *Initiative* and *Awareness of Surroundings* pattern while the quest goal is only revealed as reactions to player actions (specifically, being mentioned when the player first initiates a conversation with her). There are gaps in the *Awareness of Surroundings* for the other goals as well: Claudette does not mind being pushed around, having weapons waved in front of her (or heavy axes dropped on her head), or magic being cast in her shop. (Similarly, prison guards in Oblivion can pass by cells with open doors and no prisoners in them without reacting.)

Related to *Awareness of Surroundings* and *Own Agenda* is the fact that honest merchants in Oblivion such as Claudette do not buy stolen goods. This indirectly supports a player view that Claudette does not want to have her goods stolen by making it impossible to sell it back to her; offering the player the possible interpretation that she is so observant with her goods that she can recognize each of them from any other

similar goods. This interpretation does however not hold up to closer examination since she treats goods stolen from other shop owners exactly the same way.

Claudette displays fundamental self-awareness since she can navigate in the game world. Further, she will attempt to flee when seriously hurt in combat. These two abilities together support the conclusion that she has a *Sense of Self*, i.e., a character can monitor game state values related to that character and based actions on that information. A part of self-awareness is related to reacting to closures of one's own goals, i.e., either successes or failures. This points to a relation between *Own Agenda* and *Sense of Self* in that the former can be used to manifest the latter. Claudette shows examples of this, displaying different sets of moods depending on whether she is greeting customers, fighting a battle, trying to reclaim stolen goods, or fleeing an assailant. However, there are easily shown omissions to the completeness of the pattern in the game; Claudette is completely unfazed by the absence of goods if only the goods are removed without her observing the act of stealing.[3]

Food and drink exist as objects in Oblivion and players can notice NPCs consuming these. Although this could be seen as promoting views of a *Sense of Self* in these characters a problem arisen due to the fact that not all characters do this, specifically unlike some other characters it is not part of Claudette's daily routine to visit an establishing serving meals. Therefore the act of eating and drinking becomes just that, an act, which is not related to any sense of hunger or thirst in a character.

3 The other possible explanation, that she quickly accepts the losses and moves on, is neither supported by her actions or displays of emotions after the goods have been stolen

Expression of Emotions

The requirement of characters being able to express emotions is not only the functional ability to do so but also to express emotional responses that are believable as responses due to the context. The significant resources have been used in Oblivion to make character animations and voice acting support expressions of emotions, so on the narration level Claudette supports this attribute. The question then becomes if she does respond properly to the context.

Given that Claudette displays goals of securing her goods from theft naturally supports the presumption that she is emotionally attached to this goal. The active responses of calling for guards and attempting to retrieve the goods when discovering thieves, as well as the anger displayed, support this. However, if the thefts were not observed Claudette's affects are unaffected, even if the shop is completely emptied. This points to gaps in her display of interest in the goods, or in more general terms that Claudette does not display consistent *Emotional Attachment*, i.e., that a character has a noticeable emotional relation to a specific type of game phenomena. Stealing good right in front of Claudette does in fact negatively affect her disposition toward the player character, but this effect is small and will not affect conversations with

her unless certain thresholds are passed. In fact, if one is caught and pays the fines related to ones crimes, she will revert back to her earlier opinion about the player character. Another example of Claudette's lack of *Emotional Attachment* is that she completely disregards if the player character jumps around on tables in her shop and makes objects fall over (nor does she ever pick them up to tidy up).

These effects are very easy to detect as a player since the preposition of a NPC towards the player character is given as a number between zero and a hundred accessible in a mini game that is part of the conversation system in the game. The mini game provides the social interaction available in the game besides physical actions and choices of topics in the conversation menu. Basically the mini game consists of trying to determine four emotional states of a character and then allocating weights to different actions as effectively as possible (which can be either to make the character like or hate the player character). Although the actions are themed (admire, boast, coerce, and joke) one can ignore these at still play the mini game with maximum efficiency, making the mini game basically a test of how well players can judge what emotional responses the animators are trying to convey.

Ability to use Natural Language

Natural Language can be seen as consisting of two components: non-verbal communication through the use of movement, posture, hand movement, and facial expressions; verbal communication through the use of spoken language, typically very resilient to interjections, interruptions, and rephrasing. Claudette's ability to perform non-verbal communication has already been touched upon through the facial expression mini game; the only other aspect worth mentioning is that all verbal communication is accompanied by facial expressions.

Verbal communication takes places through a structured call-and-response pattern where the player initiates discussion about a subject and Claudette responds. Besides the action to initiate conversation, all subjects are chosen by selecting general (e.g., "Rumors" and "Directions") or specific (e.g., "Thoronir" and "Nirnroot") entries in a menu. Since Claudette can respond in full sentences one could make the assumption that she can use natural language but the *player character* cannot. However, Claudette responds the same way about a topic if ask twice in a row and starting and stopping conversation many times directly after each other has no effect on the conversation. Further, game time stops when a player has entered the conversation menu and neither the player's or NPC's speech act can be interrupted while it is being performed. This unnaturalness of verbal communication with Claudette can be attributed to the lack of contextual information: Claudette repeating of the same answers shows that she is not aware of the current conversational context is performed and thus makes the responses similar to voice mail greetings. Avoiding this would require *Contextualized*

Conversational Responses, i.e., the characters responses in a conversation depend on all relevant game states.

Persistent Traits

Claudette's most obvious persistent trait is that she maintains the same general physical appearance throughout the game. Less visible but easily observable is that game values related to her *Sense of Self* are preserved over time, e.g., her reaction to the player character remains the same unless the player character has done action to change it. Similarly, her *Emotional Attachments* remain unaffected over time unless events have taken place that would plausibly change them.

Interestingly, some of the patterns identified also have to be persistent traits. For example, Claudette displays *Own Agenda* both through trying to not having her goods stolen and through the quest regarding Thoronir. The first goals are *Continuous Goals* (see [5]) and thus naturally should be persistent since they cannot be completed. The player character can however complete the Thoronir quest after which Claudette is left only with her continuous goals. Thus, the *Own Agenda* of a character becomes weaker when a player character helps NPCs reaching their goals. Avoiding this would require that characters had *Goal-Driven Personal Development*, i.e., that characters update their *Own Agenda* with new personal goals after the closure of existing goals.

In contrast to strictly linear games, the player can assist, obstruct, or ignore Claudette in reaching her objectives without making further gameplay impossible for the player. This means that if Claudette is to have a *Goal-Driven Personal Development* the new goals she sets have to be dependent on the outcomes of the previous goals. These series of goals create a number of different potential life stories for Claudette which can be described as if she as an *Open Destiny*, i.e., that a character has different narrative arcs between game instances due to the events that took place in the game session. Regarding most of her goals Claudette cannot be said to have an *Open Destiny*: the success or failure of her goals do not change her fortunes in life in a perceivable way. She is not bankrupted by having all her goods stolen, forgives people threatening or attacking her if they serve their time, and the quest regarding Thoronir cannot fail[4] so her destiny is set for all these events. Only on a very general level does Oblivion support Claudette's *Open Destiny* since for each individual game instance Claudette may survive to the end or die at some point. But this pattern is not consistently implemented in the game: Thoronir cannot be killed before the quest revolving around him is completed but later the game allowed the player to kill him.

4 Although the quest can be short-circuited by killing Thoronir's supplier Agarmir.

CONCLUSIONS

It should be stated that the patterns identified through the analysis would not necessary make the experience of playing *Oblivion* better if they were present. Each game has specific gameplay goals and we do not claim that all games would be better by having characters that were as believable as the production of the game could allow. As one example, one possible reason why characters in Oblivion ignore having a weapon pointed in ones faces can be a trade-off with general playability; having to sheath weapons before interacting with neutral or friendly characters may feel like forcing players to behave in a certain way which does not promote the intended core gameplay. More generally, the decision to put NPCs in the limelight of a gameplay experience is not a single decision for a game but one that has to be taken for each and every character in that game.

The issues mentioned in the analysis typically stack up. For example, *Oblivion* contains a quest regarding finding a number of Nirnroots for the alchemist Sinderion and one such plant exists in a pot in Claudette shop. However, one cannot try to buy it from her (it does not show up in the interface for buying and selling) and choosing the topic Nirnroot in the conversation after getting the quest only gives a good luck wish regarding the mission. Stealing the plant is the only option to get that specific plant, but doing this successfully makes no difference whatsoever in Claudette's behavior. In fact, she does not react as if anything has been stolen even though the interface shows that the action of taking it is an act of stealing. Explaining this behavior as one of a believable character requires one of several assumptions (like she has a mental block, she finds it so uninteresting that she doesn't mention it even though she know the player character is interested in it, or she has forgotten it) that are difficult to verify. Assuming that the designers have intentionally made her behave this way[5] for overall gameplay is easier. Moreover, the AI systems running characters such as Claudette have limited range of competences due to the difficulties of achieving AI with the ability and flexibility of humans. This implied that players interacting sufficiently long with character driven by intelligent agents in a game will notice the limitations and thereby break the illusion of intentionality and take another stance towards the character.

5 Or it was missed through out all play testing, or ignored due to lack of resources

This study leads to the conclusion that the objective of creating a fully believable NPC within a game may be an impossible one. However, instead of treating this as a holy grail quest which is doomed to fail, the different requirements identified and categorized as patterns show how the design space of games can be broaden to incorporate richer character design that affect gameplay besides narration. In one sense, it allows a widening of the gameplay scope, which is more social in character than physical and mental, thereby pointing to new potential gameplay styles. Moreover, criterion for believability set in this paper

is very strict one and it is likely that expectations that relates genres influence level of believability required of characters to satisfy expectations of players like in film: John McClane in *Die Hard* [16] is only partly believable (i.e., corresponding realistic expectations based on our everyday experiences), but in many cases that seems to be enough.

It is notable that mastering a game requires understanding it as a system; reducing all components in the game so they can be understood by taking the physical stance towards them, or habit-forming. It is outside the scope of this paper to discuss this further. It is enough to note, that players' engagement a character may depend on various factors. So by striving to make NPCs more believable as characters we are introducing new challenges for the (gamist) players. This does not however need to be seen as a conflict between game designer and player but rather as enrichening the gameplay by making the system more complex to understand fully.

The analysis here can be seen as an initial survey, it would be possible to identify more patterns through searching for inconsistencies in the game with greater details. In fact, we have identified several additional patterns (e.g., *Free Text Communication, Gameplay Integrated Conversations*, *Ambiguous Responses*, and *Unpredictable behavior*) but due to space constraints have omitted them. More patterns could also be distilled from finding more general parent patterns but these would run the risk of becoming more and more hypothetical the farther they were from being easily implemented. However, not all inconsistencies need to be related to characters being unbelievable, inconsistencies can also be important for creating specific playing experience: surrealistic feeling, dream likeness, and absurd effects.

The patterns described here have not been documented to the level of detail as in Patterns in Game Design [5]. This remains to be done in the future after detailed studies of each area described by the patterns. The patterns described here do only describe the basic requirements for NPCs with gameplay believability. To make stronger use of these their character traits and relations to other characters should be included to increase the likelihood of interesting conflicts to emerge from gameplay. Although it may be challenging to base these new patterns of examples of gameplay in games, we believe that they can be distilled from literary fiction, film, and theater at least if they are created by expanding on the patterns identified here. However, this issue requires further research.

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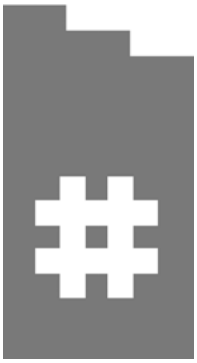

ARTICLE 4

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GAMEPLAY DESIGN PATTERNS FOR SOCIAL NETWORKS AND CONFLICTS

Petri Lankoski & Staffan Björk

ABSTRACT

This paper explores how games can be designed to make the social networks of characters as part of the gameplay. We start with a premise that game characters and social relations between them are import in games. We examine several games and derive gameplay design patterns from those games. Models from social network analysis, actor-network theory and Egri's model for dramatic conflict is used to focus the analysis. In addition to isolating design patterns from existing features of the games, we look situations where game structures do not support social networks or conflicts as proposed in above-mentioned theories. Patterns identified include *Competing for Attention, Gain Allies*, *Social Dilemma, Internal Conflict,* and *Social Maintenance.*

Categories and Subject Descriptors: K.8.0 [**Personal Computing**]: General – *Games*.

General Terms: Design, Human Factors, Theory.

Keywords: Gameplay Design Patterns, Gameplay, Narration, Non-player Character, Computer Games, Gameplay Design

INTRODUCTION

As social creatures, humans easier to engage in a game and narration when characters portrayed in these have social relations to each other, or in other words that the relations between characters form a social network. This is common knowledge within scriptwriting theories for theatre and film (see, e.g., [6, 7, 17, 19]), and these theories are also applied to creating games. However, social relations in games are typically part of the storyline (see, e.g., *Thief II: The Metal Age* [34], *Dead or Alive 3* [44], *Silent Hill 3* [45], and *Half-Life* [48]) and games typically do not let players directly act to influences those relations, instead letting them be consequences of other (most commonly physical) actions that are shown through cut-scenes. One example of this can be found in *Quake 4* [22] where the relation between the player character, Matthew Kane, and the other characters in the Rhino squad are only changed in the cut scenes. No possibilities to do so are available during gameplay, including making it impossible for the player to terminating the relationship by killing the other team members. When players are given direct choices to influence the relationship this is typically done as explicit choices between a limited set of alternatives, and the effects of these are localized and seldom have the complexity of nuances of

real social relationships, including how one change in a relationship can propagate through a whole network. Although these limitations typically make sense from gameplay or storytelling point of views, we think that the above-mentioned ways limits the design space of games, and having further alternatives would expand the expressive design space of games.

By limiting how players can affect social relations within a game, game designers are making social networks primarily a thematic aspect of the game rather than a core gameplay feature. Conversely, this may be a reason why emotional engagement in game characters is more difficult to achieve than for other types of fictional characters. In this paper we focus upon how using social relations as gameplay feature may expand the possible gameplay space and put stronger focus upon social actions rather that physical (or violent) ones.

There are of course social networks in many games, and we differentiate between the social networks of *characters* in games compared to the social networks of *players*. This paper specifically looks at social networks of *non-player characters* (NPCs) with the possible inclusion of one *player character* (PC). This removes many type of games, such as multiplayer online worlds (e.g., *World of Warcraft* [10], *Eve Online* [11], and *Guildwars* [5]). The primary reason for this is that the social relations between players tend to overshadow social relations between characters in such environments[1], and by avoiding these social networks of *players* the social networks of *characters* are more easily discernable. Thus, we will in the following primarily focus upon non-player characters.

1 See, for example, [43, 46] for player-centered studies.

The aim of this paper is to explore the gameplay design space of characters' social networks in games. As professional game developers have reported a need to explicitly codify design knowledge within game design [12, 13], gameplay design patterns [9] have been selected for that purpose. The gameplay design patterns is one of the few conceptual framework developed to describe games and gameplay and is specifically developed to support design work. Other candidates (e.g., [18, 32, 50]) also provide concepts to describing the possibility space of gameplay mechanics, but are geared towards analytical studies and players' perception of games respectively. Gameplay design patterns is a development of the design patterns approach within Architecture by Alexander et al. [3] modified to suit particular demands of gameplay design. Specifically, analytical and construction aspects are separated and the types of relations have been modified. Gameplay design patterns have previous been used to study mobile games [16], categorizing pervasive games [38], and we have earlier presented patterns for believable non-player characters [29]. Now we extend our work to cover social structures that can be used as basis for goals and conflicts in games.

Gameplay design patterns are design tools that preserve design knowledge to support reproduction of gameplay features. For the patterns

described in this paper, the gameplay features are representations of social interaction and social networks. We stress that we are not concerned with providing *true* descriptions of everyday life structures, and indeed argue that is not needed; the patterns are concerned with providing enough correspondence between a game and daily life practices that players can perceive the social interaction as believable, or at least consistent within the system.

BACKGROUND

In this section we describe the models used to study the social relations of NPCs. After describing two models focusing on the group level, social network analysis and actor-network theory, we complement this with Egri's model that focused more on the individual level, and conclude with some notes on orchestration.

Social Networks

Kathrine Isbister [24] points out that social networks are important in game character design. She suggests that one should focus not only on the characters themselves but also between the characters: what kinds of relationships character have between each other. However, she says very little how social relations can be implemented in the gameplay. In the following we present two descriptions of social network that provide specific concepts for parts of social networks. It should be noted that for both models some decision about what limits the extent of the network must be taken, and we assume that a game can contain a multitude of social networks with different limitations and that the networks may be overlapping. For example, although these models may normally be used to interrelate all participants in a conflict as being part of the same network, in the case of game design it may make sense to do that but also have a separate network for each side since this provides a means to control what actions different characters can or must take. Not only this, but different types of relations may be used simultaneously to create all interesting sides, e.g., to model treachery and traitors correctly.

Social Network Analysis

The interest of studying social networks mathematically have increased as the Internet has grown, most probably since this restricted form of social interaction provides quantifiable empirical data of large networks. These studies, called Social Network Analysis (SNA), are typically based upon graph models consisting of nodes representing people and lines representing relations between people, and then using various mathematical measures to identify specific characteristics (see [49]).

Example of these include *N-cliques* (groups where all people are connected to each other by traversing at most *N* lines), *N-clans* (N-cliques where one may only traverse lines to other members of the N-clique to determine membership), *K-plexes* (where a member must have connections to all but *K* nodes), and *K-cores* (where every member needs to have connections to at least *K* other members). Somewhat less rigorously defined concepts (see [26] include *Singletons* (people not participating in the network), *Isolated Communities* (groups that are connected to each other through one central member, creating a 'star' shape) and *giant components* (well-connected region persisting even when 'stars' are removed).

Actor-Network Theory

The network descriptions above typically have individuals as the nodes in the network, or rather their online profiles for specific applications such as *Facebook* [1] and *Flickr* [2]. However, in an effort to redefine social science proponents of actor-network theory (ANT) [33] argue that actors (nodes) in social networks should not only be humans; instead they are collections of heterogeneous entities consisting of humans, human-tool combinations, and non humans (e.g., technologies, machines, or materials). This expansion of actors is the effect of but one of the five areas of uncertainty ANT proponents argues the social science should embrace. The five areas regard the nature of groups, actors, actions, science, and textual accounts.

The ANT approach has been advocated within research on games as a way of more correctly looking at massively multiplayer online games [15] Notably, ANT argues that freedom to describe agency, as not only coming from humans when describing the social phenomena, so curses and rings can make their bearers perform actions, and love can make somebody survive ordeals. Thus, the theory supports that a game not only can explicitly use these abstract concepts in a model of a social network, but also *should* do so. Proponents of ANT argue that actors themselves should primarily do the descriptions of the component of the networks, or by as faithfully as possible observing these and documenting how they refer to their social relationships. This provides an obstacle to applying the theory directly in design processes since the designers typically want create the actors and the network simultaneously. Creating the actors first and then letting them create a network and report a network is a potentially interesting way of automatically generating social networks, but outside the scope of this paper.

Nevertheless, the actor-network theory can be useful for gameplay design since it highlights certain concepts and activities. As one example, goals in a game can be created from the view that groups are not stable entities in the ANT, but rather something that constantly needs maintenance, or in other words "if you stop making and remaking groups, you stop having groups" [33]. Another example, based on

the ANT, is seeing a textual account as being objective only if there is a presence of *objectors*, which the author needs to acknowledge. This is an argument for having believable social networks, since the social network in a game naturally has one such objectors: the player character. Furthermore, if too many objectors are raised, the network and the gameplay will fall apart.

Characters

Looking from a perspective of dramatic writing, Lajos Egri [17] also argues for the importance of a social environment of characters: the social structures influence the character behavior and set-ups a field for conflict between the characters. Moreover, Egri has presented a method for orchestrating conflicts based on character traits (including social structures). Lankoski [28, 31] has affirmed that the method is usable to live-action and tabletop role-playing game design as well as computer game design. He has pointed out that especially the goals of the characters are a tool to create conflicts in a game; in a well-defined character-driven game the goals of the game for a player are derived from the goals of the player character are the same [28, 30]. We prefer Egri's method as starting point of our inquiry as Egri's focus is in designing better drama[2] thought social conflicts and believable characters, in contrast to above-mentioned approach by Isbister [24], which concentrates designing better characters for games. In fact, others have also based on their discussion on character design for games to Egri's method [25, 41], but they mainly discuss techniques for narration.

2 We do not imply that games are drama or stories, but simply that there are applicable similarities of designing conflicts for the both.

Egri stresses that a believable conflict raises from the qualities of the character; goals or natures of antagonists are in collision, which put an action in motion. However, there can be many types of believable conflicts. Egri argues that writers create interesting conflicts based on well-defined characters. He sees that a conflict stays believable when

Physiology	**Sociology**	**Psychology**
- Sex	- Class	- Moral standards
- Age	- Occupation	- Goals, ambitions
- Height, weight	- Education	- Frustrations, disappointments
- Hair, eyes and skin color	- Family life	- Temperament
- Posture	- Religion	- Attitude toward life
- Appearance	- Race, nationality	- Obsessions
- Defects	- Social status	- Imagination
- Heredity features	- Political views	- Extrovertness
- Physique	- Hobbies	- Intelligence

Table 1. Condensed Bone Structure of a Character

transition and changes in the characters are justified by earlier progression or the qualities already exposed. Thus, events must be causally connected. The above-presented model has been modified for use in games [31] and was used to distill gameplay design patterns [29]. This model of believable character is the assumed basis for the design of individual aspect of NPCs in this paper, and to provide an insight to that basis the model is presented here in table format.

Egri's premise that believability of character action is compatible with the idea that understanding others is fundamental for predicting their actions based on the history of interactions and ones current knowledge of the other. Believable character action is behavior that does not violate our expectations drastically, i.e., an expectation that the other would not act that way in a given situation (for a more detailed discussion see [14, 27]).

Here we are interested traits that influence social dynamics between characters. We have earlier identified gameplay design patterns that relate to believability of NPCs. Some of those patterns are relevant to our current focus:

- *Own Agenda* and *Goal-Driven Personal Development* relate to Egri's psychology: goals and ambitions.
- *Awareness of Surroundings, Sense of Self, Emotional Attachment,* and *Initiative* are prerequisites for social dynamics between characters. [29]

The structure above is person-centric in that it explains the causes of various social interaction of that character. However, it does not focus upon the social interactions themselves, which in a game is interesting since they are they actions human or AI players can perform. Based upon the hypothesis that the knowledge of creating believable premises for social networks of characters can be taken from other disciplines we focus upon the interaction instead, seeing these as independent elements of the games. This is necessary since both the traits that provide the rationale for social interaction and the social interaction acts themselves needs to be described as parts of a system if the social interaction is to be encoded into the gameplay rather than being a solely thematic aspect of the game.

Orchestration

> When you are ready to select characters for your play, be careful to orchestrate them right. If all characters are the same type—for instance, if all them all bullies—it will be like an orchestra of nothing but drums. [17]

Although this paper does not go into detail on how to relate NPC design with overall orchestration in a game it is important to note that there is a direct relation. Thus the introduction of some concepts regarding this is necessary for grounding the continued discussion.

Egri's *Premise* relates to what game designer Richard Rouse calls a focus: it is a short description on the most import features of a game. [40] Egri has a narrower idea[3] when he introduces the premise that is a proposition that a work tries to prove. The premise guides the writer in the design process. Egri gives following interpretations of premises of some classical plays [17]:

- Hamlet: "Great love defies even death";
- King Lear: "Blind trust leads to destruction";
- Dead End (S. Kingsley): "Poverty encourages crime".

The *orchestration,* according to Egri, is about creating well defined and uncompromising characters in opposition whose actions in conflict will prove selected premise. Uncompromising means that antagonists in the work have so strong motives that finding the middle ground is impossible. Designer should be working to find most interesting course of action (or goal–conflict structure) that is believable. Believable conflict originates from the traits and qualities of the characters. [17]

Egri's argument is valid in the context of games too. If motivations are weak, players might not perceive the goals and conflicts in a game as believable. This will affect the perception of other design decisions, e.g., players might start wonder why the player character cannot simply avoid the conflict, and why the player character is forced to do certain things.

3 Egri is discussing only about the *play-writing,* not the whole design process from the play-writing to staging, casting and directing.

METHOD

This paper focuses on the design possibilities of NPCs, but since this is done from a gameplay perspective, we also discuss player character goals as a means to set up conflicts and co-operation[4] between the characters in a game. This view is somewhat complicated by the fact that games may let players directly control a character for a limited amount of time, and then transfer the point of control to another character. This typically means that the player does not perceive him- or herself as playing that character but rather using it as a resource in the game. A classic example of this is Chess, where players' transfer their point-of-interaction between the different Chess pieces[5]. Games such as these are included in our study since these have clear game mechanical structures for social interaction between the characters.

The general approach in the study has been to positively identify patterns regarding social interaction and relations existing in game design rather than negatively identifying patterns that are lacking. However, when clear examples of how the presence of a pattern could create new gameplay possibilities the lack of patterns are noted. The method for identify patterns has been to play games and evaluating the gameplay in terms of the above-mentioned models. We provide several case studies, as our analysis has been iterative. We started with one already studied for a similar purpose and deduced patterns. Based on these

4 Björk and Holopainen [9] points out that cooperation can be achieved by, e.g., using the pattern *Mutual Goals*.

5 Moreover, Chess pieces are not likely to be categorized as character or person, as the pieces often lack most of qualities that will encourage that kind of conceptualization, like human face, body, affective expression, or intentional states.

findings, additional games were identified that would provide complementing examples and analyzed. The patterns identified in a game were successively searched for in the other games to provide validity of the pattern as well as provide additional insights to it.

Since the paper focuses upon design aspects, the use of the theoretical models and concepts are primarily to support the design. This means that how correctly the models represent reality or everyday life is less interesting to how well they provide a good structure for creating interesting designs, in this case help create interesting gameplay and, to a lesser degree, narration.

As in our previous paper [29], we do not describe complete design patterns, e.g., the relation between them, due to the space requirements needed. Instead we present the pattern names and the context in which they were identified. In addition to this, all new patterns are listed in an *Appendix: Gameplay Design Patterns Introduced* with short descriptions. In this fashion we used the patterns in an informal fashion, which sacrifices precision for accessibility, and do this with the aim of providing an overview of the area in this paper and mapping the field for future, more detailed, studies of individual patterns.

The games described have primarily been chosen due to having a focus upon clear gameplay interaction with, and between, NPCs and being (commercially) available. The latter reason is a (weak) indicator of that a game in question has been well received by players but also ensured availability for continued research. The games have intentionally been chosen so they represent different types of games allowing the analysis to look many different approaches to the design space.

CASE STUDIES

Next we will present case studies of various games and sketch finding as gameplay design patterns. We begin with *The Elder Scrolls IV: Oblivion* [8]—building on the findings and patterns collected in our previous inquiry [29]—and then continue with other cases. Previously identified patterns are differentiated from new patterns by having given references, and are in some cases generalized to be for both NPCs and a PC rather than just for the PC.

Oblivion

Characters in *The Elder Scrolls IV: Oblivion* [8] show a level of *Initiative* [29] to acknowledge the presence of other characters by greeting them or attacking them depending on the situation. However, mentions of characters both regarding discussion betweens NPCs and those between a NPC and the player character are based upon pre-scripted media snippets, meaning that the only cases where NPCs are part of conversation topics are when they are related to quests or services (such as training or trading). Thus NPCs do not have *Context Dependent*

Reactions as they do not differentiate between which other NPC they are talking; as long as they are willing to talk to another NPC the things they say are independent of whom they talk to. The *Gossip* provided in this way has no meaning for *Information Passing* to other NPCs, rather their raison-de-être is to provide players' with the possibility to gain information through *Eavesdropping*. The player can at any time interrupt these discussions, so the NPCs are not *Competing for Attention*.

The PC can join several different groups within the game, such as the fighter's guild, the mage guild, and the thieves' guild. Each of these is a *Faction*, a specific social network where membership is defined by what actions are allowed, disallowed, and required. However, joining and advancing in these factions are in most cases strictly controlled by requiring the player to complete quests given by a specific NPC, although which NPC gives quests changes as the player's character advances. This method is probably implemented to give players an incentive to travel to the place where the quest-giving NPC is located, but reduces the player's possibility to affect the social network severely. In SNA, the system would be described as a *K-plex* where K equals the number of people in the network minus one, and joining or advancing is equal to getting a relation. That is, the player only needs to have a relation with one NPC and that relation is the only one the player can have to members in the group. This NPC is a *Social Gatekeeper*, one that determines how and when new members can join the group. Loosening these requirements could provide several gameplay possibilities. Letting K be the number of people in the network minus two or more would require players to solve quests for more than one NPC before advancing. This could be used to require more travel in the game, and in effect having several *Social Gatekeepers* that have to be unanimous. Loosening the restriction that the number of NPCs with quests is equal to K would let players choose which subset of quests to complete from a larger set, and could let the player be enemies with some parts of the network while still belonging to it. This pattern could be described as *Internal Rivalry*.

Advancing within a guild makes the guild members react more positively towards the PC, so the game can be said to partially implement *Actions have Social Consequences*. However, once a character has reached a level in a faction, that position is stable until one has advanced another level or performs actions that the faction deem unacceptable and is rejected. The character does not need to perform any *Social Maintenance*, performing actions to redefine and reform the group, and for proponent of actor-network theory the faction would thereby not be a group in a social network. Even if the unscripted redefining of social groups may be perceived by designers as permitting to unpredictable evolvement of the gameplay, requiring players to perform actions or complete quests to maintain their position in a faction can provide additional *Continuous Goals* [9] to the gameplay.

The various guilds and other social networks in the game are in practice static with the exception of the player character and some effects of quests. This can be changed by providing gameplay mechanisms to recruiting new members to guilds (described as either expansions of the network or as tracings the network depending on which model is used), and a way to instantiate *Gain Allies*. It could also be a form of *Social Maintenance* if the guilds have recruitment as requirements or *Social Norms*.

Ico

Ico [42] have three main characters: Ico (the player character), princess Yorda, and the Queen. Ico is an *Outcast*[6], a boy with horns and which is taken to a strange castle for sacrifice. In the first section of the game the player finds an imprisoned girl Yorda. Her mother, the Queen, tries to keep Yorda imprisoned by her control over shadowy figures (showing two forms of *Hierarchical Factions*). The structure of the game can be described in the SNA as showing how dyad between the Queen and Ico—the smallest possible social network—is upset when the dyad becomes a triad by Ico and Yorda befriending each other.

6 In Ico, *Outcast* is mainly a device of narration, but the idea is usable as a gameplay design pattern.

Ico and Yorda are allied by the *Mutual Goals* [9], escape from the Queen. Ico needs Yorda's help on opening magically locked doors and Yorda needs Ico to keep herself safe from shadows. Ico needs to guide and help Yorda through obstacles (*Guide and Protect).* This need of each other make them alternative doing actions beneficial to the other, which can be seen as creating the social network from an ANT perspective. If Yorda is captured by the shadowy figures the game ends, so she and Ico have *Linked Destinies*, since escape from the castle without her help is impossible.

The main predetermined change in the social network is when Ico finds a magical sword that can be used to open doors, and the Queen captures Yorda. However, after that Ico and Yorda still have *Linked Destinies*: to escape from the castle Ico must confront the Queen. In other words, the social network in Ico is predetermined and the only option to following a specific development is to end the game by failing. Possible redesigns that would imply different social network dynamics include enabling Ico to be able to save Yorda a number of times by pleading to the shadowy figures. The later can be described as a *Favor*, a promise of a future action against a *Faction* one is member of due to social relations to someone not belonging to that *Faction*.

UFO Afterlight

The resource management | tactical battle game *UFO Afterlight* ([4], one in a series) gives the controllable characters background history with stated family and friends relations. The wellbeing of friends and family is mechanized in the game as possible status changes. Although

this can be seen as an instance of *Others Fortune affects own Mood*, but it is not possible to determine by playing if a character behaves the same way to all other characters or they have distinct *Emotional Attachments* [29] to the other characters.

Viewed from a social network analysis perspective, the network in the game are *1-cliques* where the connection is of little interest, although the size of the clique changes over time, negatively due to losses in combats, retirements, and broken alliances; and positively due to new alliances, constructions of robots, and the coming of age of relatives to the characters. Characters in the game belong to one or two classes (scientist, technician, and soldier). These could be used to define other *1-cliques* in the game since the classes restrict which actions can be performed together, e.g., being a soldier is required to go on a combat mission and being a technician is required to work in the workshop.

All members of teams sent to fight enemies can be said to indirectly redefine their social network as per the ANT, since they have to cooperate to win battles. However, scientists with medic training and technicians with suit training can perform more direct beneficial actions towards their fellow combatants by healing them or repairing their suits. Although this can be seen as a form of *Social Maintenance*, it is more of an effect on the dynamics level of the game than designed into the gameplay mechanics. The only distinction after a mission is whether a character survives or not, and all social actions can be reduced to this, including friendly fire. A possibility of introducing *Social Maintenance* would be to keep individual tabs on relations that changed do to direct interactions and common experiences, such as surviving a fire fight. The game keeps track of which characters were part of important missions, such as the opening of a teleportation device that let loose a new type of enemy, so the characters already has a form of *Memory of Important Events*. This could easily be incorporated into changing individual relations. However, since the possibilities of performing actions with these effects are unevenly distributed, addition actions and most likely a social game-mode during downtime would be needed to equalize the characters social capabilities. Having this gameplay functionality make characters dislike each other could be used to splinter the *1-cliques* into smaller *1-cliques* that require additional choices to be made, e.g., forcing the player to choose whether to bring two NPCs to a battle, despite them disliking each other and belonging to different *1-cliques*[7].

There is a second level of social networks in the game, that of relations between the *Factions* (total of seven factions in all including two human ones besides the player's). The number of actors in the network changes over time, being introduced by game events and possibly disappearing by being exterminate, as so do their relations (between hostile, neutral, and allied), so the diplomatic social network is also dynamic. As new enemies appear, old ones are scripted to offer alliances, so a form of *My Enemy's Enemy is my Friend* exists in the game, but

7 This explanation mixes concepts from the SNA and ANT, which would not be acceptable within social sciences. We motivate it in this context by the condensed description made possible.

alliance offers are not dynamically generated. Through this mechanic, *Requesting Support* is possible but it is not possible to predict the consequences of the request in advance.

The social network formed by the *Factions* is linked to the individual social network as characters join or leave the player's roaster as alliances are made or broken between the *Factions*. This means that reaching a *Gain Allies* goal on the diplomatic level of the game can have as a direct effect that one succeeds in a *Gain Allies* goal on the character level. These new characters, which include aliens and robots, have thematically different descriptions but are treated as equal parts in the group as human characters. *Social Maintenance* is not a gameplay requirement for this social network but could easily be introduced, e.g., by actually requiring that some of the already occurring trade proposals are agreed for the relation to improve or at least not deteriorate. Another possibility, which would mirror the gaining of allies, could be to require characters to be sent to the other *Factions*.

Crusader Kings

Crusader King [37] puts the player in control of a medieval dynasty in Europe that strives for power, but at any given point the player controls a ruler (a king, duke, or count). The power struggle is fought both through military and diplomatic means. The players has to consider papal support, having publicly acknowledged claims to provinces fought over, and having the loyalty of the dukes and counts under ones control since these most often provides the majority of the fighting forces in one's *Faction*. Each ruler has a court that provides the possibilities of assigning new dukes and counts, the positions of steward, spymaster, marshal, and chancellor, and being parts of political marriages. Given that the game stretches from 1066 to 1452 with each turn being one day, creating dynasties and dynastic alliances is of importance in the game. In fact, not having any blood-relatives to succeed the character one is currently playing when he dies results in the game ending. Every character, both rulers and court members, have traits (e.g., Lustful, Suspicious, Schizophrenia, Intricate Webweaver, and Scholarly Theologian) and primary stats (Martial, Diplomacy, Intrigue, Stewardship, and Loyalty) that influences relations with the PC and the characters.

The game clearly makes use of patterns of *Loyalty* and *Hierarchical Factions* in a complex fashion: it is, for example, much easier to gain the loyalty of one dukes when they are your sons or brothers than when they are your uncles or grand-uncles. The importance of blood relations can appear to support *Linked Destinies,* but more often lead to *Internal Rivalry* since members of the same family have claims of rights to the same areas. The game instantiates *Binding Promises,* as rulers must support their lieges in war or risk losing their domains since refusal to help gives their liege a casus belli against their vassals. *Binding Promises* come into play in another way of the game: having Muslims or

heathens as part of one's court due to their skills can cause the pope to question one's *Loyalty* to the Catholic Church and risk becoming an *Outcast* whom anybody can attack freely.

Expanding one's social network can be said to be a core goal in the game since rising in a *Hierarchical Faction* and gaining new subjects is one of the ways to determine success in the game. The social complexity of the game could be achieved by adding other social networks, such as Catharian Heretics, fighting order of the Knights Templars, or religious Orders like the Dominicans or the Franciscans. This could add *Internal Rivalry*, a need for *Maintaining Lies,* and also the possibility of *False Accusations* as political means. The theme of the game also provides a rich basis for introducing various needs of *Social Maintenance*, e.g., tournaments and pilgrimages.

Civilization IV

Although the anachronistic immortal leaders in *Civilization IV* [20] can be seen as player characters they are actually more often perceived as NPCs. This since they are typically controlled by AIs and, interesting for the topic of this paper, the game introduces new game mechanics specifically to handle social interaction with these. This diplomacy is primarily controlled through a value of how friendly or hostile the AI perceived the player to be. The value is influenced not only by the interactions with the AI but also with those towards other players, e.g., fighting the same enemy (indicated by the modifier "Our mutual military struggle brings us closer together"), trading with an enemy ("You have traded with our worst enemies!"), and not accepting a request to stop trading with another nation's enemies ("You refused to stop trading with our worst enemy!"). These modifications, which can be seen as instantiating an *Emotional Attachment* [29], also express *Memory of Important Events*. Although these modifications do mainly relate to *My Enemy's Enemy is My Friend* pacts, they do create patterns of *Either You are with Me or against Me* and *Others Fortune Affects Own Mood*.

From a perspective of the SNA, the game begins with the civilizations as lone actors and from which forms dyads, triads, and various *1-cliques* as the game progresses, typically ending by merging into one single *clique*. Two of the game's victory conditions can be directly linked to the social network: 1) destroying all other civilizations and thus the network leads to the conquest victory, and 2) sufficiently positive relations to other civilizations can result in diplomatic victory through being voted world leader. Various dyadic subgroups are possible in the game (e.g., defense alliances), but also permanent alliances that create *cliques* that share victory conditions, in essence creating *Linked Destinies*. This use of *Factions* could be expanded to multiple actors and different types of *Factions* (so that phenomena such as military pacts, free trade agreements, international standards, IP rights, Olympic Games, etc., was treating with similar mechanisms), supporting gameplay to *Gain*

Allies, to test one's *Loyalty* between different alliances, and to fostering *Internal Rivalry*.

Civilization IV does not conform to the ANT in requiring individual actions to maintain social relations, although many such individual actions exists, e.g., demanding resources or territory and giving gifts in the form of technology or money. Cooling relations if no positive actions occur could be one way of requiring *Social Maintenance*, but other options include *Gossip* and *Information Passing* about other civilization's status, *Requesting Support* for threats (which might require use of a *Favor*), or providing *Outspoken Support* for other's threats. The events features adding in the *Beyond the Sword* expansion for the game could further be used to create additional, minor, diplomatic events, including *False Accusations*.

Canis Canem Edit (aka Bully)

In *Canis Canem Edit* [39] the player controls Jimmy, who is sent by his parents to the boarding school Bullworth Academy. Jimmy ends in the middle of a power play between different student *Hierarchical Factions* (nerds, preps, bullies, jogs, greasers), and the gameplay focuses upon how the player can influence his relation to the *Hierarchical Factions*. However, most of actions (like attacking people) do not influence how the NPCs react to Jimmy; only the missions seem to change respect values and behaviors. Each NPC has an *Emotional Attachment* to Jimmy's actions, e.g., they can start a fight with somebody after seeing Jimmy kissing that person. Despite this reaction, the relation between Jimmy and the NPC doesn't change. As a consequence, Jimmy can continue to date all of his girl- and boyfriends, so the NPCs cannot be said to have a *Memory of Important Events*. The social dynamics, thus, remains perceivably superficial. The NPCs seem to lack *Goal-Driven Personal Development* [29], or the game instantiates the pattern only partially: the only events that influence the personal development are the completions of the goals of PC. Hence, the social network evolves only in relation to the completed goals; *Social Maintenance* is not needed. This may seem odd because completing the main goal of the game requires that Jimmy wins the trust of the *Hierarchical Factions* in the Bullworth.

One possibility to change the game would be to introduce more complex social network interactions, both in the SNA perspective of expanding networks or in the ANT perspective of redefining them. For the latter, the game could, for example, be based on *Social Maintenance* and finding ways to get the leaders of *Hierarchical Factions* to like Jimmy. Each *Hierarchical Faction* could have members, whom attitude toward Jimmy influence also indirectly to attitudes of others. *Hierarchical Factions* also could have relations between each other. For the former, game dynamics could be based on pattern *Gain Allies*, and *Competing for Attention*. Besides the patterns mentioned above, this could require the use of patterns such as *Actions Have Social Consequences* (i.e., helping a

Faction member will help to get in good terms also with other members and attacking a member will be retaliated), *Requesting Support*, *Outspoken Support*, and make *Loyalty,* and *Maintaining Lies* as important goals of the game.

Splinter Cell: Double Agent

In *Splinter Cell: Double Agent* [47] the player controls Sam Fisher, which the NSA has an assignment by his employer the NSA to infiltrate a terrorist organization JBA. This forces the player to guide Sam into committing crimes. Completing goals increases the trust of the terrorists' or NSA's, but can at the same time reduce the trust of the other organization. The game uses *Traitor* pattern, as the game *requires* pretending to maintain an alliance while acting against it. However, the necessary *Social Maintenance* is per *Faction* rather than per NPC.

In the game, the player is given moral dilemmas like if to shoot a prisoner to gain terrorists' trust. The dilemmas are instantiated in the game by using *Internal Conflict*: Sam Fisher is given two *Incompatible Goals* [9], e.g., to kill the prisoner (and gain the trust of terrorists') and to keep the prisoner alive (to avoid loosing the NSA's trust). To generalize, the game builds these dilemmas on contrasting the need of *Maintaining Lies* to the terrorists, while providing one's *Loyalty* to the NSA. As both patterns have with maintaining and developing Sam's relations with the to group, and the game ends if either the NSA or terrorists' trust reach zero, *Social Maintenance* has an important role in game.

The NPCs in the game have an *Awareness of Surroundings* [29]: they react to Sam Fisher and they know where they are. If the NPCs spots Sam doing something suspicious they comment on that and trust value lowers as long as a player chooses to continue the action. The reaction of NPCs also depends on the area *(Context Dependant Reactions)*, e.g., some areas in the terrorist's base are off-limits to Sam and trespassing quickly deteriorates the terrorist's trust of Sam if the terrorists spot him.

Given the overarching goal of destroying the terrorist network, removing individual actors from it could be a possible expansion of the game. Besides stealthy assassination, this could has the social aspects of fostering *Internal Rivalry* by *False Accusations*, to developing relations to be able to ask for *Favors* against the terrorist organization, or even to *Gain Allies* by turning individual terrorists into *Traitors* against the organization. Focusing instead on establishing social relationships, the current game structure can be tuned to highlight social interaction by focusing on the pattern *Traitor.* By adding minor gameplay goals regarding *Gossiping, Eavesdropping*, and adhering to the *Social Norms* the player could have advantages in achieving goals of *Maintaining Lies* and providing the correct *Outspoken Support*. Depending on how much interaction this would require, maintaining the trust of the JBA members could be a secondary goal of *Social Maintenance* in addition to completing the missions given by terrorists and the NSA.

Façade

Façade [36] is a discussion-based game based on a dysfunctional marriage between two NPCs: Grace and Trip. Players influence the outcome visit to the couple through movement, simple interaction with objects, and free text input. Both NPCs in the game are *Competing for Attention* from the player to *Gain Allies*, providing the player with a social dilemma. This provides an implicit *Internal Conflict to* the player: how to be a friend to both.

Players can take sides by choosing whom to talk or by showing attitudes through modulating their personal distance, something the NPCs also do, but may also come with *False Accusations* to provoke responses. NPCs both directly involve players into the conflict by explicitly *Requesting Support* and indirectly when the player is *Eavesdropping*. NPCs react to comments made by the player to the other NPC, so NPCs are also *Eavesdropping*. In general, Grace and Trip have good *Awareness of Surroundings.* In addition successes of the other affects Grace and Trips moods, which leads to a pattern *Others Fortune affect own Mood*.

The initial setup of the game can give the impression that both Grace and Trip follow the pattern *Either You are with Me or You are against Me*. Hence, the player can try to escalate or calm down the conflict between Grace and Trip depending on the player's goals of the experience. Trip and Grace react more and more negatively to prolonged silence from the player, so a form of *Social Maintenance* is required to not be thrown out of the apartment. The player can gain information of Grace and Trip's internal states from their displays of *Emotional Attachment* [29], e.g., by the facial expression, personal distance, gestures, and comments. The NPCs have *Context Depended Reactions* and they expect the player to obey *Social Norms* like turn taking in discussion.

Façade is simultaneously the example focusing the most on social interaction and being the least game-like: the latter for not having clearly expressed goals and by effectively hiding the game state behind the performances of the NPCs. If is therefore difficult to state which patterns do *not* occur in the game as much lies in the eye of the beholder, e.g., the player can become an *Outcast* by being thrown out of the apartment after taking as a personal goal to be a *Traitor* within the game's context. Unlike the other examples, increasing the gameplay aspects of social interaction in *Façade* does not require more gameplay mechanics, but rather making these more visible to players, something that seem to go against the design intensions of the designers as they "examine issues of procedural authorship using the interactive drama Façade" [36].

DISCUSSIONS

In this section we briefly discuss findings not directly linked to individual examples. These findings are groups into those pertaining to relations between identified patterns and already document pattern and structures, general design implications, and future work.

Patterns

Given the complexity of the game examples, and the difficulty of gaining information on the inner working of them, not all specific cases in each game may have been identified and thus the identified design patterns relate to the typical gameplay of each game. That being said, the identified patterns provide starting points for several ways of expanding gameplay generally regarding social networks.

Although most patterns have been positively identified in the examples—some were easy to hypothesize about, but more difficult to find. One such example is *Information Passing*, which would probably require modeling information as discrete entities in the system, possibly based upon the ideas of memes, to be part of structured gameplay. If games did model this, however, players would have not only to consider what goals they have with an ongoing conversation, but also the long-term effects of that the conversations can have. The gameplay effects of this in games such as *Crusader King* [37] and *Splinter Cell: Double Agent* [47] include possibilities to gain access to secrets through *Gossip*, being able to perform *Brokering* between hostile parties, finding ideal *Match-Making* solutions, *Maintaining Lies* to provide alternative identities, and causing conflicts through *False Accusations*.

Social Maintenance is another pattern primarily found as hypothetical redesigns of the examples. Two main requirements exist for this to be used in games: First, actions that can carry the role of maintain social networks exist in the game and that these actions are seen as meaningful for gameplay. This requires that players have goals attached to the effect of the actions. Second, that the actors in the social network are sufficiently complex in the social model that the social relations do not become trivial. If these both requirements are met by the design of the game system, gameplay can focus upon social interaction rather than physical or problem-solving activities, e.g., *Triangular Drama* or *Threat from Outside*, which have been posited as gameplay possibilities by Lankoski [28]. A side effect of this would be to enrich the interactions with *Hierarchical Faction*, so that games such as *Oblivion* [8], *Splinter Cell: Double Agent* [47], and *Canis Canem Edit* [39] can support gameplay based upon *Competition for Attention*, *Favor*, *Loyalty*, and *Internal Rivalry*.

Several of the patterns identified, e.g., in *Façade*, have arguably more to do with the design of believable characters on the face-to-face level

of social interaction that the large scale social network. Finding such patterns, which could be said to belong to our previous study on individual NPCs, are normal since changing the frame of references can highlight characteristics of a design that under previous circumstances have been so. Notably, the conflict in *Façade* [36] requires many patterns that relates to believability of NPCs to make gameplay possible and the player's choices understandable—or patterns give means to players to predict NPCs reactions to their actions based on their previous (everyday) experiences.

Designing Social Networks

As for all design patterns, the patterns presented here should be seen as tools; their use does not suit to every design, as each game has their own gameplay goals. However, the patterns identified highlight some game structures and possible design solution that can be used in games in which the design goal has focus on social conflicts or social structures have an important role. Why these kinds of game structures have not been used more, or made into the core gameplay mechanics, is of course impossible to say with certainty, but a hypothesis is that focusing on social relations seems incompatible with simulations. Those focusing on depicting a developing social relation within a game may shun away from creating a simulation that carries the development of relations as this can cause unexpected, or simply boring, outcomes. Likewise, those focusing on simulation may shun away from social relations as they may seem simplistic or mechanistic compared to those describe through theme.

Looking at the gameplay structure underlying the examined games, most of the examples have models similar to those described in the SNA than those described in the ANT. This may be due to the ANT descriptions requiring a greater focus on the dynamics of social networks than the SNA, but this implies that an ANT-based approach could be more suitable for introducing more simulation into the social networks of NPCs.

Future Work

The gameplay design patterns identified above are not presented in such a detail as in the original collection [9]. This remains as a future work mainly for two reasons: 1) a desire to include more case studies in the paper required to reduce the details, and 2) more comprehensive studies of each individual pattern, including design experiments, is needed to describe aspects such as "implications of using a pattern" in detail. In addition, many more case studies should be added, with the *Sims* [35] or Japanese dating sim games as possible candidates.

Massively multiplayer games were excluded as player relations typically have more impact on the game experience of those games

than character relations. There is, however, no reason to believe that the identified gameplay design patterns could not be applied to these games to strengthen the social network of the characters. In fact, some of the applications helping player guilds organize themselves in *World of Warcraft* [10] have been describe having the potential to "become powerful social actors" in the right contexts [43]. Furthermore, combining the functionality of such applications and NPCs could provide systems that could, like human players, participate in both social networks. A precursor of this phenomenon can be found in conversational agents developed for MUDs (e.g., Julia [46]), which was designed to support social networks through keeping track of player presences and passing messages [21]. Thus, a possible design challenge for creating social NPCs in massively multiplayer games may be to make them into functional guild members.

CONCLUSIONS

In this paper, we have described gameplay design patterns that offer design possibilities in games regarding social interactions between NPCs. The patterns have been identified from games through the lenses of scientific models of believable characters and social networks, and shown how these patterns provide new gameplay possibilities through hypothetical redesigns of the examined games. The patterns indicate that games are modeled more after the structure-oriented social interaction analysis than interaction-oriented actor-network theory. Therefore, looking at the latter could provide new avenues for novel gameplay designs.

Many new patterns identified seem to depend on the patterns we have presented while focusing non-player characters. This points towards a requirement, besides that of narrative believability, that both social conflicts and individual structures of a character must be believable in order for the gameplay experience regarding characters to be believable as a whole.

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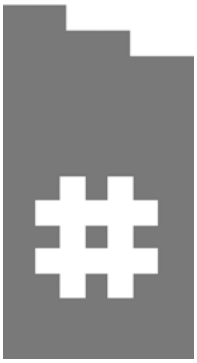
APPENDIX: GAMEPLAY DESIGN PATTERNS INTRODUCED

Name	Description
Actions Have Social Consequences	Action by s a character influence on how others perceive and how they act towards the character.
Binding Promises	A binding agreement that is either a a goal (failure to keep a promise is penalized) or a rule (being impossible to break after commitment).
Brokering	Enabling interaction between to not directly connected actors in a social network by acting as an intermediate.
Competing for Attention	The competition between several characters to get attention of one character.
Context Dependent Reaction	NPC reacts to events and objects (including other characters) depends on the context (space, other objects in that space, and past events) in which character is.
Eavesdropping	A possibility to gain information through listening other characters talking.
Either You are with Me or against Me	A demand for a support where disagreeing threatens rejection from a network.
False Accusations	Untrue statements that can be made to affect the social network.
Favor	The promise of a future action against a Fraction one is member of due to social relations to someone not belonging to that Fraction.
Faction	A specific social network where membership is defined by what actions are allowed, disallowed, and required.
Gain Allies	The goal to add new members to a social network defined as an alliance.
Gossip	Two characters passing information between each other mainly for informing a player about various things. The passed information does not have direct influence to gameplay.
Guide and Protect	A character needs to guide another character from place A to place B and protect that character during the journey.
Hierarchical Faction	A group that have hierarchical power structure, e.g., a clan, family, or police

Name	Description
Information Passing	The passing, from a character to another, of information having influence on the gameplay.
Internal Conflict	Having a set of desirable goals where progress in one typically makes others more difficult.
Internal Rivalry	Being an enemy with a character within the same fraction
Linked Destinies	Two or more characters share the same persistent goal.
Loyalty	The continued goal of being part of a social network.
Maintaining Lies	The continuous goal of maintaining a condition in the social network created through a lie.
Match-Making	The goal of creating a relation between two characters.
Memory of Important Events	NPC keeps track of events that have impact to it and the event influence its behavior.
My Enemy's Enemy is my Friend	A common enemy aligns two characters with each other.
Others fortune affects own Mood	Noticed events affecting parts of one's social network cause secondary effects on oneself.
Outcast	A character that is thrown out from a group so that the group members, e.g., ignore or attack the outcast character if they meet.
Outspoken Support	Explicit declaration to support another actor with future actions.
Requesting Support	Being able to ask an actor in one's social network for support based upon one's relation.
Social Gatekeeper	The arbiter of membership for a specific social network.
Social Maintenance	Perform actions to redefine and refine the relation to a group.
Social Norm	A rule; breaking the rule will influence behavior of NPCs like changing attitude to more negative towards breaker of the rule.
Traitor	Traitor requires pretending to belong to a fraction while acting against it.



ARTICLE 5

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LIES AND SEDUCTION

Petri Lankoski & Tommi Horttana

ABSTRACT

Lies and Seductions is a computer game in which a player controls Abby, a character on a wager to seduce a rock star who has promised to stay a virgin until marriage. The game is loosely based on the story of *Les Liaisons dangereuses* (Dangerous Liaisons). The game is a design experiment exploring how to use social relations, seduction, and tragedy as meaningful gameplay content.

Keywords: computer game, social interaction, seduction.

INTRODUCTION

Lies and Seductions[5] is a 3D computer game about seduction, lies, betrayal, and tragedy. The game is built using Unity[6] game development tool. The gameplay focuses on social interaction with non-player characters (NPCs). Information and dirty little secrets are gathered through discussion, gossip and eavesdropping to be able to navigate a social network to the heart of a rock star. The game draws from the novel *Les Liaisons dangereuses* (Dangerous Liaisons) by Pierre Choderlos de Laclos (first published in 1782) and its film adaptations *Dangerous Liaisons, Cruel Intentions,* and *Untold Scandal*.

With some liberties, we took the main characters and their relations, as a starting point for our game. The main challenge in the game design has been to turn the characters, their relations, and, especially, the main conflict into gameplay.

The main conflict we used in the *Lies and Seduction* is adapted from *Dangerous Liaisons*. Marquise de Merteuil and Vicomte de Valmont are decadent nobles and ex-lovers. De Valmont is a skilled womanizer who has set his eyes on the beautiful, married, and chaste Madame de Tourvel. The marquise makes a promise to have sex with de Valmont if he succeeds to seduce de Tourvel. The story of *Dangerous Liaisons* contains another seduction assignment for de Valmont, but we did not use it in the game.

Lies and Seductions game is a design experiment on character-driven game design. Gameplay design patterns "are semiformal interdependent descriptions of commonly reoccurring parts of the design of a game that concerns gameplay."[1] In the design of NPCs, the social networks and conflicts we have used are found in several patterns described by Lankoski and Björk.[3], [4].

CHARACTERS AND GAMEPLAY IN LIES AND SEDUCTIONS

The player character (PC) in *Lies and Seductions* is Abby (the character's counterpart in the *Dangerous Liaisons* is de Valmont). Abby and Becca (de Merteuil) are on a cruise. They make a bet: if before the cruise ends, Abby gets to seduce Chris (de Tourvel), the singer of a rock band, Becca sleeps with Abby. Otherwise, Abby lets Becca humiliate her publicly. The challenge is that Chris has publicly promised to stay virgin until marriage and has, so far, kept his word. We use a cut-scene to introduce the bet. Chris is traveling with his two friends, Emma and Ed. Ed is the bass player and songwriter in Chris's band. Another noteworthy character is rich aristocrat Lord James who wants to have sex with Abby. These characters serve as a starting point of the gameplay design.

The main goal in the game is to seduce Chris before the deadline. To complicate things, this is not possible directly, as Chris initially refuses to engage in longer conversations with Abby. A Player needs to convince one of Chris's friends to help. In this way there are two goals that regulate advancement (on regulating goals, see, Lankoski [2]); one of these goals needs to be accomplished before one can successfully reach the main goal of the game.

The above goal structure, as such, would create a rather static game structure. To make things more dynamic, we use a gameplay design patterned after *Actions Have Social Consequences* (see, Lankoski and Björk [4]). This means that Abby's actions will shape how a non-player character feels about Abby. For example, if the player guides Abby to kiss some other character, and Chris witnesses this, Chris will have a negative impression on Abby. This, consequently, will make seducing Chris more difficult. The player's performance in the minigame, for example in a dance mini game (Figure 1), can also change the impressions of NPCs.

Design-wise, this is implemented using an impression system, in which certain actions set an impression in an NPC's memory. In the

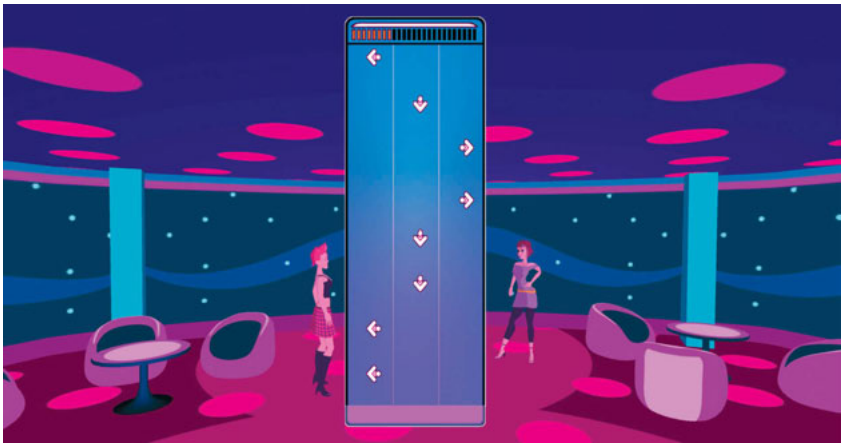

Figure 1. Dance minigame.

Figure 2. A gameplay screen with dialogue.

above example, the impression "Slutty" is adjusted in Chris's memory. This, along with other impressions, affects Chris's overall attitude to Abby (meaning, in the context of the game, his willingness to have sex with her). How each impression affects each NPC's attitude depends on their personality. For example, while Chris dislikes sluttiness, some other characters find that enticing. Using the impression system, it is also possible to add some level of *Memory of Important Events* (see, Lankoski and Björk [4]) for NPCs. Impressions can also be used to trigger *Emotional Attachment* (see, Lankoski and Björk [3]), which means that an NPC has and shows emotional reactions to certain events in the game.

Storing the impressions separately, instead of simply adjusting a single attitude stat for each NPC, allows the NPCs to act on individual impressions (for example, mention them in dialogue). More interestingly perhaps, it also allows them to share their impressions about Abby through gossip. This gossiping is *Information Passing* (c.f., Lankoski and Björk [4]) between NPCs, and this gossiping influences gameplay.

Conversations with NPCs have an important role in the game. We use prewritten dialogue trees, in which the availability of branches are based on the current impressions of an NPC. Impressions are used to create *Contextualized Conversational Responses* (see, Lankoski and Björk [3]). In addition, choices made by players during a conversation can change impressions. The discussion with an NPC is shown in figure 2 above. For writing the dialogue, we have built an editor that can also be used to simulate dialogues with impressions (see figure 3).

In conclusion, *Lies and Seductions* is a game in which we explore ways to bring some structures of drama, tragedy, and social interaction to the game. Design-wise, we have been interested in testing various ways of integrating scriptwriting and gameplay design seamlessly.

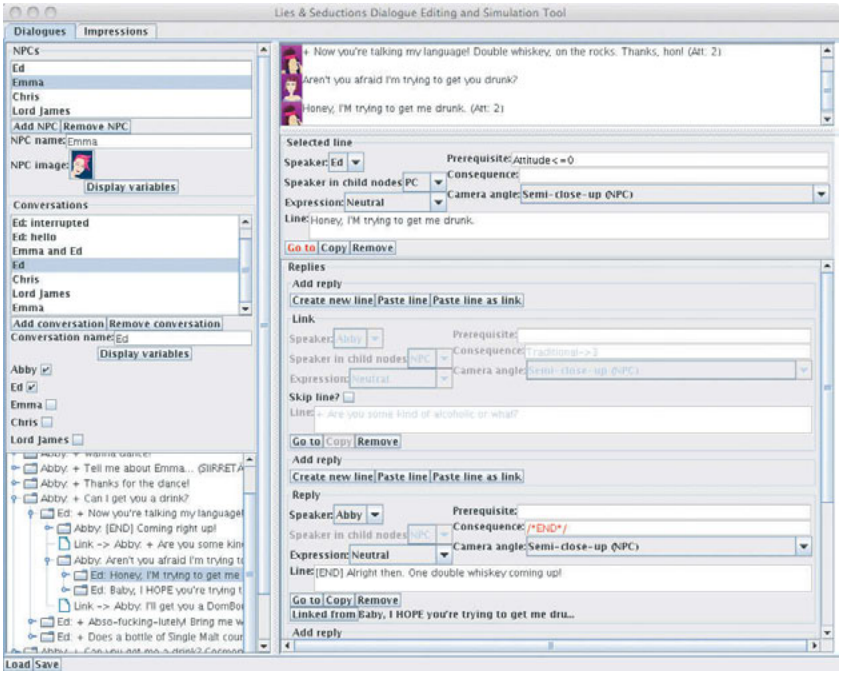

Figure 3. Our dialogue editor and simulator.

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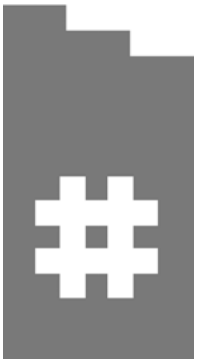

ARTICLE 6

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CHARACTER-DRIVEN GAME DESIGN: CHARACTERS, CONFLICT, AND GAMEPLAY

Petri Lankoski & Staffan Björk

ABSTRACT

Contemporary computer and video games utilize characters in large extent. However, game research literature says only little about how to design gameplay so that it reflects characters' personality; mainly focusing on the narration and graphical presentation of the characters. This paper presents a character-driven game design method, which uses ideas from dramatic character design to include gameplay into the design process. Based upon previous work on NPC design and a new analysis, several design choices regarding gameplay are identified. These choices are described as gameplay design patterns and related to how specific features in a character design can support gameplay. In conjunction with the patterns, the concepts of recognition, alliance, and alignment are used to introduce the method and provide examples. The paper concludes with a discussion on how the method can affect the overall gameplay in games.

Categories and Subject Descriptors: K.8.0 [**Personal Computing**]: General – *Games*.

General Terms: Design, Human Factors.

Keywords: Gameplay design, game design, player character, non-player character.

INTRODUCTION

Characters are utilized in many, if not in the most, popular, contemporary computer, and there is empirical evidence that characters are important for playing experience [10,26]. However, the existing game design literature discussing game characters has focuses mainly on visual design storytelling or narrational principals of character design [2, 11, 14, 17, 27, 36].

Notably, an important way to affect the game experience is through designing gameplay, which has been defined as "the structures of player interaction with the game system and with the other players in the game." [5] The relation between game characters and gameplay design, in the game design literature mentioned above, can, at most, be said to be discussed implicitly given when the method was developed. Since not all games have characters but it is difficult to imagine games without gameplay, the design of the latter can be said to be more generally

applicable for game design. This, however, gives no cause to believe that there is any fundamental conflict between two types of design, although surprisingly little research on the intersection between these has been reported.

Gameplay design patterns (see Björk and Holopainen [5]) have been used in our previous work on non-player character design [20], social networks, and conflicts [21] to describe choices regarding gameplay. This paper builds on those works; therefore, gameplay design patterns are also used in this work in conjunction with other conceptual tools. *Gameplay design patterns* "are semiformal interdependent descriptions of commonly reoccurring parts of the design of a game that concern gameplay" [5] that support but design and analytical work. Björk and Holopainen [5] model for a pattern consists of a name, definition, general description with game examples, description of using the pattern, description of implications of using the pattern, description of relation to other patterns, and references to other work that relate to the pattern. It is important to note that design patterns are intended to function as part of a larger design language; using them does not require a specific design methodology or choice of aesthetics. Although they may, like any concepts, have associated connotations and biases their principle role is to help chart possible design spaces through providing specific point of design choices. Gameplay design patterns are marked by being in capitalized italics (and should be distinguishable from games by context). Due to space considerations, no full descriptions of patterns are given; existing patterns are referenced to and new patterns can be understood as concepts or game mechanics.

The paper is divided into five parts. First, we describe a general method for character and conflict design. Second, we consider how previous work on designing believable NPCs[1] and social networks pertain to designing social conflicts. Third, we use all the observations so far to make general conclusions on how to design PCs and social networks and conflicts in which the PC is integral part. The concepts of *recognition, alignment* and *alliance* are introduced in order to pinpoint junctures between gameplay design and character design. Fourth, we propose a model to support character design by iterating between the different foci. Building on models and game analysis, the main part of the paper focuses upon PCs and the iterative character design model. Last, we give an example of using the presented method.

1 We use the abbreviation PC and NPC throughout the paper for player character and non-playing character respectively.

GENERAL ASPECTS OF CHARACTER DESIGN

Egri [9] describes a character as a sum of physiological, sociological, and psychological qualities. Based upon this he describe the *bone structure* of a character, a checklist of various aspects of the character that will influence *behavior* of the character. The bone structure is as follows:

— Physiology (e.g., sex, age, height, weight, appearance, distinct,

and physique);
- Sociology (e.g., occupation, education, family life, friends, enemies, and hobbies);
- Psychology (e.g., moral standards, goals temperament, obsessions, intelligence).

To give an example, a very short character will use different means to get his hat on a hat rack than a tall one (see Egri [9]). The *bone structure* is only a tool for design. The character description made using the checklist does not transfer directly to a game; features that convey the bone structure of the character to players need to be designed.

According to Egri, each character has their unique ways to react to an event and behave in a given situation. As Egri emphasizes, the dimensions of the bone structure are not disconnected, but qualities in another category can influence what kind of qualities are possible or believable in the other categories; every aspect of the character should be dealt with light of the character's other aspects [9]. Also, Egri notes that a writer might need more detailed description of a character than what gets into a play. The principals of the character design as presented by Egri is not tied to any particular form; the method has been applied to film writing [3] and to game design [17,36], but, as noted above, the question how gameplay and character design relate is not addresses in detail.

We have earlier shown that analyzing games using the theories of social network analysis (see, Wasserman & Faust [43]) and interaction-oriented actor-network theory (see, Latour [23]) can identify gameplay design patterns that expand the possible design space for games. Of the patterns identified *Social Gatekeeper*, *Internal Conflict, Faction, Social Norm*, and *Social Maintenance* merit note since they provide means to translate a social conflict to gameplay [21]. A conflict can arise from the incompatible goals of a player character. This *Internal Conflict* requires that if one goal of the character is reached another is rendered impossible. The failed goal should also have consequences in relation to gameplay, such as exclusion from a *Faction* (because of the action of the character violates the *Social Norm* of the *Faction)* or change in the *Emotional Attachment* of a NPC. Joining to Faction can require support of a NPC that function as a *Social Gatekeeper*.

Notably, social networks behave differently whether the PC is a pivotal character in it or not. The first type of network will break down if the player does not engage it, i.e., if *Social Maintenance* is required and not performed. The second type of network can be stable with or without the player activity. This implies that when the PC is pivotal character, the gameplay can be built on maintaining the network. On the other hand, social networks in which PC is not pivotal can be used to structuring gameplay, for example, by using patterns *Social Norm* and *Moral Code*. The network (as a *Faction*) provides punishment mechanics if the player chooses to act against the *Faction* making the character an

Outcast or preventing access of resources of the *Faction*.

In Egri's model, the conflict arises from the characters that are in opposition. Their goals are incompatible, and the characters are not willing to give up their goals. The conflict in the game requires, then, that the NPCs have their *Own Agenda* (see, Lankoski and Björk [20]), that the actions of a NPC are driven by its goals. It some cases, NPCs need to have *Goal-Driven Personal Development* (see, Lankoski and Björk [20]), that they can update their goals when existing goals are completed or blocked.

A believable NPC does have *Emotional Attachment* (see, Lankoski and Björk [20]) which means that the character expresses emotional relation to specific type of game phenomenon such as affection, anger, or fear toward other characters or events. The reactions of the believable NPC are also context depended, which leads to the pattern *Context Dependent Reactions* (see, Lankoski and Björk [21]). This means that, for example, if the NPC gets angry it might not start a fight if a police is near by. Moreover, each character, as argued by Egri [9], reacts to events in its personal way. This can be described by a new pattern *Trait Regulated Behavior*, meaning that the character dimensions regulate and modify the behavior.

CHARACTER ENGAGEMENT

In what follows we discuss about a model of character engagement proposed by Murray Smith [37], which has been used as a base to design model. The model has been refined to be suitable for games [18]. While we present the engagement model, we also link it to games and gameplay using examples of various games.

Recognition

Following Murray Smith [37], we use the term *recognition* to refer to process of constructing character. Recognition depends on features such as: perceivable traits of the character (body, face, voice); descriptions of the character (e.g., name, title, profession); actions of the character; and reactions of other character toward the given character.

In case of NPCs, game designers can control all above-mentioned aspects, including actions, of the character. However, PCs in games differ from the NPCs in an important way: a player always (in some extent) controls a PC. Therefore, and somewhat paradoxically the PC as character is seen irrelevant to gameplay and the player (e.g., Aarseth [1]), since, as argument goes, different presentation of the character does not make one play differently. However, character is more than presentation, as Lankoski, Ekman, and Heliö [22] argue. They propose that the recognition of a PC can be guided, in a large extent, by regulating players' actions, and offer the following palette:

- providing *goals;*
- providing *possible actions* (including making actions impossible, and making some choices hard or easy);
- defining *predefined functions* such as voice over narration triggered by event, attack movement as a feedback to the players choice;
- *cut-scenes* and *scripted events*.

From the design point of view, the design of possible actions and predefined functions are beneficial to connect with each other; in what follows, predefined functions are mainly considered as a feedback to the player's choices. This highlights aspects of gameplay, but neglects, for example cut-scenes, but is motivated by the fact that cut-scene design and their function in games are studied elsewhere in detail (e.g., Dansky [8] and Klevjer [16]). It should be noted that from the perspective of translating character traits to gameplay, the same principles apply whether a character is created by the game designers or players (within framework offered by the game designers).

Choices and feedback, i.e., how the character executes the command is related to recognition and has an impact on the gameplay and character interpretation: In *Tomb Raider: The Angel of Darkness* [40] a player is required to perform just on time button push to make Lara Croft, the PC, performed necessary acrobatic maneuvers; since one typically fails quite often this makes Lara Croft seem clumsy instead of agile and physically able adventuress. On the other hand, the PC, Altaïr, in *Assassin's Creed* [41] performs jumps in right moment and jumps have right length, and the player's duty is to plan and make decision on the route of the character; choices in the route can lead to a jump to the death, but the most of the time character performs as a very skilled athlete. To give an another example, the strength of Hulk in *Hulk* [31] can be seen in possible actions and predefined functions: buildings can be damaged with bare hands and cars can used as weapons.

It is important to note that the all aspects of the PC's personality need not be fixed. It might not even be possible to fix all the traits because in games the player can make choices that have impact on the personality of the character. On the other hand, designers are always fixing some traits of the PC when they define the game system (e.g., by setting up the goals). As a general rule, the more choices that are given to the player, the fewer traits will be fixed. Some games even let players create their characters. This can be described as the new gameplay design pattern *Player-Designed Character*, i.e. that the character has influence of the design of a character, and is present in *The Elders Scrolls IV: Oblivion* [4] and to a lesser degree in *Deus Ex* [13] and *The Witcher* [7]. Conversely, the PC in these games can be consider to be more fixed if the character is evaluated only in the terms of gameplay; the player sets up the many traits of the character in character creation, and the traits set up then fixes many character traits. One should be aware that

no character is completely fixed, not even literature characters such as Anna Karenina, as a character are always interpreted from narration or perceived qualities. On the other hand, as argued above, the limits and possibilities the game offers have relation to character recognition. Hence, the character cannot be totally open.

As argued above, the player character design can be seen as designing action possibilities for the character based on character and conflict sketch that are important for that conflict. Importantly, also making some action possibilities impossible is import part of design, e.g., a pacifist should have different action possibilities to reach a goal that a bully. This said, it is also important that players do not perceive these limitations ungrounded. Moreover, how the character executes the choices made by is important in gameplay. To continue the example in blatant way, the pacifist might be slow to react to commands at fight and have ineffective attacks, whereas the bully executes attack straightforwardly and the attacks are effective (a more elegant solution might be letting the pacifist to dodge fight by talking oneself out of the situation).

Alignment

The term *alignment*, first described in Smith's theory on film [37], refers to how the characters and player are related in terms of control and access to information that enables *recognition*. Besides how a character is controlled, *alignment* relates to what and kind of access is offered to a character's thoughts, affects, and actions. The access can be very minimal and provided from the first person point of view. An example of this is *Half-Life* [42]. In the game, players do have very little access to characters thoughts and feelings. Implied goals give some information about the character. Mostly the game uses the reactions toward the player character and actions of NPCs to feed information about the player character. The *Thief Deadly Shadows* [12] extends how the information is on the character is given to players. The access is still very minimalist: The game utilizes voice over narration triggered by certain events; the role of voice over narration is, in addition to feed information to recognition, is to give hints to players how to play. Short cutscenes are also used. Mainly the character and gameplay is structure using explicated goals.

Character goals can be stated explicitly or implicitly (see Lankoski [19]). One game that uses explicit goals is the *Thief Deadly Shadows* [12], in which goals are listed (and players can consult the list when they please), and the goal list shows also if the goal has been reached or not. On the other hand, games, such as *Ico* [38], use more implicit goals: the player is not given direct access to any goals of the game. In *Ico*, goals are not explicated to the player (with the sole expectation of escaping from the castle, which is stated in the user manual), but enforced by the game system: for example, a failure to protect Yorda, the main NPC in the game, leads to game being over.

Part of a character design is defining its social relations. Advancing in the social groups in the game world provides one avenue for achieving alignment based upon this, and is possible in games such as *Elders Scrolls IV: Oblivion* [4], *Canis Canem Edit* (aka *Bully)* [33], and *Fable* [24]. The pattern *Character Social Status* encapsulates this characteristic of a game, but should not to be confused with the pattern *Social Status* (see, Björk and Holopainen [5]) which deals with players and not characters. Uses of the pattern can be related to *Progress Indicators* [5] but can require additional *Social Maintenance*, impose a stricter *Social Norm* and cause *Internal Conflict*.

In relation to progression structure, such as goal structure, a game *alignment* can be described as patterns, e.g., *Detective Structure* and *Melodramatic Structure.* These patterns can also be combined. The patterns can be found in many already available games, and a creator of a game can assume that the assumed player will be familiar with them and thereby have a preconception of what the experience of playing the game will be. In *Detective Structure* the player is controlling a single character, and the players' information restricted to the player character, and examples of this include *Thief Deadly Shadows* [12], *Deus Ex* [13], *Half-Life* [42], and *The Elders Scrolls IV: Oblivion* [4]. In *Melodramatic Structure* the players' are controlling more than one character and they know more than any single character (see, Lankoski [18] and Smith [37]) *Fahrenheit* [30] exemplifies *Melodramatic Structure* through letting players control three characters, one in time, depending on what goals have been reached.

Notably, a game can allow players to influence what kind of person PC is, which proposes challenges to alignment design. Games use patterns of *Player Constructed Worlds*, *Planned Character Development* (see, Björk and Holopainen [5]), and *Character Defining Actions* to enable player to define PC. Actions performed by characters define how their skills and abilities change, leaving much of the PC design to the player during gameplay. This functionality is present in many roleplaying games, e.g., *The Elders Scrolls IV: Oblivion* [4], *Deus Ex* [13], and *Fable* [24] and in some action games, e.g., *Canis Canem Edit* (aka *Bully)* [33]. Another way for players to design their character is to voluntarily not use available actions and advantages which can be codified as the new gameplay design pattern, *Code of Honor*, restricting behavior in the game due to the character designer (whether it is a player or game designer) choosing the moral view of the PC. This is one part of *Roleplaying* (see Björk and Holopainen [5]). Examples of player interest in this include *Fallout 2* [6] for which the Wikipedia [44] entry discusses whether it is possible to complete the game without killing any NPCs (or killing *all*), showing that exploring the design space of PCs is deemed one of the noteworthy features of the game. Another example in making self-imposed restrictions can be found in the use of rule-enforced advantages and disadvantages in *GURPS* [15] and insanity rules in *Call of Cthulhu* [28]). That these are tabletop roleplaying

games show that the concept is not limited to computer-based games. However, when games provide game mechanics for limiting characters this can lead to the *Enforced Character Behavior* pattern, that the game takes control over the character to maintain the design personality. This pattern, which has a clear relation to *Cut Scenes,* can challenge or support *Roleplaying* depending on how consistently the character design is transferred to game.

An important part of designing *aligment* is to structure gameplay and different parts of narration to support each other. In this designers need to consider what aspects of the character are fixed in gameplay and narration, and trying to minimize the potential conflicts. This means that if designers want to give players construct some aspects of the character in gameplay, these aspects should not be later fixed in narration, as there is a potential conflict there (see above example of a pacifist character and possible conflict between traits proposed by different quest, i.e., goal structures in *The Elder Scrolls IV: Oblivion* [4]).

Allegiance

Allegiance is about how the players evaluate a character; to be allied with a character, the players typically need to perceive the PC having desirable or preferable positive traits or qualities (such as beautiful, skilled, similar moral or ethical values). The positive traits are relational to the standards the game set via the other characters. [18, 37] Notable techniques that can be used to prompt positive evaluation of the character are as follows:

- physical beauty (beauty relates to symmetry, v-shaped body of male, hourglass body of female) [32];
- expressions of affection or fear [37];
- moral evaluation in relation to standards set in game world (i.e., character needs to have morally better than other characters) [37];
- via gameplay (we return to this below).

For sympathy the player does not need to evaluate the character positively in every aspects, but find something positive. *Allegiance* is not only relevant in relation to a PC, but some games might require strong *allegiance* with a NPC, not the PC. An example of such a game is *Ico* [38], in which the player needs to find Yorda, NPCs that needs to be protected, sympatric in order to engage the game.

In games, design of controls, as the perception if controls have two-folded role: Hard controls can make the game unplayable. It is easier to evaluate easily controllable and, thus, able character positively (see above the comparison of *Tomb Raider: The Angel of Darkness* [40] and *Assassin's Creed* [41]). Related patter, *Character Defining Actions*, makes possible to shape PC within gameplay: skills used within gameplay will increase making using them later on more favorable. The games using

Character Defining Actions pattern leaves much of the PC design to the player by offering a framework within which the player needs make design choice in order to be able to play. This functionality is present in most role-playing games (e.g., *Deus Ex* [13] and *Fable* [24]). The pattern can be used to strengthen allegiance as it enables players to choose a mode of play they prefer.

Another relating strategy to create allegiance is exemplified in *The Witcher* [7]. In this game the player takes on the role of Geralt of Rivia, who makes a living as a witch hunter. The PC has amnesia in the beginning of the game. This design has been used more or less explicitly in many other games; MobyGames lists 49 games as being amnesia-themed, i.e., having it as the primary game plot. A similar plot device, simply not explaining the back story of the PC (the pattern has also been used in, for example, *The Elder Scrolls IV: Oblivion* [4]. Having a PC with amnesia fixes the personality and backstory less. This abstraction of the PC is, again, a strategy for making players more easily sympathize with the PC. The design choice to have a PC without a backstory, either by amnesia or simply omission, can be described as the gameplay pattern *Tabula Rasa*: the PC's personality is formed by the player during gameplay, so that the character can be differ each time the game is played—although the thematic aspects and the game system set limitations to how different the personalities can be.

Successful *allegiance* makes players feel that what they are doing in the game is the right course of action since they buy into the goals of the PCs. But on could ask, if the behavior of the character is non-problematic to the player, does the character become an unnecessary construct for understanding the gameplay and the story? Interesting choices can still be available but are then either system related or related to moral questions that can make players notice or question aspects of themselves. Typically sympathy with the player character requires that the player evaluate the character having positive or desirable qualities in relation to standards set by other character.

Philip Zimbardo describes an interesting effect, "blind obedience of authority" based on psychological experiments, of rule systems that relates to allegiance: "[Rules] work by externalizing regulations, by establishing what is necessary, acceptable, and rewarded and what is unacceptable and therefore punished. Over time, rules come to have an arbitrary life of their own and the force of legal authority even when they are no longer relevant, are vague, or change with the whims of the enforcers." [45]. Deciding on following the rules may create a tension between what a player's private beliefs are and his or her public behavior. The typical reaction to this conflict, called cognitive dissonance, is to justify the actions by rationalizing them. [45][2] Although Zimbardo's experiments are not games, the mechanics game systems work. The *Ultima VI* [29] makes use of this kind of approach to modify *allegiance* setup; the game allies the player in the beginning with the PC, but later

2 Zimbardo [45] points out that taking on a role defined by such rules and then internally striving to motivate them may make the role become real, he also points out that all test subjects quickly returned to their normal behavior.

on prompts antipathy to the PC by bringing attention to questions of racial tolerance. In the game the player is given the quest to end a threat from the race of gargoyles that initially are understood as strange creatures taking hostile actions against the PC and the PC's home for unknown motives. As gameplay progresses one learns about the gargoyle culture, and to understand even their language which is presented as another language in the game interface, only to realize that from their perspective they have just cause for their behavior and that the PC's actions have been prophesized as those by a "False Prophet" that will destroy their entire civilization.

Similar structure is used in *Silent Hill 3* [39]. In the beginning, the game tries to ensure that the player sympathizes with Heather, the player character. Near the end, one NPC (in a cut-scene) tells Heather that the monsters she has been killing are real people. This is used to create antipathy with PC and players choices in order to amplify horror atmosphere. Use of cut-scene in *Silent Hill* can be seen as an example *Enforced Character Behavior* pattern, in which a single piece of input from the player can set in motion a sequence of PC actions where the player has time to reconsider what to do but cannot interrupt the action (another example of the pattern *Enforced Character Behavior* would be jumps of Altaïr in *Assassin's Creed* [41]).

Summarizing, for players to have emotional attachment their PCs they need to have to make meaningful choices; here implying that the choice has consequences which have an impact to gameplay or the moral evaluation of the action. Specifically, moral dilemmas working only the representational level are not usually effective dilemmas, as the player does not need to live with the consequences of the choice. For players to keep the interest in the choices they need to not know when the effect of their choices will be revealed but they must have the perception that the will be revealed. In another phrasing, if the choices do not affect the character or game stats they are not interesting but the effects cannot be immediately revealed.

ITERATIVE GAMEPLAY DESIGN

With the explorations of character and gameplay design finished, the results necessary exist to propose an iterative character-driven process that highlights aspects of social conflict. The proposed method is based upon Egri's original proposal [9] and changed and expanded to be applicable to games. A design needs to have focus and Egri suggests a *premise*, a proposition that the work tries to prove. In Romeo and Julia, according to Egri, the premise is "great love defies even death" [9].

Given a focus, the next part of design process is *orchestration*, which is about selecting (and creating) well-defined characters in opposition. The seed of a conflict is in the qualities of selected characters [9]. The bone structure approach to creating character provides a basis for this

given that the traits are selected to support the premise; in one sense this means focusing more at this stage on aspects of the characters' social network than their believability. The theme naturally influences the choices if already decided; otherwise the choice of character traits can prompt certain themes. The choice of trying to instantiate certain gameplay design patterns, for example, *Player-Designed Character*, may be necessary already at this stage since it can restrict the design choices available regarding character traits. Likewise, initial ideas for how to provide *alignment* with the player and character needs to be considered here. Overarching patterns such as *Detective Structure* and *Melodramatic Structure* can be identified as feasible candidates here since they provide frameworks for how conflicts play out, and the premise can provide enough information to support design decisions regarding this.

Given a first draft of the characters that can drive the premise, the next step is to operationalize the ambitions or goals of the designed characters. What players will be trying to achieve in the game and what means they can use in this? This requires designers to identify possible gameplay actions the PC supports and what task should be easy or hard to perform. In addition to listing *possible action and impossible actions*, designer can analyzing the characters through gameplay design patterns as shown in the Romeo and Juliet example. The identification of patterns such as *Internal Conflict*, *Social Maintenance*, *Code of Honor*, and *Character Social Status* provide states that want to change or maintain during gameplay and this can start as initial suggestions for goals and goal structures in the game. The suitable actions to try and achieve these goals form a basis for core gameplay activity and provide additional means of creating *alignment* with player and character. These goals also give first ideas to how the player can have a feeling of alliance with the character. This step may focus upon PCs, but identifying their range of actions and related patterns typically led to solidifying aspects of NPCs as well.

Given the initial NPC traits and intended player goals, points of conflict can be identified through analyzing how NPCs will intentionally or unintentionally cause conflict by resisting these goals. From a character narration point of view this requires ensuring that the NPCs social behavior is consistent and believable, which may require focus upon the patterns of *Own Agenda*, *Goal-Driven Personal Development*, *Emotional Attachment*, and *Context Dependent Reactions*. Sketching the responses of NPCs to PCs' actions and vice versa provide a framework to create a cause and effect mapping. By creating subsections in this mapping both a general narration structure and a gameplay partitioning (e.g., through *Levels*) can be created. This mapping can also inform about the feasibility or necessity of patterns such as *Emotional Attachment, Tabula Rasa* or *Character Defining Decisions* as well show where and if it is interesting to consider manipulating the player based upon their alliance to the character for purposes of narration and emotional impact.

After these steps are completed, a very basic structure of the gameplay and character design exists. To continue making the design more detailed, iterating can be started by beginning to add more detail to characters taking into account the additional information about what is required to make them socially believable. The added characterization can provide additional or refined goals for the player which in turn requires addition thought about how the actions of PCs and NPCs trigger other actions. Iterating in this fashion can continued until the wanted level of detail and complexity is achieved. New iteration can also take input from play testing with various types of play testers (c.f., Rouse [34] and Schuessler and Jackson [35]).

CASE: LIES AND SEDUCTIONS

Lies and Seductions[3] is a game designed using the methodology presented in this paper, and it used to illustrate the method. The game is inspired by a classical story *Les Liaisons dangereuses (Dangerous Liaisons)* by Pierre Choderlos de Laclos (first published in 1782). The designer took the main characters and their relations as a starting point. In the story Marquise de Merteuil and Vicomte de Valmont make a wager on if de Valmont can seduce beautiful and chaste Madame de Tourvel. In the following first the character and conflict design is described followed by how the gameplay design choices were influenced by these.

3 The game *Lies and Seductions* is designed and developed Petri Lankoski, Tommi Horttana, Niklas Gustafsson, Kimmo Karvinen, Reetakaisa Neittaanmäki, Linda Kronman, Anne Parkkali, Raisa Omaheimo, Mike Pohjola, and Jari Suominen.

Character and Conflict Design

Character and conflict design of the game went through many iterations, which we are not discussing in detail—only important choices are depicted. Designed team chose to inverse the roles in the conflict. The player character is Abby (counterpart is de Valmont) who makes a wager with her friend Becca (counterpart is Marquise de Merteuil) to seduce Chris (counterpart is Madame de Tourvel) the lead of a Christian rock back, publicly promised to stay virgin until marriage. Abby, Becca, and Chris and are on holyday cruise. Chris is traveling with Emma and Ed, the bass guitarist in Chris's band.

Emma and Ed were introduced as the designers wanted to complicate the conflict, and make it possible to give players more choices. Seducing Chris should be impossible without some help from his fiends, but getting Ed or Emma to help should not be straightforward either. Designers wanted to make Abby blackmail Ed or Emma. To help forming positive allegiance with Abby, Lord James was added to design. His main role is to lower moral standards of the game world.

The next step was to deepen the characters based on Egri's dimensions to fill these functions (Egri's dimensions were used in the design even before the following description, for the sake of simplicity this is not presented). For Emma and Ed, the designers needed sociological and psychological traits enabling blackmailing. They both like Chris

and want to be in good terms with him, so blackmailing is needed both to motivate their behavior and to give sub goals to the players. For Ed the design solution was to make him a gambler with alcoholic tendencies. Just before the cruise he has lost considerable sum of money in poker tournament, and is broke although he will not refuse to play if asked. The overall design choice that every character was meant to be seducible by Abby required Emma to be a lesbian (or bisexual). This was decided to be key to blackmailing Chris's sister Emma; as Chris is religious and not approves premarital sex, it was obvious extension that Chris thinks that sex between the same sexes is unnatural. Emma, again, knows that and is afraid what happens with their good relationship if Chris finds out that she is lesbian. This serves as a hook for blackmailing Emma.

To give depth to Ed, he was decided to be the songwriter of the band. Also, to make him even less stereotypical, the designers made him doctor of philosophy. As Lord James needs to set low moral standards, he needs some negative psychological traits: he is pushy, chauvinist, womanizer who likes to boast about his exploits. Chris, naturally, is a devoted Christian with high moral standards. To contrast this he was made to be charismatic rock star. Figure 1 shows concept art for the characters. The concept art was based on character descriptions.

Becca was only minimally designed, as it was not possible add her to the game due the lack of animator. She appears only in dialogue, intro, and end cut-scenes.

Abby is charismatic, social, extrovert single who is good with seducing men, but bad to keep up relationships. She is also bisexual. She likes clubbing and partying, and time to time, she enjoys playing poker with her girl friends. She an editor in fashion magazine, in which Becca is managing editor. To provide grounds for positive allegiance despite

Figure 1: Character concept art: Emma, Chris, Abby, Becca, Lord James, and Ed (from left to right).

the exploitive bet, she was made beautiful and, as noted above, Lord James was introduced to lower moral standards in the game.

Gameplay Design

Many aspects of Abby that relate to gameplay, is fixed in character design presented above.

The *goal* of Abby is to seduce Chris. As this is not possible without help of Emma or Ed, additional *goal* is, either, seduce Emma and blackmail her, or steal Ed's money in poker. This also means that the game utilizes *Social Gatekeeper* pattern.

Possible and impossible actions were designed by looking what actions should and need to be possible. Based on character and conflict description summarized above, following list of action was chosen:

- having conversations and flirting,
- proposing sex,
- blackmailing,
- dancing,
- playing poker,
- giving gifts,
- drinking (beer and drinks),
- eating,
- walking,
- eavesdropping,
- sitting.

Predefined functions of Abby were designed by an animator and a dialogue writer based on character descriptions and possible actions. Notably, all the choices made by animators and dialogue writer also define details of Abby. Actions possible by the other character was defined based on the possible actions of Abby, as they need to interact with Abby in the game. *Cut-scenes* are used as setting up the conflict and ending the game. Abby having sex with a NPC is presented in cut-scene as the designer did not want to add a gameplay mode for that. In addition, the blackmailing scene is presented as a cut-scene. This decision was made rather late. The change was needed because if Chris appears to witness the blackmail it would ruin Abby's chance to win the bet. Thus, to prevent failure just by bad luck, after the player chooses to blackmail Emma or Ed, a cut-scene is started.

The design was iterated using gameplay design pattern presented by us earlier [20,21]. This iteration introduced the idea of getting information about NPCs referencing by *Eavesdropping*. Moreover, some ideas that where implicitly in the character and conflict design were explicated as gameplay design. To give some examples: Pattern *Information Passing* made designers think that actions of Abby should not be di-

rectly available to all NPCs. Rather, they should transfer their opinions and knowledge to each other when they talk. The idea of Emma and Ed working as *Social Gatekeepers* was explicated it this phase. As the above-presented goal structure (blackmail Emma or Ed) can lead to very linear gameplay, patterns *Actions Have Social Consequences*, *Emotional Attachment,* and *Context Dependent Reactions* were used to counteract that. Chris's (and other NPCs) *Emotional Attachment* toward Abby changes based on Abby's actions, i.e. *Actions Have Social Consequences.* In addition there are designed to change based on characters *Emotional Attachment* toward Abby. *Context Depended Reactions* introduces variation, for example, can be used to create variation on how one can seduce Chris after getting Emma or Ed to help, as how the blackmail goal is reached has influence the game flow. Designed to be rather short game evolving around goal to seduce Chris, natural choice for alignment was the *Detective Structure,* as the *Melodramatic Structure* would easily give too much information about NPCs to the player.

CONCLUDING REMARKS

We do not suggest that the method presented above is the only method that should be used for game design. The designers should choose their method based on the design goals of the game. Our method is meant to highlight the potential that relations between PC–NPC and NPC–NPC have for designing gameplay. NPCs and their social networks is a tool that can be used to provide the sense of the game world as emotionally believable, and therefore to provide a basis for emotional attachment to the setting. Moreover, social networks and character-driven social conflict can provide alternatives for violent combat-driven gameplay.

Character design and logical connection between gameplay and representations are needed for certain kinds of effects, and the suggested model is intended to make this easier to design. However, for other effects or interpretations, one might need to ignore what is presented in this paper. For example, dream-likeness and surrealism requires inconsistencies in characters or in sequences of events [18]; *intentionally* breaking the design rules presented here may be needed so such effect.

Naturally, the method described is a simplification of how design processes really work. Creating a game consists of work in many other design fields, often simultaneously, which can affect each other and cause iterations to be restarted in various ways (see Björk and Lundgren [25] for a model of such multidisciplinary design work). However, we argue that having models for design processes help in initial planning and support on identifying problem sources and how to update plans for ongoing processes.

Concluding, the method described here offers game designers a process for creating games where the focus is on having a strong link

between gameplay the character design. It thus provides an alternative to existing methods and opens up for novel game designs. The concepts used, primarily *alliance* and *alignment*, provide a slightly finer level of detail when considering designs and the gameplay design patterns even more so. Together, these provide designers with tools are several different levels of granularity that can be used individually or together to support working on new games.

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Lies and Seduction concept art courtesy of Niklas Gustafsson.

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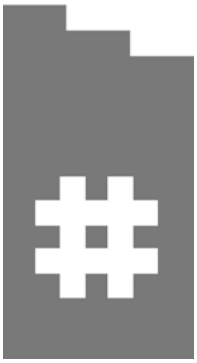

ABSTRACT

In this study I propose a design approach for *character-based games*. In order to develop a design method for character-based games, I look at how games guide players and the playing experience (especially the relationship between formal features and playing experience). This design approach has been used in the design of the game *Lies and Seductions*.

Research implies that people react to human-like entities (e.g., game characters) as if they were people, including empathizing with characters. I argue that *player characters* can be used to guide the playing experience by limiting player choices. In addition, the system can make some things easier or more difficult to perform. This means that when the game system promotes or denotes some choices, the system can fix the personality traits of the character. These techniques support certain kinds of interpretation of the *player character* and of the game.

In this study, I argue that the relationship between the game system and the representation of characters should be taken into account. I use formal analysis in conjunction with theories of cognitive science to distinguish designable features and trace the possible implications of using these features within the design.

As the main results I introduce a character engagement model and a design approach (that is grounded to the character engagement model) for character-based games that integrate insights from dramatic writing for theatre. The proposed design approach focuses on character-driven conflicts.

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Petri Lankoski has background in software engineering and new media. Before working at the University of Art and Design Helsinki and Aalto University, he has worked as a software designer at Nokia Networks and a researcher at the University of Tampere. His research focuses on experience and game design. His games include *The Footprints of Power* and *The Songs of North*. Lankoski has published on game design and roleplaying theory, as well as edited two books about experience design: *Ihminen, aika ja paikka* [Human, Place, and Time] (2001) and *Henkilökohtainen navigointi: periaatteita käyttöliittymien ja käyttökokemuksien suunnitteluun* [Personal Navigation: Principles for Designing User Interfaces and Experiences] (2002).

PHOTO: Inger Ekman

In the *Character-Driven Game Design*, Petri Lankoski presents a theory that illuminates how game characters contribute to shaping the playing experience. Based on this theory he provides design tools for character-based games which utilize methods and theories derived from dramatic writing and game research.

"The use of Lajos Egri's bone structure for a three dimensional-character and of Murray Smith's three levels of imaginative engagement with characters allows the candidate to expose the full complexity of the imaginary persons represented and controlled in a single-player game. What makes his design-center approach even more interesting is that gameplay is an integral part of it."
Bernard Perron, Associate Professor, Université de Montréal

"Lankoski does a great job laying out the theory of primary interest to him, and making the case for the need to tether character design to game design more tightly than has been the case in the past. Certainly, too, putting attention to social networks of characters and finding useful design patterns to guide this level of game design is also of great value, and underexplored in the field."
Katherine Isbister, Associate Professor, Polytechnic Institute of New York University

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