An Embodied Cognition Approach for Understanding Role-playing

Popular abstract - The article proposes that the theories of grounded cognition and embodiment can be utilized in explaining the role-playing experience. Embodied cognition theories assume that cognition is not only a feature of the brain, but the body as a whole and it is interaction with the environment it operates in. Grounded cognition proposes that an action, perceiving an action, and thinking about an action rely on the same processes. Moreover, knowledge is inseparably grounded to bodily states and modalities. Based on the grounded cognition theory and especially embodiment, we argue the character immersion and bleed are natural consequences on how the brain works. Also we illustrate how the operation of simulators explains some of the central features in the creation of fiction and it is similarities to our everyday experiences. In general, grounded cognition provides a rather simple explanation how fiction is experienced as in this theoretical framework action and thinking about an action largely utilize the same brain mechanics and so are phenomenally similar.

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1. INTRODUCTION

In this article we explore what it means to play a character and how the characters and fictive game world are constructed. Our focus is in role-playing including both table-top and live-action role-playing games. We look at the role-playing experience and aim to provide psychologically plausible account on the playing experience and its relations to the game rules and materials by introducing the concepts of embodiment and grounded cognition. Our premise is that characters and pretending to be a character is a central aspect in the role-playing (Lieberoth 2008; Rognli 2008; Montola 2008). In fact, we argue that characters in some form are a prerequisite for role-playing.

Some authors have seen *immersion* as a key concept of describing the role-playing experience. However, the definition or ideas of immersion vary between authors. Kim (2004) refers to immersive story, whereas Harviainen (2003) distinguishes three types of immersion: character immersion, narrative immersion and reality immersion. He sees that character immersion is "[t]he ability to 'become' a character, to assume its thought-patterns, ethics and personality." (Harviainen 2003). Pohjola (2004) defines immersion as follows: "Immersion is the player assuming the identity of the character by pretending to believe her identity only consists of the diegetic roles"[1]. Lappi (2007) writes that "Immersion means that a player takes temporarily things included in (her) imagined space for a part of everydayness." Castellani (2009) proposes similar idea when he writes that immersion is "two interconnected and interdependent phenomena, each giving rise to the other: the situation when a participant feels the same emotions as his or her character, and the situation when a participant assumes his or her character's personality." These all have a shared idea that immersion is a state where the fiction of

[1] Diegetic is a synonym to fictive.

the game, in some extent, takes over the playing experience.[2]

In terms of psychological experience, it is unlikely that the players are able to experience a situation in similar way as a character fictively experiences the situation; moreover, it is very unlikely that the emotions of a character would be identical to the player. For example, if a character faced Lovecraft's horrific Cthulhu, the character would go mad from fear, whereas the player would experience anxiety.[3] The same applies to the horror larps[4] that try to frighten the players in order to produce authentic experiences, as in *Ground Zero* (Jokinen & Virtanen 1998); however, it would be very strange that the fact that the players are larping would not influence the experience (c.f., Apter 2007, pp.13–35).

Some designers (e.g., We Åker Jeep 2010) and researchers (Montola 2011) use the concept of *bleed* instead of immersion. The We Åker Jeep design community describes "bleed" in the following way: "Bleed is experienced by a player when her thoughts [sic] and feelings are influenced by those of her character, or vice versa" (We Åker Jeep 2010). However, this account has an issue: the character does not exist as an independent entity[5] and, therefore, cannot have thoughts and feelings that would influence the player. This issue is related to the problem of how we can be touched by fiction (literature, films, and video games) and pity the fates of characters that do not exist (Radford 2004; Lamarque 2004; Tavinor 2009, pp. 130–142; Walton 1993, pp.240–258). Role-playing games are, obviously, different to literature, film, and video games, but these same questions are relevant if we want to understand the role-playing experience.

Immersion and bleed have been adopted in design and research vocabulary instead of *engrossment* used by Fine (1983) in *Shared Fantasy:*

"For the game to work as an aesthetic experience players must be willing to 'bracket' their 'natural' selves and enact a fantasy self. They must lose themselves to the game. This engrossment is not total or continuous, but it is what provides for the "fun" within the game." (Fine 2002, p.4)

Fine (1983) noted that role-playing requires a player to bracket their natural self and enact a fictional self, but performing as a character is not (and cannot be) total or continuous. Notably, the player might not always notice shifts from performing as character to performing as oneself. This is because the players use attitudes and solutions that are already learnt from previous experiences (e.g., ordinary life and other playing occasions) instead of playing as the character (Walton 1993, pp.138–187; Lankoski et al. 2004). This implies that the player is only able to act as a character part of the time. While Fine's account on the character-playing experience is plausible, his take does not explain engrossment from the psychological perceptive, but merely describes the phenomenon.

However, this account has an issue: the character does not exist as an independent entity and, therefore, cannot have thoughts and feelings that would influence the player.

From the point of view of psychology, the set of concepts reviewed above do not describe the playing experience adequately, so a more nuanced account of the playing experience is needed. Recent research in psychology (Damasio 1994; Grafton 2009; Niedenthal et al. 2005) and philosophy (Gallagher 2005; Noë 2009; Lakoff & Johnson 1999) suggests that knowledge and experience are embodied or grounded which means that they are fundamentally tied to bodily states and action possibilities (which are relational to the environment). In this article we take the psychological theories of embodiment (Damasio 1989; Barsalou et al. 2003; Niedenthal et al. 2005) as a starting point to look at role-playing. The theory proposes that action, perceived action, and described action are similar in terms of the brain functions while they are phenomenologically different. This will be discussed in more detail below.

The main goal of this article is to provide an overview of the grounded cognition approach and

[2] See Holter (2007) on the different definitions of immersion.

[3] This argument follows Carroll's (1990, pp.88–96) the critique of character identification in *Philosophy of horror: Or paradoxes of the heart*.

[4] Larp is acronym for live-action role-playing games.

[5] The character existence is relying on someone to imagine the character, think about it, describe it, or act as it.

argue that this approach can provide a psychologically plausible theory for understanding the role-playing experience and process. We do not intend to explain all aspect of role-playing, but aim to explain the earlier takes on role-playing that relate to the field of psychology or philosophy of fiction (namely character interpretation and pretence-play or make-believe) and popular concepts describing playing experience (namely immersion and bleed).

In this paper we will first go through the concept of embodiment (and grounded cognition theory) in order to introduce a psychologically plausible cognitive background theory of role-playing to which more conceptual level models could be connected. After this we take a look at theories drawing from psychology and philosophy of fiction in order to partly describe the phenomenon that we aim to explain using the theories of grounded cognition. What follow is a description of the character as a theoretical construct and the process of role-playing on a conceptual level. And finally, we will see how the concepts used to explain characters and role-playing in this paper and various role-playing phenomena can be explained by embodiment and grounded cognition.

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2. GROUNDED COGNITION AND EMBODIMENT

So-called grounding problem in philosophy is about such questions as "how do words get their meaning?" and "how concepts are connected to the things thy refer to?"—in grounded cognition theories embodiment is one answer to those questions. That is, embodiment is a way in which cognition can be grounded. The embodiment theory in general holds that cognition is determined not only by brain activity but by the whole bodies of organism and it's relation to environment it operates in (Damasio 1994, pp.223–244; Noë 2009, pp.64–65). For instance, food is something that a rat or human can eat and that nourish; or weapon is something that human can grip, swing and try to hurt others. In other words, the meaning of things is in tight connection to various action possibilities determined by the physical body in a physical environment. A simple brain in a jar would not be sufficient for humanlike cognition.

Grounded cognition is an alternative model of human cognition where all cognitive processing is in tight connection to modalities (ie. senses). In classical theories, higher cognitive functions are operated using amodal symbols that are somehow formed from sensory feedback. These symbols are then handled in the part of the brain that processes symbols. The brain is similar to a computer which operates using symbols. For example, when one perceives a dog, that perception is transformed to representational format where a dog is an animal with four legs and it barks (and so on). An example of such a theory is Fodor's Language of Thought (e.g., Fodor & Pylyshyn 1988) where mental operations use amodal symbol level representations. In grounded cognition, the knowledge is structurally and inseparably grounded in bodily states and modality-specific system, for example dog's barking is stored and processed in the auditory systems. In this line of thought, meaning is (in many cases) a relation between an organism and the environment. This means, for instance, that the ground and water are related to certain kinds of motor action possibilities and without these action possibilities there is no meaning for those. This meaning does not need to be conceptual: one does not need to have the words "ground" or "water" in order to know what the ground and water are. Naturally, abstract concepts are not directly tied to motor action possibilities in this way. However, Lakoff and Johnson (1999, pp. 60–73) argue that abstract concepts rely on sensorimotor categories via analogical and metaphorical relations to sensorimotor categories. Pragmatics, such as Peirce, has proposed similar idea how the action and meaning are connected. In 1878, Peirce (2012) argues that "[t]he essence of belief is the establishment of a habit; and different beliefs are distinguished by the different modes of action to which they give rise."

In this section, we offer a short review on studies on grounded cognition and supporting evidence. There are several studies indicating that higher cognitive functions such as language, emotions and conceptual thinking and motor functions are connected. For more extensive reviews, refer to Barsalou (2008), Niedenthal et al. (2005), and

Martin (Alex Martin 2007). Before this review, it is important to note that there is a relatively small body of empirical evidence supporting the classical amodal view and support is often theoretical (see, Barsalou et al. 2003). Moreover, amodal theories have problems explaining how or where concepts and non-conceptual content is stored in the brain (Barsalou 2008) or what kind of process turns sensory input into abstract amodal symbols (Niedenthal et al. 2005).

2.1 Review of evidence supporting grounded cognition

The empirical evidence strongly supports the grounded approach when the focus is in non-abstract reasoning. Different studies suggest that there is no singular memory system or storage but different types of object properties are stored in the different parts of the brain. Importantly, studies indicate that motor-based object properties are stored in the motor systems and sensory-based properties in the various sensory systems of the brain (see review in Martin 2007.) In various fMRI[6] studies showing pictures of various tools to participants it has been found that the recognition and naming of tools also activated cortical areas associated with motor functions (A. Martin et al. 1996; Chao & A. Martin 2000), suggesting that the motor system is involved in the processing of such images. Although, the interpretation of results in these types of studies has also been criticized, see for example Mahon and Caramazza (2008). In addition to the evidence from fMRI studies, experiments in psychology support the notion that motor actions are widely used in higher cognitive functions. A study found that cartoons were considered less funny when the smiling of participants was artificially prohibited by having them hold a pencil in their mouths (Strack et al. 1988). Studies have also shown that simple postures (flexed vs. extended arms) or movements (nodding vs. shaking of head) with positive or negative associations affect accordingly how stimuli are evaluated (J. T. Cacioppo et al. 1993; Wells & Petty 1980). These findings strongly suggest that cognitive tasks such as language and item recognition and emotional evaluation of various stimuli and motor functions are highly connected.

In 1990s researchers discovered the *mirror neuron system*[7] in the brain. The main feature of mirror neurons is that they activate when perceiving actions, thinking about action, and performing an action. It is argued that mirror neuron system is essential in understanding the actions and motor intentions of others (Rizzolatti & Craighero 2004; Rizzolatti & Sinigaglia 2010) as well as empathy (Decety & Jackson 2004).[8]

Mirror-neurons partly explain the mechanisms of how individuals imitate or mimic each other's bodily postures and facial expressions. The studies by Meltzoff and Moore (1995) confirm that imitation is inborn, as they show that infants (the oldest in one study was 72 hours and the youngest 42 minutes old) use successful facial imitation (pp. 49–51). The mimicry of facial expressions also leads to emotional contagion (Hess & Blairy 2001; Hatfield et al. 1993) between individuals; when perceiving facial expressions those expressions are mimicked which in turn cause emotions related to that expression to be felt. This is also the basis for empathy (Levenson & Ruef 1997). These phenomena strongly support the notion that motor functions, in this case facial muscles, are involved in interpretation of facial expressions and also in creation of emotions those expressions convey, and thus also support the theory of embodied cognition.

Overall, this short collection of studies indicates that motor functions are at least partly involved in higher cognitive functions. The strong form of the theory of embodied cognition assumes that the different systems are not sending messages to each other but (more or less inseparably) act as one system. Next, we will present simulators and

[6] fMRI (Functional magnetic resonance imaging) is a method to measure brain activity by measuring blood flow changes in the brain.

[7] Mirror neurons were originally discovered in macaque monkeys, but later also in the human brain (see, Rizzolatti & Craighero 2004).

[8] A critical account to mirror neuron theory is presented, for example, in Hickock (Hickok 2009). Albeit, Hickock critique misses the point when he writes "musically untrained people can recognize, say, saxophone playing even if they've never touched the instrument, just as one can recognize actions of non-conspecifics". Understanding saxophone playing, does not require that one *can* play saxophone, but merely being able to understand finger movement based on ones own motor action possibilities (and connect that to heard sounds). When one is trained saxophone player the understanding (naturally) changes when ones simulators have been updated (c.f., Rizzolatti & Sinigaglia 2010).

simulations, a model of cognition that is based on the premise of embodiment.

2.2 Perceptual symbols, simulators and simulations

When discussing cognitive theory of grounded cognition, the terms 'simulator' and 'simulation' are used in a very specific way that differs from the classic use in games and simulation research as in, for example, Crookall, Oxford & Saunders (1987). Here 'simulator' is roughly equivalent to 'concept' in meaning. We will shortly present how simulators are born and how they are used for simulations in grounded cognition.

Barsalou (1999) argues that cognition is a Perceptual Symbol System (PSS) and based on perceptual symbols, not amodal symbols. Perceptual symbols are modality-specific and stored in the modality-specific systems and are never converted into amodal symbols. These perceptual symbols are effectively created when perceiving something: that is, they are neural activation patterns in the modality-specific systems (e.g. auditory, visual, somatosensory, olfactory etc.). When interacting with the environment, some perceptual symbols are activated simultaneously and are soon linked together forming a simulator. Thus, a simulator for dog is a combination of perceptual symbols from different modalities (barking from auditory systems, hairiness from visual and somatosensory systems, and petting from the motor system). The same perceptual symbol for example hairiness can be a part of several simulators. (Barsalou 1999)

Barsalou (2003) explains that "[a] simulator is a distributed collection of modality-specific memories captured across a category's instances" (p. 88). According to Niedenthal et al., (2005) an entity can form simulators of different kinds of "objects (e.g., chairs), properties (e.g., red), people (e.g., politicians), emotional states (e.g., disgust), physiological states (e.g., hunger), actions (e.g., walking), events (e.g., dinner), settings (e.g., restaurants), relations (e.g., above), and so forth." (p. 195) For example, a simulator of swords contains the core perceivable features of the object as well as motor actions (swords can be used to cut or – if one knows more about swords – to counter attack after parrying) and mental states (it hurts if one gets hit by a sword) and bodily states (pain and damage if one is actually hit by a sword). The simulator can be used to produce different simulations (roughly the same as conceptualisations), such as rapier, a one-handed sword designed for thrusting, and two-handed sword, designed for powerful cuts; these simulations are subsets of a simulator, not the whole simulator is used. In the case of the rapier, the one-handed sword, the parts of the simulator relating to the motor actions of the second hand are not used. Moreover, when one reads about a sword, the simulator of swords will be used to generate a simulation of a sword that enables one to visualize the object and understand what the sword can be used for. Or they can be thought of as different simulators with many overlapping parts; one simulator is not clearly distinct from another.

Once simulators are developed in long-term memory, they can be used to simulate different aspects of experience. Niedenthal et al. (2005) describe simulation as follows:

"The use of simulators in conceptual processing is called simulation. A given simulator can produce an infinite number of simulations, namely, specific representations of the category that the simulator represents. On a given occasion, a subset of the modality-specific knowledge in the simulator becomes active to represent the category, with this subset varying widely across simulations. For example, a simulator that represents the social category, my significant other, might be used to simulate love making with a significant other on one occasion, to simulate fights on another, to simulate quiet togetherness on another, and so forth." (Niedenthal et al. 2005, p.196)

The grounded cognition theory maintains that concepts are simulators and thinking with concepts are simulations. However, simulators are more than concepts and also include (so called) non-conceptual content[9] such as motor skills. Also, simulators contain elements of which we are not at all consciously aware and their limits cannot be truly determined, thus being different from what is commonly meant by concepts.

Niedenthal et al. (2005) distinguish two forms of simulator use: online and offline processing. In cognitive processing bodily postures, bodily responses, and motor behaviour are associated with attitudes and action tendencies (such as avoiding that object, person, or thing). In online processing the object is present when the

[9] E.g., about issues of non-conceptual content has been addressed in a book Essays on non-conceptual content, edited by Gunther (2003).

processing happens. However, in offline processing these associations (formed in online processing) are active when one is processing the word or relating to the entity[10] or thinking the concept. (Niedenthal et al. 2005)

3. WHAT IS ROLE-PLAYING?

Before looking at role-playing from the point of view of grounded cognition, it is important to draft an idea of the role-playing process so that we can look at the process and explain main parts of it using grounded cognition. Most descriptions of role-playing process are grounded in other scientific disciplines and are not a suitable basis for more cognitive explanations (e.g., Montola 2008). Role-playing as a process can be analytically divided in two. The first part is internal and focused on a creative use of imagination around conceptual constructs such as character, game world and story. The other part is the procedural expression and sharing of this internal fiction with others and the procedure of combining these into a shared fiction. In practice, these two are mixed and cannot be distinguished entirely from each other but for the sake of clarity we will discuss them separately.

3.1 The process of role-playing as a form of pretence-play

Pretence-play and make-believe are concepts used to describe role-playing-like activities that have been used extensively in art studies and developmental psychology. For example, Harviainen (2012) sees formal similarities between role-playing and children pretence-play as well as common cognitive features. Hence, theories of pretence-play provide a wider theoretical framework in which role-playing as an activity can be examined. Earlier, Lankoski (2005) and Rognli (2008) have proposed that role-playing can be understood as adult form of pretence-play. Angeline Lillard (1993)lists five features of children pretence-play:

1. a pretender;
2. an actual world;
3. a representation of a fictive world that differs from a representation of the actual world;
4. a layering of the representation of the fictive world (3) over the actual world (2) so that they can exist within the same time and space;
5. awareness of the actual world (2), the representation of the fictive world (3), and layering (4). (Lillard 1993)

The listed qualities are also present in role-playing, but role-playing has more fixed conditions. Montola (2008) lists the following features of role-playing:

1. "Role-playing is an interactive process of defining and re-defining the state, properties and contents of an imaginary game world."
2. "The power to define the game world is allocated to participants of the game. The participants recognize the existence of this power hierarchy."
3. "Player-participants define the game world through personified character constructs, conforming to the state, properties and contents of the game world." (Montola 2008)

When comparing these feature lists, it is evident that role-playing and pretence-play are highly similar activities. Role-playing is a specific kind of pretence-play activity, namely pretending to be somebody else in fictional game world confined by rules. However, the above-mentioned definitions are not detailed enough to explain the role-playing activity.

In the case of role-playing games, a player builds an initial representation of a fictive game world from game materials. When the fictive world is created from a scratch, or based on some existing fictional setting and rules, the players need to add details, because the descriptions cannot be exhaustive. Naturally, the fictive world that the players imagine is never complete; thus the players need to constantly add details (Lankoski 2012; Nichols & Stich 2003, p.35). This adding, inevitably, is based on information available to a player (not to a character) and therefore details filled are more or less aligned with other information about the game world and characters. It is easier to fill details to a character that has similar traits as the player (Fine 2002, p.209) or when a fictive world resembles the

[10] The term "entity" is used to denote person, creature, organism, and things (objects).

player's every-day environment. Otherwise, when one pretends to be someone that one is not familiar with, it tends to lead to stereotypical portrayal (c.f., Nakamura 2001; Nephew 2006). Some games have included rules to avoid falling back to familiar behaviours and to force the characters to behave according to game fiction: example of this are Vampire: the Masquerade (Rein-Hagen 1992) frenzy rules or Call of Cthulhu (Petersen 1981) insanity rules (Lankoski 2005; Lankoski et al. 2004).

Rules are not separate features; rather they influence playing and game fiction. One of the distinct features of role-playing is that the fiction is created by a collection of contributors (players). While they often have different roles and power structures (Montola 2008), each contributor follows similar inner and descriptive processes (descriptions, actions, system use), which together form the whole. Some part of the fiction created by the contributors is never communicated or shared with others and remains private, while most of it is.

This shared part of the fiction is more or less commonly agreed on and interpreted in equifinal manner (c.f., Loponen & Montola 2004). It is also the part of the game which is typically explicitly monitored by rules, though some rules and their interpretations also direct the non-shared parts of the fiction (e.g., the frenzy rules in *Vampire the Masquerade* direct how each contributor plays her character even when not shared with others). The shared part of the fiction is also typically validated and accepted by other contributors as negotiating and solving conflicting views is an essential part of the process. Walton (1993, pp.138–187) argues that there are two important principles, the *Reality Principle* and the *Mutual Belief Principle*, which can explain many features in the interpretation of fictional works. *The Reality Principle* proposes that people will naturally assume the fictional world to be similar to the every-day experience, except for those parts that are explicitly stated in the fiction to be different (e.g. character and world descriptions, rules). The implicit parts of fiction are assumed to be similar to their everyday experiences. *Mutual Belief Principle* proposes that the common folklore and beliefs in the society influence how the fiction is interpreted. The inclusion of mutual beliefs of society, such as vampires suck blood and die in sun light, is not necessary in the fiction as they are assumed unless explicitly contested in the fiction. (Walton 1993, pp.144–161) In addition, role-playing games use an arbiter who can fill in details and explicate them when needed. Commonly the final arbitrary power is wielded by a gamemaster. The non-shared part of fiction is naturally not negotiated and thus can contain conflicting elements more easily. In a larp, the negotiation and arbitration process is remarkably different as the actions become true in the fiction at the instant they are performed. They do not typically go through similar arbitration and negotiation process as actions in tabletop rpgs where it is easier to freeze or step back in time during the process. However, Walton's principles describe certain features of interpreting fiction, but not explain psychologically how these principles work. We return to this below.

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3.2 Characters in RPGs

Characters have an important role in many forms of media, such as film, television and literature. Despite the seeming differences between characters in role-playing games and other forms of fiction, Carroll (1990), Smith (1995), and Currie (Currie 2004), among others, argue that all works containing characters are understood via characters and their intentions. Tavinor (2009) argues that players of character-driven video games are (emotionally, cognitively) immersed within the game because the player-character works as a proxy to the fictional world of a game. This proxy relation enables players to make sense of and react to what is happening within the game fiction (Tavinor 2009, pp.130–149).

Role-playing characters are, from the point of view of this paper, fundamentally similar cognitive constructs as other characters or people. Montola (2008) and Lankoski (2005) argues that that taking the role of a characters is the defining feature of role-playing. As seen above, role-playing games use wide range of different methods to feed information about game characters, but what is a character from the cognitive science point of view? A character, in this article, refers to an interpretation of a fictive or non-fictive human agent in a game. In the role-playing process the character is a central construct. Lankoski proposes the idea of person schema to understand role-playing (2005) and video game (2011) characters following Smith's (1995) argument for film character engagement.

Smith (1995) proposes that all human agents share some qualities, which include:

- a distinct human body;
- perceptual activities and self-awareness;
- intentions;
- emotions;
- ability to understand natural language;
- self impelled actions;
- persistent traits or abilities. (p. 21)

Smith argues that this set of qualities is used as a framework which enables people to interpret other people and characters, and to form expectations toward them. This framework is referred to as the *person schema*. (Smith 1995, pp.20–35). Smith describes a character construction process as follows:

"[Characters] are constructs formed on the basis of perceptual and explanatory schema (the person schema) which makes them salient and endows them with certain basic capabilities. Particular characters drawing on culturally specific schemata are built upon this foundation. And as with all other schemata, the person schema is subject to revision: we may apply the person schema to a brain-damaged individual, and be forced to revise it on discovering that the individual lacks certain capabilities presupposed by the schema." (Smith 1995, p.31)

In this view, a person or a character is always a construction depending on various kinds of information such as perceived body, face, voice, actions, and descriptions. The person schema is used even when role-playing non-human characters like aliens, undead, monsters, or cartoon toasters. While those agents are superficially distinctly non-human, one's inner logic is dominated by person schema when playing them and when interpreting them when they are played by someone else. (C.f. Smith 1995, pp.20–24)

Let us first look at the characters played by other players. The construction of properties of a character played by others normally depends on external perceivable traits of the agent. Usually this means that the body is used as the basis of the first interpretation of the person. Later on interpretation is revised after new information is acquired. (C.f., Smith 1995, pp.114–118). In table-top role-playing games a character is rendered predominantly by linguistic devices (names and descriptions) while live-action role-playing games relies primarily on body, clothes, actions performed by the player, and dialogue. Hence, there is a difference between live-action and tabletop role-playing games. Nevertheless the difference can be minimal in some forms of tabletop and live action role-playing games (like games based on intrigue and negotiation) in which information about characters is mostly conveyed through dialogue.

The players need to construct their own characters before they can role-play it. Ones own characters are constructed in similar fashion to other characters. The main difference is that rule-system and action possibilities and limitations influence construction of persistent traits or abilities in more direct manner than other characters (Lankoski et al. 2004; Lankoski 2011). In live-action role-playing games (larp), the body of a player is something that the player cannot change[11] and can never fully escape limitations set by his body and skills; the limitations of a player restrict their ability to portray a certain character. Thus the physical and psychological limitations of the players influence also how others will perceive that character.

Next, we look at how these above-mentioned observations, especially the person schema, can be explained using the theories of grounded cognition.

4. GROUNDED COGNITION IN ROLE-PLAYING

In this section we illustrate how the grounded cognition approach can explain the features of role-playing and pretence-playing introduced above. After that we look at a selection of games and explain 1) why those games produce described playing experiences or 2) what kind of experiences the game is likely to produce using the above-presented grounded cognition theories.

4.1 The role-playing experience

Here we argue that grounded cognition and embodiment can explain the features of playing described above in the section Role-playing

[11] There are some temporal modifications that one can do to oneself to alter a sense of body (such as binding a hand to body so it cannot be used) that will influence body perception; of course, one can alter a body more permanently (e.g., by body-building or using plastic surgery, but that is changing the self).

process. We propose that because we are embodied in a certain way, the features of person schema, immersion (and its relatives), and the game fiction surface.

4.1.1 Person schema

Person schema discussed above can also be placed in the grounded cognition framework. A person schema is a simulator that is used online and offline to produce simulations in a wide variety of contexts. It is a strong and constantly used simulator. The qualities of the simulator pervade the simulation forming the so called person schema, that is, the tendency to think of all human (like) agents through those similar qualities. In role-playing context, when a character is played, such as a barbarian in *Advanced Dungeons & Dragons* (Gygax 1977), the player uses existing simulators to represent the barbarian and the other aspects of that character. The simulator for "barbarian" is likely to be formed by repeated experiences with fiction (such as *Conan* in books, films, and comics) but will be contextualized for *Advanced Dungeons and Dragons* and the specific game world in use. Similarly, simulators used for archaeologist in the *Call of Cthulhu* (Petersen 1981) would be build on the simulators from various sources (archaeologist as in pulp fiction/Indiana Joneses/Call of Cthulhu and in everyday life) and contextualized within Cthulhu mythos. This contextualization is different if the player is familiar with the mythos or not. The simulation of barbarian and other simulations relating to the character are then used to represent various aspects of that character, in making decisions as the character and in acting as the character (e.g., speaking, expressions). When playing a certain character over time, a specific simulator for that specific character forms, and that would be used in simulations relating to that character.[12]

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4.1.2 Game fiction

Lillard's (1993) definition of pretence-play (see above) emphasizes the existence of a real world, a fictive world and the conscious layering of those two. In terms of simulators and simulations, the process of pretence-play consists of using the simulators that are based on real world experience and simulators that are related to the fiction in question in conjunction. Meanwhile Montola's (2008) definition could be paraphrased as "Role-playing is an interactive process of defining and re-defining the simulator(s) which includes state, properties and contents of an imaginary game world". As the real world simulators are also constantly in use, it is never fundamentally about becoming the character, although contextual processing ensures that representations simulated are specific to the game, or more specifically, to the player's interpretation of the game fiction.

Contextualized processing is important in understanding game fiction. This means that people do not process generic representations of things without context; rather the processing always simulates a particular instance of an entity along with the action possibilities with that particular entity. For example, when I am entering my office floor, a door simulator includes the actions of using a key card to unlock the door and the actions needed to open the door—whereas in a computer game a door simulator takes a form that includes actions needed to pass the door (pressing the x-button on the gamepad near the door or just walking toward the door), or whether the rules of a game require a skill check to open the door (and how that skill check is performed).

The above-described Walton's (1993) *Reality Principle* and *Mutual Belief Principle* can be explained through embodiment. As people use simulators from everyday life as bases of simulation (that is, to produce representations of the fictional world), the everyday life features of the simulator are attached to an instance of the simulator when the context does not require creating another kind of simulator instance.

As motor actions are always part of the simulation, the possibility of various actions is always present in physical objects. Already a perception of an object activates the simulator and so action possibilities are constantly present. While everyday objects are processed with everyday simulators and therefore open everyday action possibilities,

[12] The simulator for the character can be modification of the simulator for previously played character.

fiction-related objects activate fiction-related simulators or are instantiated with fiction-related action possibilities. These objects with an additional fictive component are called props. Importantly, while in everyday context the broom handle opens up action possibilities related to cleaning, extended reach, leverage and hitting something—in pretence-play context (such as child's play or larp) the interpretation of the object opens up fiction related action possibilities in addition to these everyday action possibilities, depending on the game fiction and rules (e.g., the broom can be used for flying or hexing or to represent a sword).

An important part of embodied theories is mimicry and mirroring of the expressions of other people. Affective mimicry refers to phenomenon where perceived emotional expressions are mirrored involuntarily (e.g., Barsade 2002). This mirroring can range from very small muscle activations to clearly perceivable expression. Niedenthal et al. (2005) argue that mimicry is fundamental for social information processing and others (e.g., Decety & Jackson 2004) have proposed that affective mimicry explains the core of empathy (that is, why we react emotionally to the emotional expressions of other people).

Online and offline processing are both relevant in role-playing. In tabletop role-playing most elements in fiction are not physically present in the gaming environment and thus they are subject to offline processing (see above). When the player is imagining and describing her barbarian character's actions in combat, she is using a simulator for that character to create a simulation of the situation which includes the player's ideas of related motor actions needed to swing a sword and to dodge a fireball. In live action role-playing there are considerably more elements physically present and thus they are processed online.

In 360 illusion games the design goal is to create an environment where there is no difference between the real surroundings and the fictional world. These games foreground online processing where every physical object is part of the game and there are no relevant fictional objects that should be imagined or processed offline. As the boundary between tabletop and larp is ambivalent also the online and offline modes are not easily distinguishable. The two modes, larp and tabletop, *feel* different (i.e., are phenomenologically different), just because they are embodied differently.

4.1.3 Immersion, bleed, and engrossment

Embodiment gives a very simple explanation for the immersion experience: because in role-playing games players are making decisions for the character, the experience always has a *I am acting as my character* component (in larps, the player is also physically acting as character) (c.f., Lankoski 2011). The quality of immersion depends on how much information directly relates to the fictive frame of the game and how much non-fictive-related information there is or how well the player is able to ignore the non-fictive information. For example, throwing dice in table-top can be throwing the dice or killing a dangerous monster in one blow. From the point of view of character immersion acting has interesting feature: when acting one uses the simulators of those actions, and those simulators can contain emotions. Hence, acting happy or angry can change the actor's emotional state toward the acted emotion (c.f., Dimberg et al. 2000; Duclos et al. 1989).

In the context of embodiment, the concept of bleed is quite artificial. A character as a simulator is a combination of other simulators and contains a tremendous amount of non-fictive components by nature. Here, again, simulators invoking emotions can explain bleed experiences. Also it is impossible to clearly define the borders of a simulator. In addition, the border between the player and a character gets blurred, because of situated processing: the character is the context which is used to create particular simulators for that situation (including simulators for "I"). Thus, from this perspective it is impossible to clearly distinguish the character from the player and "bleed" turns into a built-in feature of the human cognitive system.

Thus, from this perspective it is impossible to clearly distinguish the character from the player and "bleed" turns into a built-in feature of the human cognitive system.

4.2 Case studies

Above, we proposed how grounded cognition can explain the role-playing experience in a general

sense. Next we look at specific cases and discuss them in relation to this theory. In the Call of Cthulhu case study we combine the grounded cognition theory and an analysis of the game system. The case studies of *Gang Rape* (Wrigstad 2008) and *Ground Zero* (Jokinen & Virtanen 1998) are based on Montola's (2011) and Hopeametsä's (2008) analyses of the playing experiences. We combine these analyses and the grounded cognition theory to explain why the experience is as described.

4.2.1 Call of Cthulhu

In a traditional tabletop role-playing game, such as the *Call of Cthulhu*, embodiment works on many levels. The most obvious one is the way simulators of the characters' actions within the game fiction are linked to motor functions of said actions. Also the common simulators (e.g. person schema type of simulators) related to role-playing in general, which we have presented throughout this paper, are relevant. However, a more interesting feature of the game is its above-mentioned insanity rules. Here, the players learn to attach a new feature of certain agents, the monsters, of the game. In addition to being very dangerous in combat and being able to kill the player-characters easily, just the mere presence of the monster can make the player-character go mad with a failed insanity check. The players learn, in other words create a new simulator for the monster, with this feature. In addition, they need to include the details of the insanity check and how its results are portrayed in the game. The simulator, within time, is likely to include emotions relating to losing a valued character by failing an insanity check.

4.2.2 Gang Rape

Montola (2011) describes the game *Gang Rape* (Wrigstad 2008), which aims at an extreme, repulsive experience. Montola describes the game as follows:

"It plays out in three scenes: an introduction leading to a rape, the act itself and an epilogue. All scenes are role-played in different ways: while the scene leading to the rape is played as a larp, the rape is played verbally, in a fashion similar to table-top role-playing" (Montola 2011)

He analyses the playing experience of the game based on interviews he conducted. The presented interview anecdotes seem to confirm that the game delivers the intended experience. The interviewed players mention certain features of the game:

- the need of keeping eye contact with the victim was scary;
- the reactions of other players added to the experience;
- being disgusted by the actions one was depicting. (Montola 2011)

Again, the above-presented theory of embodiment can explain the playing experience (but not why certain kinds of players seek these kinds of extreme experiences). For this, the rule that requires keeping eye contact in the rape scene is important, because it forces players to focus on facial expressions and prevent typical strategies to avoid affective mimicry. Affective mimicry and negative attitudinal dispositions associated[13] with simulators of described actions are likely to modulate negative emotions to these actions or breaking taboos.

4.2.3 Ground Zero

Ground Zero was a larp where players spend 24 hours in a bomb shelter. The game's backstory takes players to 1960s. The characters escape to a bomb shelter. Our description summarises Hopemetsä's (2008) study of the game. The only written rule of the game was that the doors of bomb shelter were locked (as they were required to be kept open for security reasons). The game was based on the characters and their relations. The game area contained hidden speakers that were used for radio broadcasts coming outside as well as to simulate a shockwave (of a missile attack) that made it feel like the whole space was shaking.

The players described the playing experience to be very immersive (Hopeametsä 2008).

There are three important factors that shape the playing experience:

1. When other players role-played and acted according to the game fiction, their acting was mirrored and interpreted.
2. When the player is acting according to the fiction, the contextualized simulators are

[13] However, psychopaths have been shown not to react expressions of fear and pain emotionally (Verschuere et al. 2006) and (high-performing) autistic individuals have issues with social cognition, especially in empathy (Baron-Cohen et al. 1985; Baron-Cohen & Wheelwright 2004; Goldman 2006, pp.200–206). In addition, in some context, people might loose their negative attitudinal dispositions to certain kinds of actions (c.f., Zimbardo 2007).

used to act as if the character and the fiction were true. Importantly, the player acted and those actions also influenced the experience: for example, acting scared will modulate one's emotional state toward being scared, because the simulators used in acting and the actual actions performed will also activate neurons in emotional areas, and those activations will influence the body state on a more general level)

3. The fiction is maintained and updated via radio: information fed there will be activating contextual simulations relating to fiction. Moreover, players do not need to imagine the shock-wave, but experience it. The contextual simulators, again, provide an interpretation of that which is tied to the game context.

The factors made the fiction seem very authentic.

5. CONCLUSIONS

We have described the role-playing process and discussed the concept of character in terms that are suited to be examined in the light of theories of grounded cognition and embodiment. We have illustrated how the concept of embodiment works as a general cognitive background theory for role-playing. Fictional characters have been studied earlier in the philosophy of fiction. Role-playing game characters have many commonalities with them. While the typical conceptual qualities of characters remain the same, the process of defining and acting out the character is different as it is in tight connection with the interpretation and creation of the whole fiction in collaborative effort. The nature of the process is such that all participants have access to varying parts of the fictive whole and thus their whole interpretation varies. Some individual parts of the fiction are never shared with others but still affects the whole. However, the fiction is surprisingly coherent between players, because embodiment and embodied action possibilities limit players' capabilities to simulate something different. In other words, the simulators players have and use during role-playing are largely based on their everyday experiences and only some of them are strictly fiction related. This is both a blessing and a curse, as they both enable a coherent fiction to be created in the first place but also tend to guide it into very similar structures through such mechanics as for example person schema and reality principle.

An interesting implication for grounded cognition is that acting, role-playing, and goal-oriented play can lead to very similar experiences. Simulations in acting and role-playing (thinking as-if a character) are largely the same. In terms play, systemic aspect support pretence-play, related simulations are partly the same. Hence, these three types (acting, role-play, and goal-oriented play) are psychologically rather close to each other.

In this article we have proposed that grounded cognition can be used to explain a variety of playing experiences using a single theory. Furthermore, embodiment explains phenomenological experiences of character and player (e.g., bleed) and world immersion without the logical issues of previous accounts, such as the requirement for a fictive autonomous being— a character. Naturally, while not everything can be explained with above-presented theories, it is our belief that we have illustrated how embodiment (and grounded cognition in general) can act as shared background theory for understanding role-playing experience and bind together various approaches to gameplay experience in role-playing research. Perhaps it could even be used as a criterion for psychological plausibility when designing role-playing games.

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