Communication in Games

by

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For my family
This thesis answers the question of how, and what, people communicate to each other while playing games. The presented conclusions offer guidance to computer game developers on what means of communication they should support in games in order to provide better possibilities for interaction between people that play games together.

The data for this study was collected from two sources: the first was during LinCon, an annual game convention in Linköping, and consists of four players playing a game of WarCraft: The Board Game; the second is from a game session of the multiplayer roleplaying game World of WarCraft. The sessions where documented using a combination of video recordings and participant observation in order to increase the quality and speed of the analysis. The video recordings were subsequently sorted into labelled passages and then organised into categories based on their similarity to each other with the purpose of finding categories and means of information exchange.

The analysis identify five categories of information that people exchange between each other while playing games and three categories of how they convey that information. The implication of these categories on game design practice is also discussed.
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1 INTRODUCTION

This study attempts to build knowledge about how to improve computer game design. Computer games moved with full force into people’s lives and into popular culture in the beginning of the 1980s with the release of the Nintendo Entertainment System (NES), Amiga, Commodore 64, and Atari computers. It’s possible to trace the history of computer games back much further than that though. There is an argument over which game was the first computer game and the reason there is a discussion at all mostly has to do with how people choose to define computer games. There are two games though that are widely acknowledged as candidates and they are Tennis for Two, released in 1958, and Spacewar!, released in 1962. Tennis for Two was created with the help of an oscilloscope and analogue parts while Spacewar! ran on a mainframe. That is the core of why not everyone agrees on which computer game that was the first one. A lot has happened since then and now the games industry is estimated to be worth 265 billion Swedish kronor in 2011 (Edge, 2006).

Games didn’t begin with computer games but have been around for much longer. Chess is one of the oldest European games but its predecessors originate from India. Chess got its form as we know it today around the 15th century (Hooper & Whyld, 1992, pp. 173-175). Go is even older and the first written reference to it is dated to 6th century BC (International Go Federation, 2008). The game currently recognized as the world’s oldest game is the Royal Game of Ur, which is dated to be around 4500 years old (British Museum, n.d.).

Since the practice of playing games is at least 4500 years old it might be surprising to learn that the academic study of games can barely be said to be more than 100 years old. Stewart Culin (born 1858, death 1929) authored the first academic publications about games that I know of but they are seldom used in writings about game studies. The oldest, and often referenced, book is Homo Ludens, released in 1938, by Johan Huizinga. In the book Huizinga tries to explain the relationship between play and culture. He died some years later in Nazi captivity as a result of his anti-Nazi conviction (Huizinga, 2004, inside of jacket).
There have been academic publications about games since then but they all have in common that they are all written in another academic discipline than game studies. The reason for that is that game studies as a field hasn’t existed for very long. Even if some academics earlier might have labelled themselves as game researchers the first academic journal on computer games released its first issue in 2001. The year after, in 2002, the first academic conference about computer games organised by DiGRA (Digital Games Research Association) took place. Before that research on games had to be published in other discipline’s journals and conferences. Although there hadn’t been any game oriented academic journals or conferences before the 21st century Chris Crawford, notable game designer, saw a need for a place for people to talk about games and organized the first Computer Game Developer's Conference back in 1987 in his own living room (Crawford, 2003, p. 453-454); it’s now an annual conference with more than 16 000 participants.

Game studies seem to have a lot in common with the field of cognitive science. Both are areas of study that I believe need to take an interdisciplinary approach in order to be successful in providing meaningful answers regarding their object of study. They also arrived very recently on the academic scene, filling their ranks with academics from all disciplines of science. Cognitive science now offers a path where students can study it from the undergraduate level all the way up to their doctorate. Game studies still haven’t arrived there but probably will in the future. Since the field is so young it still has to sort out questions such as which disciplines should be considered a part of the field and what a game studies researcher is expected to know. An assessment of the state of game studies by Newman (2004) reaches the conclusion that there currently are so vast differences in classifications, participants, methods, and length of studies that the results are all over the place and therefore hard to summarize (ibid., pp. 66-69). The articles he has examined are primarily based on the relation between violence and computer games but it’s clear from his summary that game studies is a turbulent subject that is still trying to find itself.

1.1 PROBLEM FORMULATION AND REASON FOR THE STUDY

Computer games have moved from being an activity where a person mainly interacts with a game in the form of a program on the computer. Now it’s
rather an activity where multiple people interact with a program and with other people through their computers. Computer game designers now try to develop games that allow and support this interaction.

As a result of that this thesis attempts to create a body of knowledge that will aid designers in their work of designing for this type of interaction. To do this the study takes a step back from computer games and focus instead on traditional analogue games to uncover how people spontaneously communicate with each other during a game session when that communication is not filtered through technology.

This is not done in order to uncover the kind of communication that computer games ought to support in order for players to communicate successfully. The reason to focus on analogue games instead of computer games is because in analogue games players have a number of means of communication readily available to the in the form of speech, body language and the surrounding environment. In a computer games developers have to design and create all means of communication between players. A failure to do so well enough often leads to situations where players use third-party programs like Skype or ICQ in order to better communicate with each other. Therefore the aim of this study is to answer the following two questions:

1. What different categories of information do players exchange with each other during play?
2. How do players utilize available resources in the form of their body, the surrounding environment, and objects in order to convey that information?

1.2 SCOPE OF THE STUDY

Since this study is an attempt to uncover categories of communication that takes place during play the unique categories of communication that I found have been transcribed, analysed and included in the study. Statistics have not been calculated to see to which extent a certain category makes up communication that takes place between the players. The intuitive rationale for this is that I believe that the amount of communication that can be tagged to each category will vary depending on the type of game being played, the people playing, and the reason for playing.
For those reasons I believe it is more fruitful to observe the natural occurring communication between players in an analogue game instead of observing the artificially created means of communication found in computer games. A play session of a digital game was still recorded in order to complement the analogue play session in order to see if there are categories not found in the natural communication through speech and body.

1.3 GAMES USED IN THE STUDY

Two different games were included in this study, *WarCraft: The Board Game* and *World of WarCraft*. The first play session that was recorded and analysed was *WarCraft: The Board Game*. In the second play session *World of WarCraft* was used as it gave an opportunity to flesh out the gathered material with game that shares the lore of the first game but that has another design focus.

1.3.1 *WarCraft: The Board Game*

This game has a number of design features that makes it well-suited for this study. The players have to cooperate with one other player and coordinate their play with each other as well as play against two other opponents who are also cooperating with each other. For this study this was ideal since it is then a necessity that players both communicate and coordinate actions with a group while at the same time competing against another group.

At the start of the game each player has a square on the game board that represents their starting home. They are also given three fighter units and three worker units to command. The goal of this particular game session was for the players to eradicate the opponents units and towns. The game is turn based and every turn in divided into the four phases; movement, harvesting, deployment, and spending. During each phase the players in turn take the actions allowed during that phase. When all players are done with one phase the next phase begins. When all four phases are completed one turn is over and the next turn begins with four new phases. Victory in the game is rewarded to the team as a whole so there is no incentive or reason for the players in one team to not cooperate with each other.
The layout in figure 1 on page four shows how the room was arranged where the play session was recorded. The players sat in the four chairs facing each other with the game board being placed on the table between them. I sat in the top-most chair facing down towards the two tables. During the session I switched between that position and the spot marked out as B in order to get two different viewpoints of the game and the players. The camera that was used video and sound uptake was moved around between the points A through E.

![Figure 1: Placement of players during Warcraft: The Board Game.](image)

**1.3.2 World of WarCraft**

The online game *World of WarCraft* is a game where you control a single humanoid avatar in a fantasy setting. It’s currently the world’s most popular MMORPG (massively multiplayer online roleplaying game) with more than 10 million subscribers (Blizzard, 2008). MMORPG is a genre of games where a large number of players have the possibility to play in the same world with, and against, each other; those players are then split up over a huge number of instances of the game world so a player can’t meet every other player in the same instance.
There are games like *EVE Online* though, with 200 000 players (Massey, 2007), that host all players in the same game world instead of splitting them up between several identical copies. The decision to use *World of Warcraft* in the study was based on two reasons. The first is that *World of Warcraft*’s chat system is very similar to most MMORPGs and the game is often used by game researchers in their studies.

### 1.4 A NOTE OF INTEREST

A note should be made about something that feels like a fantastic example of zeitgeist. During the analysis of the gathered data for this thesis an article was published in Japan (Taichi, Junkichi, & Makoto, 2007) that also deals with communication in board games. It's interesting because to my knowledge it is currently the only other written work that deals with communication analysis of people playing board games. They use different methods and have other goals with the article than this thesis but the two still touch in some areas, which is great since it strengthens our individual findings.
2 BACKGROUND

The background section is roughly divided into two equal parts where the first part presents a short overview of games and the second part focus on communication. The first part gives a presentation of what I mean with computer games and then proceeds with a short reflection of some definitions of games, and ends with a schematic of how to classify the composite parts that makes up a game. The second part is focused on communication and begins with a presentation of the concepts that are used in this thesis. The two concepts of common ground and layers are then given further explanations.

2.1 WHAT IS A GAME

As explained in Chris Crawford on Game Design (2003, pp. 5-9) his search the meaning of games in the mainstream dictionary proved to be a fruitless search since the word is so ambiguous that in order to study them a sharper definition is needed. Looking up the word game on Dictionary.com quickly proves him right as the word gives 24 definitions from just one of the many dictionaries used by the site. Many of the different attempts to define games manage to catch a bit of what the essence of games might be without being able to encapsulate everything that might be one. Chris Crawford (ibid.) makes a case that he deems a bit simplistic but still close to how an average person might define games. Crawford concludes that a game is something that is made with the purpose of making money, they are interactive, have goals, and competitors that are allowed to impede each other’s attempts to win (ibid., pp. 6-8).

There are many researchers and designers that have offered definitions over the years. Some of them like Newman (2004, p. 27) are content with summarizing other people’s work. The game designer Raph Koster (2005, p. 14) does the same, though he also gives his own definition that states that “Games are just exceptionally tasty patterns to eat up”. The academic writers Katie Salen and Eric Zimmerman (2004) also make an attempt in Rules of Play (p. 73-80) by offering several pages of definitions of games with the oldest one being written in 1938 by John Huizinga. They also provide one themselves that reads “a game is a system in which players engage in an artificial conflict,
defined by rules, that results in a quantifiable outcome.” It’s to the point but I wonder if a conflict can take place and still be artificial since something will always be invested in it. From the Nordic countries Jesper Juul (2003) has made a contribution that has received attention with the definition:

A game is a rule-based formal system with a variable and quantifiable outcome, where different outcomes are assigned different values, the player exerts effort in order to influence the outcome, the player feels attached to the outcome, and the consequences of the activity are optional and negotiable. (Juul, 2005, p. 36)

Juul’s definition draws on a number of previous attempts at defining games. His definition took a good approach for finding a definition but it still has flaws. The need for cultural knowledge in order to understand games and how to play them is missing from his model and the importance of those parts has understandably been successfully argued for by Linda Hughes (2006) since games are enacted by human beings.

The lack of an exact definition of what a game actually is seems to be unsettling for many game designers. It might be because computer games came of age in the engineering tradition and many developers have a background in computer science and mathematics. If a persona is used to exact definitions of units of measurement then why wouldn’t one look for an absolute definition of games? This lack of an absolute definition need not be a problem though since the same problem of definitions can be found in all design disciplines, which I consider game design to be part of.

Not even architecture goes free from this problem even though it’s heavily influenced by engineering and has had books published on the subject for a very long time. De Re Aedificatoria by Alberti (1988) was published in the late 15th century where he tried to define the responsibilities of the architect and the field doesn’t seem to have reached full consensus yet. When speaking of engineering subjects I can also mention that there still isn’t an exact definition of the kilo (The International Bureau of Weights and Measures, 1889); even though an exact scientific definition is coming, and expected to be ratified in a few years, it is still just a piece of metal stored in a glass casing in France.
Clarisse De Souza (2005, p. 27) explains in *The Semiotic Engineering of Human-Computer Interaction* that signs, e.g. human language, are constantly reinterpreted in an unlimited semiosis. This means that even if we try to find a definition for games our most recent conclusions will lead to another, and hopefully deeper, uncertainty in an iterative fashion. That is not to say that trying to find a definition is a pursuit marked by fruitless effort. On the contrary, De Souza gives reassurance that it is a pursuit worth the effort and that it leads to understanding. We just shouldn’t worry if our definitions feel unsatisfactory or that our current definitions become void when a new game is released that doesn’t fit the mould.

2.2 AN OVERVIEW OF THE COMPOSITE PARTS OF A GAME

This thesis will not dwell on the web of intricately connected parts that can be said to make up a game as it focuses on the interaction and communication between people playing them. Therefore it will only present a short overview of the theory of games. A game is to a large extent made up by its rules. According to Salen and Zimmerman (2004, p. 130) the rules can be divided into three different parts: Operational rules, constitutive rules, and implicit rules.

For Salen and Zimmerman (2004) the operational rules are the rules as they are written in the manual that explains the game. The constitutive rules are the underlying mathematical structure of the operational rules. They are often more abstract and we might not even see the relation between the two unless the similarities are pointed out to us. The implicit rules are the unwritten rules of how the game should be played. The following passage written by Hughes (2006) exemplifies the value of implicit rules:

> This referee is well aware he is supposed to be providing something more than a literal reading of the rulebook. Maintaining the game’s “flow” and earning the respect of other participants depends upon knowledge of both game rules and gaming rules. One must not only know how the rulebook defines and penalizes “hooking.” One must also know that this “hook” is not the same as that “hook.”

(Hughes, 2006, pp. 504-516)
Despite the abundance of writing regarding the game as code or physical artefact the importance of a game is realized when it is experience by a person. This is denoted as a game’s gameplay. This concept is described by Salen and Zimmerman (2004) with the following words:

This form of play is a narrow category of activity that only applies to what we defined already as “games.” Game play is the formalized interaction that occurs when players follow the rules of a game and experience its system through play. (Salen & Zimmerman, 2004, p. 303)

The reason for bringing up gameplay is to make a distinction between computer games and most other software. Software used for work as a statistics program is a tool that is used on a set of data in order to produce results for the user. In this case the program and the data it operates on are separated since the data has a connection to an external world and comes from outside of the program itself. While regular software is used in order to solve problems existing in an external world, a game is its own artificially created problem that the player can solve.

2.3 COMMUNICATION

In order for communication to have meaning two persons have to be involved in the communication in the form of a speaker and an addressee (Clark, 1996, p. 11). Clark notes that the settings in which these communications can occur can be simplified into a spoken and a written setting (ibid., pp. 3-6). The difference between the two is that in the former the speaker expresses a speech act by using her body as a medium. While in the latter the person delivering the message is not directly present for the addressee but rather use a different medium than her body. During communication the speaker has her own body available as a medium to express herself. This can be done in the form of speech or through gestures. The speaker can make use the surrounding environment in order to communicate. In some situations speech or gestures can be used exclusively while some calls for the complex gestures that Goodin (2003) has labelled symbiotic gestures in order to convey the intended meaning to the addressee. A symbiotic gesture is a gesture that is mutually dependent on speech, gesture and environment in order to convey
meaning. It means that if one of them is removed the meaning is lost. An example could be a person explaining something on a map for another person. Gestures will probably be used to point things out on the map while speech is used to explain the things pointed out. If the map is removed it’s not possible to point out important areas on it, if the speech is lost the gesture can’t be explained and if the gesture is lost the person will have trouble explaining what she’s referring to on the map.

Humans are adaptable and compensate for the loss of one part of a symbiotic gesture but it will lead to a situation where more time has to be spent to express the same meaning. Goodwin (2003) therefore suggests that we should think of communication as a semiotic ecology where each modality has its own niche and depending on the situation people use these modalities flexibly in order to communicate meaning. As Fillmore puts it “the language of face-to-face conversation is the basic and primary use of language, all others being best described in terms of their manner of deviation from that base” (in Clark, 1996, p. 9). Face-to-face conversation should therefore serve as a good starting point for understanding communication between people when they play games. Clark (ibid., pp. 9-11) has made the following list over the features that characterise a face-to-face conversation:
Copresence  The participants share the same physical environment.
Visibility  The participants can see each other.
Audibility  The participants can hear each other.
Instantaneity  The participants perceive each other’s actions at no perceptible delay.
Evanesence  The medium is evanescent – it fades quickly.
Recordlessness  The participants’ actions leave no record or artefact.
Simultaneity  The participants can produce and receive at once and simultaneously.
Extemporaneity  The participants formulate and execute their actions extemporaneously, in real time.
Self-determination  The participants determine for themselves what actions to take when.
Self-expression  The participants take actions as themselves.

**TABLE 1: CHARACTERISTIC FEATURES OF FACE-TO-FACE CONVERSATION.**
2.4 COMMON GROUND

Clark (1996, p.92) tells us that “everything we do is rooted in information we have about our surroundings, activities, perceptions, emotions, plans, interests. Everything we do jointly with others is also rooted in this information, but only in that part we think they share with us”. Common ground is information we expect that we share with others but it is not information that is shared between people in the sense that it is duplicated in two brains but rather a belief a person has of what another person knows.

Our expectation of a common ground with another person is therefore our starting point in communication with them and the information we exchange with each other during conversation is then added to the common ground we believe to share with that other person. Common ground doesn’t necessarily begin from scratch when we meet a new person. If you are a person from Sweden and meet another person from the same country you will assume that the other person knows some things that you expect other Swedish people to know.

Common ground can therefore be divided into two parts of information we consider to share with others. One part is common ground we believe we share with others because of inferences we’ve drawn about them. The other part is information we have a real empirical basis for by having personally communicated or shared events with them.

2.5 LAYERS

A useful concept, with some slight alterations, to understand games is Clark’s (1996, p. 359) concept of layers: “people sometimes appear to say one thing when they are actually doing something quite different”. The slight alteration to Clark’s (ibid.) concept of layers in this study is foremost a change in approach. Clark’s examples concern pure language use. In this study layering is used in a situation that also involves an artefact.

The concept of layers has a number of properties that can be divided into two parts where the first part deals with the duality in layers while the second part concerns properties relating to the asymmetry between two connecting layers.
Out of those properties the most important one for this study is recursion. This is what makes it possible for layers to be stacked on top of each other and also to collapse down on themselves to lower levels (Clarke, 1996, pp. 359-360).

Layering is a useful concept for this study because it can be used to describe situations a person doesn’t have to be a part of if she doesn’t want to since she can walk away from it at any moment. The reason for this is because while a person accepts to be limited by certain rules while playing a game those rules are a negotiation between the players and aren’t limiting in the way natural laws are. An example of layering could be a person telling a story to another person, which would have two layers. The bottom (first) layer would be the actual world the people exist in. The second layer would be a hypothetical world with the actors, and the environment of the story that exists only in the heads of the two persons. The features, as described by Clark (1996, pp. 359-360), are the following:
<table>
<thead>
<tr>
<th>Relation</th>
<th>Layering is an asymmetric relation between join actions in two domains</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domains</td>
<td>Each domain is specified, principally, by its participants, roles, time, place, surroundings, and possible events</td>
</tr>
<tr>
<td>Deixis</td>
<td>The joint actions in the two layers have distinct deictic frames</td>
</tr>
<tr>
<td>Simultaneity</td>
<td>The two domains are present, or current, at the same time.</td>
</tr>
<tr>
<td>Recursion</td>
<td>Layering is recursive</td>
</tr>
<tr>
<td>Mapping</td>
<td>The primary participants jointly develop a correspondence function $C(2)$ that maps entities of domain 2 into entities of domain 1.</td>
</tr>
<tr>
<td>Perspective</td>
<td>The primary participants may construe any entity (an object, state or event) in one way in domain 1 and, simultaneously, another way in domain 2.</td>
</tr>
<tr>
<td>Causality</td>
<td>Many entities in domain 2 are caused by the occurrence of the corresponding entities in domain 1, but not vice versa.</td>
</tr>
<tr>
<td>Access</td>
<td>The participants in layer 1 have informational access to entities in domain 2, but not vice versa.</td>
</tr>
<tr>
<td>Speaker’s meaning</td>
<td>When there are two layers, the speaker who means what is expressed by a signal, and the addressee for whom it is meant, belong to layer 2.</td>
</tr>
<tr>
<td>Imagination</td>
<td>When there are two layers, the primary participants are to imagine the actions in layer 2, and appreciate the actions in layer 1.</td>
</tr>
</tbody>
</table>

**TABLE 2: FEATURES OF LAYER**
3 METHOD

The data for this study from the game *WarCraft: The Board Game* was gathered during an event called *LinCon* which is an annual hobby convention held in Linköping, Sweden. An ethnographic approach was taken by venturing into the players’ own culture to collect the data. This meant that I socialized with the observed players before, during and after the game session; my own background in games goes back some 20 years. In this particular play session my participation was limited to observation and social interaction with the players as opposed to actually playing the game myself. It can be argued that this particular location isn’t the players’ natural environment since people most often play games at home and this was a convention that only lasts for three days a year. Visiting conventions is a part of many people’s gaming hobby though and even if the physical environment differs from the average kitchen table the purpose of the activity is still the same, which is to play games together.

The study is a qualitative attempt to identify categories of information that people talk about and how they exchange that information. For the analytical framework in this thesis the used approach is the one described by Hirsch (1989) with some slight modifications. The steps that concern statistics in Hirsch’s framework were removed for this study as the attempt is to identify categories of speech and how they are exchanged, not to quantify them. Their occurrence will most likely vary depending on the game, the players, and the context of the play session. It should be noted that these steps are not supposed to be followed by starting with step one and then ending with step six. Instead the analysis moves iteratively through the six steps by letting knowledge and understanding grow organically and build on each other. The original steps of the framework, as described in Hirsch (ibid., p. 105) are:

1. Observation, comparison, and selection of data
2. In-depth examination of a limited amount of data
3. Classification and systematization of the data
4. Descriptive statistics of correlations
5. Generalizations based on the statistics
6. Conjectured explanatory hypotheses
The data was collected using video recording equipment. In order to minimize the amount of material to go through after the session an event sheet was used (Appendix C), with notifications regarding time and a description of the events. This allowed the impressions from the actual play session to aid with remembering which events were interesting to return to for a deeper analysis. This would be in contrast to going over the material at a later date with the recordings and only the limited help from foggy memories of what stood out as important during the session. In order for a segment to be marked as interesting during the play session it had to depict a situation that contained communication that was about the game, or its players, felt focused enough to be useful when transcribed and was not similar to other situations that had already been marked down several times already.

After the play session all segments were viewed again and tagged according to the kind of information that was exchanged between the players and on how the players conveyed it to each other. The segments were then sorted into categories based on their tags. One segment that stood out as particularly explanatory in each category was then selected to represent that category and those segments were transcribed for presentation in this thesis. The transcriptions focus on the semantic content of the communication between the players and on how they communicate rather than on syntactic or phonological aspects.

3.1 PROCEDURE

The play session for WarCraft: The Board Game began with all participants being welcomed and given a sheet of paper with information (Appendix A) about what would happen during the session. The sheet contained information about what they were expected to do, how data would be collected, how the data would be treated and their rights as participants in the study. The participants were also encouraged to ask questions in order to clarify any uncertainties in the and not to be shy about asking questions during the play session. After the introduction they were given a box containing the game WarCraft 3: The Board Game. To make the play session more genuine and allow for data gathering from all parts of board gaming session the group had to read the rules themselves and decide on how to play the game.
After the game was finished the participants were given a questionnaire (Appendix B) to answer some general questions about themselves and the game they had just played.

3.2 PARTICIPATING PLAYERS

The four players participating in the play session for WarCraft: The Board Game was respectively 19, 22, 23, and 24 years old. All participants were Swedish students at the technical faculty of Linköping University. Two of them had played the game once before. All participants had played games since childhood. The two players in the play session for World of WarCraft were anonymous as nothing is known about their game, gender or nationality.

3.3 NOTATION

The notation system used for the transcriptions in this study is based on the system used by Hirsch (1989) with some small modification. The biggest difference compared to his system is the use of two columns where one shows speech uttered by the players and the other show the players’ gestures. The notation symbols are as follow:

< > Is used to show that speech and gesture overlap with each other

<1:>, <2:> When several overlaps of speech and gestures the numbers are used to simplify reading

[] Used to indicate something about the way in which a person expresses something

/ A subjectively perceived short pause in the person’s speech

// A subjectively perceived longer pause in the person’s speech

/number/ Denotes the approximate length of the pause in seconds

( ) When two players’ speech overlap or if it is hard to hear what’s being said
(...)

When something said is impossible to hear

<Gesture> A situation where a gesture isn’t overlapping with speech but is instead used to note where in the conversation the gesture takes place

meaning Italics are used to show a translation from Swedish to English

? Indicates that the player’s voice rises in intonation in the end to signify a question

**Bold** laughter. Used to note an action that isn’t a gesture or speech, for example
4 RESULTS AND ANALYSIS

Seven instances from the gathered material of player interaction have been transcribed and included in this chapter for further analysis and elaboration. Each transcribed player interaction begins with a short contextualising explanation, then the transcribed material is presented, and lastly an analysis of the interaction is presented. The chapter ends with a summary of the results.

4.1 TRANSCRIPTION PASSAGES

This section contains all the transcribed player interactions. They are: Rolling for resources, presents two players helping each other to resolve resource allocation; explaining the rules, shows an interaction between two players as they talk about the rules of the game; reacting to other players’ bodies in shared space, gives an example of how the presence of other people can influence a play session; sharing personal experience, shows the fragile nature of immersion in a game; signalling intent and inner thought, presents how we almost always communicating something; practicing democracy and reaching consensus regarding the rules, gives an example of how people discuss and cooperate in order to create and uphold the play session; pretending to be someone else, shows that people pretend to be someone and somewhere else in games.

4.1.1 Rolling for resources

In this transcription the players have reached the resource phase of the current turn and it is Martina’s turn to roll the die and gather the resources she’s entitled to. She’s allowed to roll one die for every game piece that is a worker and is standing on a square, on the game board, containing a resource marker. A result of 1-2 gives her one resource, 3-4 gives her two resources and 5-6 gives her three resources respectively from rolling the six sided die.
<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Martina</td>
<td>&lt;1: okej ja slår&gt; / &lt;2: den här&gt; / &lt;3: och den&gt;</td>
<td>&lt;1: Shakes a die&gt; / &lt;2: Points at one of her worker units&gt; / &lt;3: Points at another of her work units&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1: ok I roll&gt; / &lt;2: this one&gt; / &lt;3: and that&gt;</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Martina</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Shakes, and then rolls the die&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Martina</td>
<td>&lt;ett på den&gt;</td>
<td>&lt;Points at one of her worker units&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;one on that&gt;</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Kristina</td>
<td>&lt;ett guld&gt;</td>
<td>&lt;Kristina begins to reach for tokens&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;one gold&gt;</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Martina</td>
<td>mm</td>
<td></td>
</tr>
</tbody>
</table>

**TABLE 3: TWO PLAYERS HELPING EACH OTHER TO RESOLVE RESOURCE ALLOCATION.**

Martina is just about to take her actions related resource gathering and she has a few game pieces on the board with the capability to collect those resources. She needs to decide in which order to roll the die for the different game pieces. As seen in the transcript she doesn’t take the time to tell the others with verbal speech which game pieces she intends to roll for. What she does instead is signalling verbally that she intends to roll a die and points physically at the relevant game piece. The game rules don’t force her to explain these intended actions but she does anyway. This might not seem to be a remarkable thing but it has a couple of implications. One is that by pointing she is conserving time as signalling the same meaning verbally would take longer since there are few obvious visual elements on the game board for her to refer to.
If she had only one worker or if she had two workers that stood on resource squares of different types, for example a forest and a mine, it would be easy references to make. In this case it becomes more difficult since she has three workers and she would have trouble communicating verbally which worker she was actually referring to if she only used her voice.

These embodied references through gestures are exactly the kind of symbiotic gestures that Goodwin (2003) could see among archaeologists. In the example above Martina is dependent on the game board for the others to make sense out of her gestures. Kristina seems to understand easily what Martina is saying and what she’s implying. The result of Martina’s actions is that she gets more gold to spend, which is something Kristina understand. While Martina is making gestures to indicate which game piece should be connected with which die roll Kristina begins to resolve the result of Martina’s actions by picking up the game markers to give to her.

What’s interesting here is not that Martina is gaining some tokens. It’s that Kristina is giving her the markers and this is made possible as they share a physical location and because Kristina is drawing inferences of the actions Martina is taking. First, Kristina notices that it is Martina’s turn and that they are currently in the resource gathering phase of the game, which means that Martina’s die rolls take on a particular meaning. Secondly, Martina’s gestures in that context are indicating the order in which she’s rolling the die for the game pieces. Thirdly, Kristina infer from the workers’ placement on the game board what that particular die roll means. This can be seen in the answer “ett guld” (one old) without Martina having to ask for a gold token.

This shows that symbiotic gestures are used when people play games together. If the game board had been removed then the gestures made by Martina wouldn’t carry any meaning for the other players and she would have had to explicitly tell them about her actions verbally. The gestures couldn’t be removed either without Martina having to resort to a longer verbal communication to make her understood. If verbal speech was muted she would have a harder time explaining what her gestures or rolls were meant to mean. If a person is able to physically point at objects while also using additional verbal explanations it save both time and effort for the player.
4.1.2 Explaining the rules

This conversation takes place before the start of the game. The participants are familiarising themselves with the rules. Martina has taken the reins by reading and explaining the rules to the other participants.

<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Martina</td>
<td>&lt;dom / faller inom den här kategorin&gt;</td>
<td>&lt;Points at a game token&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;They / fall in this category&gt;</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Rebecka</td>
<td>dom här &lt;också&gt;?</td>
<td>&lt;Point at a pile of game tokens and picks some some up&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>These ones &lt;too&gt;?</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Martina</td>
<td>ja (...)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>yes (...)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rebecka</td>
<td>&lt;va ä de där då&gt;?</td>
<td>&lt;Points at a game token&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;what are those then&gt;?</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Martina</td>
<td>spendera två guld två trä</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>spend two gold two wood</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Rebecka</td>
<td>&lt;va ä de där då&gt;?</td>
<td>&lt;Still points at the same game token&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;what are those then&gt;?</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Martina</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Looks at where Rebecka is pointing&gt;</td>
</tr>
<tr>
<td>8</td>
<td>Martina</td>
<td>[de där ä uppgradering] &lt;Gesture&gt;</td>
<td>[Quickly and happily]</td>
</tr>
<tr>
<td></td>
<td></td>
<td>[those are an upgrade] &lt;Gesture&gt;</td>
<td></td>
</tr>
</tbody>
</table>
<Points at the
same game token
as Rebecka>}

9 Rebecka (…)

10 Martina (kostar lika mycket som) (…)
(cost as much as) (…)

**TABLE 4: INTERACTION BETWEEN TWO PLAYERS AS THEY TALK ABOUT THE GAME RULES.**

This transcription gives a good example of a more genuine symbiotic gesture than the previous transcription when Rebecka says “va ä de där då” in line 4. If removing any of the components of gesture, environment or speech it would be hard for the others to guess her meaning. Consider the question “what’s that?” without any indication of what “that” refers to if there is no environment. If there is an environment but no gesture anything in proximity could be the source of the question and without speech the gesture could possibly mean anything from “look at that card” to “I like touching cards”. The players often use symbiotic gestures since they are an economic way to save time. They also don’t have to learn specific names for the different parts of the game if they can refer to them by pointing. In line 4 Rebecka asks the question “va ä de där då” and Martina continues by saying “spendera två guld två trä” in line 5. Rebecka then repeats the question. There are two probable reasons for this: the first is that the answer doesn’t fit with what she’s pointing at, the second is that Martina’s body posture and eye gaze made it apparent to Rebecka that Martina probably never saw what she was pointing at.

In this transcription gestures are also interesting for another reason since they place Rebecka’s question in a specific context by drawing attention to what she’s referring to. While a verbal question might be easier to notice since it doesn’t require that the person’s eyes are looking at a specific location it has drawbacks. It’s harder for the speaker to know if the listeners are attuned to her speech. If the speaker is using gestures and the addressee isn’t attuned to it she can probably that the addressee hasn’t understood her question completely.
This conversation is about learning the formal rules of the game and what the different game pieces and tokens mean and how they are used. In this particular transcription Martina is the one holding the rulebook, reading from it, and explaining what she reads to the other players while they ask clarifying questions, and by doing this they are creating a mutual common ground for the game.

4.1.3 Reacting to other player’s body in shared physical space

The following transcript comes from a sequence in the game where Kristina is involved in a battle with Karin. Kristina has decided to use one of her special cards to sway the course of combat in her favour.

<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kristina</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Picks up her spell cards&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Mathias</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Leans forward to read the rules that are on the table&gt;</td>
</tr>
<tr>
<td>3</td>
<td>Kristina</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Holds the cards up to show Mathias&gt;</td>
</tr>
</tbody>
</table>

**TABLE 5: THE PRESENCE OF OTHER PEOPLE CAN INFLUENCE OUR ACTIONS.**

These actions exchange information between two agents: Mathias and Kristina. There is a difference though between the intentions of the action and the subsequent interpretation of that action by the other agent. When Kristina picks up her playing cards it’s reasonable to assume that she’s picking them up in order to find a card to use that will sway the upcoming battle in her favour and after a while she finds a suitable spell card and plays it. By doing this she’s divulging information that she's probably going to play a card.
In this case it alerts Karin that she might want to start looking through her own collection of cards for one to play as well. All actions that a player can take in *WarCraft: The Board Game* this particular game are open actions that everyone can see which means that all actions are also possible learning experiences for the other players when someone performs an action. Picking up her cards and playing one she's both demonstrating that such an action is possible and what the outcome might be.

After Kristina picked up her cards, Mathias leaned forward to read the rule sheet in order to see when you're allowed to use card and when she does that Kristina holds up her cards for him to see. Mathias is not on her team but he's not part of the opposition either since he's just present for doing data collecting. Apparently Kristina felt it was safe to show him the cards. This means that by physically moving his body he's leaking information into the environment that other agents can observe and draw conclusions from. This means that the agents are continuously involved in a bodily communication between each other. Through that communication they are giving each other indications about possible future actions which mean that agents can make preparations for other agents' actions before they are performed.

### 4.1.4 Sharing personal experiences

This transcript begins with Karin wanting to construct some more troops to bolster her army. Her team mate Martina doesn't hear what Karin is saying and responds by letting her know that. Rebecka suddenly draws everybody's attention to a card she thinks is funny to share with the other players.

<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Karin</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Picks up some tokens&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Karin:</td>
<td>i vilket fall som helst så ska jag / [bygga tre stycken grunts] <em>in any case I'm going to build three grunts</em></td>
<td>[Intonation on every word]</td>
</tr>
</tbody>
</table>
3 Martina Huh?

4 Karin <Gesture> <Puts away tokens>

5 <3 seconds of silence>

6 Rebecka är det nån som klarar av <1:att se på den här bilden överhuvudtaget> /3/ <2:ser ut som att han> har typ två horn i näsan eller nått <3:skratt> is there anyone that can handle <1:to look at this picture at all> /3/ <2:Looks like he> has like two horns in his nose or something <3: laughter>

7 Martina va?
what?

8 Rebecka (...) sjukt <fult ut> (...): crazy <ugly> <Martina takes the card from Kristina and looks at it>

9 <2 seconds of silence>

10 Kristina de e...() it’s...()

11 Rebecka <1:Gesture> (visa) upp för kameran också <2:Gesture> <1:Looks toward the camera> <1:Gesture> (show) it to the camera too <2:Gesture> <2:Points at the camera>

12 <General laughter>
Here it becomes obvious of how sensitive the game is to disturbances. It’s only maintained while the players are actively focused on the game instead of the rest of the world. There is of course the physical artefact that remains in the form of location of pieces, resource markers and ability cards. Without the players’ involvement the physical artefact will remain unchanged and no events will change the game’s state until the players again focus on the game and continue the session. This is related to the concept of layers. Using the concept is valuable in games because a person playing a game will jump between different layers when she communicates with other agents about the game. She must first accept the rules stipulated for the game and then act in accordance with those rules to take action. Above that layer she needs to communicate those actions to other players and sometimes even the reason for those actions and the rules that govern them. On the side of that she can accept the fiction of the game and act out play that doesn’t emerge from the rules but is a meta-play based on the game’s fiction where she acts out a situation where she is not her physical self but an agent in the game that decides on the actions that she takes. Different games might support these layers to different degrees and different layers might require different means of communication to appear.

The game is used to communicate information to each other that has less to do with the game session itself and more to do with the life the agents share with each other, which enrich the social aspects for the people involved. When
that happens the game recedes into the background and the social aspect takes over in importance for the people involved. The environment becomes objects to be used for that interaction which can be seen in how the card is passed around as a source of amusement and even the recording camera is drown into the conversation.

The players communicate with each other about actions they are taking in the game. Karin states that she’s going to buy some units in the game even though she doesn’t have to since she can just perform the action instead by taking the units and placing them on the board. Instead she both explains what she’s going to do before and while doing it. Doing so gives the other players an opportunity to understand what her actions are going to be and put them in relation to their own intended actions in the game. I don’t know if it’s a conscious act or not but it is surely use for both her teammate and her opponents.

### 4.1.5 Signalling intent and inner thought

The transcript below contains very little verbal speech. It’s Kristina’s turn to move her game pieces and she does so by just muttering while moving them and when she’s finished the players move on to the next phase of the game.

<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kristina</td>
<td>&lt;1:så&gt; // &lt;2:så&gt; // och &lt;3:(…)&gt;</td>
<td>&lt;1:Moves a unit&gt; &lt;2:Moves another unit&gt; &lt;3:Looks at her game tokens&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;1:so&gt; // &lt;2:so&gt; // and &lt;3:(…)&gt;</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Kristina</td>
<td>&lt;Gesture&gt;</td>
<td>&lt;Holds her hand in the air above the game board for 12 seconds, no one does anything else&gt;</td>
</tr>
</tbody>
</table>
Kristina: <Gesture> <Moves her hand back and leans back in her chair>

< 5 seconds of silence>

Rebecka jaha flytta...ä sätta ut gubbar då (...) 

oh move...place units then (...) 

Martina mm

TABLE 7: PRESENTS HOW WE'RE OFTEN COMMUNICATING SOMETHING.

The players move their game pieces in turn, which makes the game into a serial activity since no actions are executed in parallel; neither between players nor between a player’s different actions. When it is a player’s turn all other players have to wait until that person is finished before the game can progress. For another person to continue she therefore needs to know that it’s her turn, which can be conveyed in a number of ways.

In the passage above Kristina has finished moving all of her pieces so in principle her turn is over and now it is the next player’s turn. Yet, the next player doesn’t begin her round, which is likely caused by the fact that Kristina is holding her hand in the air above the board, and through that make the other player wait in silence for her to finish. People communicate implicitly and explicitly with each other and convey meaning both with speech and through gestures when they play games together.

4.1.6 Practicing democracy and reaching consensus regarding the rules

The following transcript is taken from a part of the game where Kristina decides to give her thoughts about a mechanism in the proposed game rules. She seems to feel they aren’t as well constructed as they could be and wants to talk this over with the other players. She quickly gets support from Rebecka that suggests a different set of rules that they can use instead.
<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kristina</td>
<td>&lt;1: det är lite fusk med de här&gt; / spenderakorten eftersom de står &lt;2: början av / din spenderafas&gt; // men om jag vill supporta &lt;3: dig&gt; med trä &lt;1: it’s kinda cheating with these&gt; / spending cards because it says &lt;2: beginning of / your&gt; spending phase // but if I want to support &lt;3: you&gt; with wood</td>
<td>&lt;1: Looks towards the rule book&gt; &lt;2: Looks towards the rulebook again&gt; &lt;3: Throws her right hand out turned up&gt;</td>
</tr>
<tr>
<td>2</td>
<td>Rebecka</td>
<td>(mm)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Martina</td>
<td>(de) hjälper inte (they) don’t help</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Kristina</td>
<td>(...) fast du måste ha dem från början (...) but you must have to have them from the beginning</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Kristina</td>
<td>ja menar de att / att om jag nu vill ge dig (...) &lt;1: fem trä&gt; / då får ja inte spela dem fören det är min tur å då kan &lt;2: inte du&gt; använda dom I mean they that / that if I now wants to give you (...) &lt;1: five wood&gt; / then I can’t play them before it’s my turn and then &lt;2: you can’t&gt; use them</td>
<td>&lt;1: Kristina makes a giving gesture towards Rebecka&gt; &lt;2: Makes a hand gesture towards Rebecka&gt;</td>
</tr>
<tr>
<td>6</td>
<td>Rebecka</td>
<td>näe / alltså ä de bättre å va &lt;1: jag&gt; som kan ge &lt;2: dig&gt; sen än tvärt om (...) jag tycker det</td>
<td>&lt;1: Points at herself&gt; &lt;2: Points at</td>
</tr>
</tbody>
</table>
är i början / fasen överhuvudtaget man borde spela sådana här kort no then it’s better to be that can give later than the other way around (...) I think it’s in the beginning / the phase one should play those cards

Kristina

7 Kristina Mm

8 Rebecka alltså annan gjort nånting // that is one has done anything //

Waves her hand over her cards

9 Karin (mm a)

10 Rebecka (vad) tycker ni om det husregel? (what) do you say of that house rule

11 Karin Jo yes

12 Rebecka Inandning ja då kör vi så Deep breath yes then we do like that

13 Karin faktiskt / even om det ger er ett litet (övertag) yes / even if it gives you a slight (advantage)

Table 8: People discuss and cooperate in order to create the play session.
In this transcription something happens that is fairly unique to analogue games, compared to computer games and that is the possibility for players to alter the game rules while the game is in play. There is no insurmountable technical barrier that makes it impossible to implement such functionality into computer games; it’s just almost never done. Players can of course add their own self-imposed rules, for example that no one is allowed to use a certain item in a game, but they are in-game unable to change make modifications to the rules in the game’s code unless the game developers have implemented such functionality. It marks a clear difference between analogue and digital games and how they are played in the sense that analogue games can always be altered in case the participants democratically decide that the rules should be changed.

When you play a game you participate in one of the few situations in society where you're completely free to make up the rules of the game as you see fit or at least you can choose not to bind yourself to set of rules by not joining a certain game. Games are in that sense rules agreed upon by its participants in order to play out a situation made up by an artificially constructed problem; since the problem is artificial the participants are free to create their own rules for resolving that problem. Most often though games and rules are selected by buying a commercial board game and then following the rules on the inside of the box, for example by buying Monopoly or Risk. The reason for using these two examples is because they have a standard set of rules but they are also two games where players often have strong opinions about what the games’ rules actually are as players have often changed the original rules by inventing “house rules”. These different opinions about the rules have to be resolved in order for the players to play the game because otherwise players will adhere to conflicting rules, which might lead to different outcomes for the same actions. This in turn can lead to conflicts that make it impossible to play or finish the game. This is a clear current difference between analogue games and computer games. In analogue games there is often a set of rules that are suggested by its designer through the instructions for the game. In a computer game the designer enforces the rule set since the rules are internalized in the code that makes up the game. There are games where you can alter the game in the form of modifications but the person doing the altering and the person playing the game are often two different persons as a quite high level of technical
sophistication and time investment is needed in order to make those changes. Such modifications can also not be done while the game is running.

The discussion in the transcript concerns the rules and how those rules affect the game currently in progress. As a result of the discussion the players decide to change the rules of the game and then continue to use those altered rules instead of the old ones. This was done through a debate among the players that resulted in a democratic consensus. The new rules are therefore not externally given or enforced but decided among the players themselves and it required consensus so that everyone will abide by the new set of rules.

4.1.7 Pretending to be someone else

This transcription was gathered from World of Warcraft where two people are involved in a roleplaying session in the city of Orgrimmar; the main capitol for one of the two factions in the game. Players go there to do errands, for example buying things, and it is a gathering place for people who want to socialize with other players. It is not an area where you go to progress directly in the game by killing monsters and solving quests to gain experience and better equipment.

<table>
<thead>
<tr>
<th>Row</th>
<th>Person</th>
<th>Speech</th>
<th>Gesture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pia</td>
<td>I have forgotten how beautiful Azeroth can be.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cecilia</td>
<td>Mmm, truly</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pia</td>
<td>Too much fire and brimstone lately</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cecilia</td>
<td>None of the smoking craters reeking with demon stench</td>
<td></td>
</tr>
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<td>5</td>
<td>Pia</td>
<td>Or swamps crawling with bloodsucking creatures</td>
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</table>
6 Cecilia And the sky, that hated sky,
always shifting from one
unnatural colour to another

TABLE 9: PEOPLE PRETEND TO BE SOMEONE, AND SOMEWHERE, ELSE.

The passage above notes an exchange between two players talking with about their current situation, their impression, and feelings about the fictional continent Azeroth. What distinguishes this exchange from the other transcriptions is that the players are pretending to be the avatars that represent them in the game world. They are not discussing actions to take in the game in order to change the current state of the game. The focus is instead on the discussion of the players’ avatars’ social life and the avatars” relation to each other. This discussion will not affect the game as it is realized through rules in the software. Instead this could be called a meta-game that only affects the game world as it is perceived by the players.

4.2 SUMMARY

From the previous analysis five categories of information could be found that players exchange during play. Furthermore, three different ways could be found of how players communicate those categories. The five categories of information exchange are:

- Communication about actions in the game
- Communication about how to perform actions in the game
- Communication about future actions in the game
- Communication about the players themselves and the physical world
- Communication about imaginary things that aren’t governed by the game but by the players

**Communication about actions in the game:** Whenever we take actions in a game we communicate to the other players what we’re doing in some way. It might be that our actions are visible so that other players can draw conclusions about those actions or that we explain our actions by doing them. It helps other players to plan their actions in order to aid or hinder that player.
**Communication about how to perform actions in the game**: Players communicate to clarify the rules of the game, to explain what one can do in order to play better or differently. They also discuss how the rules impact the game, how they will be, and how they should be, affected by those rules.

**Communication about future actions in the game**: People not only talk about what they are doing right now. They also reason about possible actions to take in the future. There is a difference between this category and the category *communication about actions in the game* because that category is about what’s happening right now, while this category is concerned with hypotheses about what might happen in the future.

**Communication about the players themselves and the physical world**: People talk about themselves, the world that they physically live in, and their relations to other people. The difference between the last category and this one is that a person can have a good relationship to someone and still pretend that their avatars are enemies and play the game in such a way.

**Communication about imaginary things that aren't governed by the game but by the players**: Player interactions don't always change the internal state of the game itself but instead the way that players experience the game. When people pretend to be their avatar and play out its relationships to other avatars the internal state of the game is not changed in most computer games. The interactions can still have positive or negative effects on the experience of the player though by affecting the players’ subjective experience of the game.

### 4.2.1 Means of expression

The three ways in which players communicate with each other during play are:

- Speech
- Gestures
- Symbiotic gestures

**Speech**: speech refers to all communication that is conveyed by using the voice.
**Gestures**: gestures are referring to the situations in which a person uses her physical body in order to visually convey meaning to other people.

**Symbiotic gestures**: a combination of the speech, gestures, and the environment that a person is in are called symbiotic gestures. A symbiotic gesture requires the presence of all three components in order for it to be effective. It is an interesting part of communication and it’s important but is seldom present in the design of technology for communication.
5 DISCUSSION

The last part of this thesis will mainly focus on three topics: the methodology used in the analysis, its implications for game design, and future research.

5.1 REFLECTION ON THE METHODOLOGY

Methodology concerns the goodness of fit between theory and data. How, on the one hand, a theory is derived from the data, and how, on the other hand, the theory adequately accounts for the data.

(Hirsch, 1989, p. 87)

The methods used in a study are always a big concern. As a cognitive scientist I’ve had the opportunity to come in contact with a variety of methodological approaches from several academic disciplines. To tackle certain research questions has previously been a quite straightforward approach though since I’ve always written from a certain discipline and also into the same discipline. In this study however I’m writing into a discipline that’s just forming and therefore has not yet settled on which methods should be used in the discipline.

This has two consequences: The first is that everyone that’s currently writing about games does so with the perspective from another discipline which leads to a situation where many disciplines are trying to squeeze games into their own frameworks. Secondly, the discipline has not existed long enough for a range of methodologies to appear that have stood the test of time in this particular discipline. In this situation it is not surprising that everyone is still dipping their toes into the water, as I know I am, rather than swimming in the data.

My guess is that the field of game studies will to a large extent reflect the history of cognitive science. Both are interdisciplinary fields of study and began with people that moved in from more traditional disciplines and tried to understand the subject with the knowledge available to them from their old discipline. If the historical progression of cognitive science can be a guide then
in time game studies will get its own scholars that began their academic careers in the discipline itself. The discipline will then have its own curriculum of methods and theory that has emerged over time by proving itself in application of being able to solve problems that the field sees as important.

5.2 REFLECTION ON THE CONCLUSIONS

In the analysis of the transcribed passages of communication between the players, five different categories of information exchange and three ways of conveying this information could be identified. One reason for this study was to find ways to improve the interaction in computer games. These categories show the different kinds of communication exchanges that the computer games should support. Each category probably requires different design suggestions in order to reach its full potential. Communication about future actions might need tools that support strategic planning while communication about your current actions might only require the ability to express yourself with speech.

These categories can also inspire game design. People talk to each other about the rules in the game and make suggestions of how to change them but there are very few computer games that support these kinds of discussions by letting players change the parameters of the game. This is a situation that has to be explicitly designed, compared to the traditional board game where the players can just change the rules by just deciding to do so. Using our whole body to communicate is also what we as humans are used to and, whenever possible, we use it to its full extent when we communicate with each other. As can be seen from the analysis, when players want to communicate they readily make use of speech, gestures and their fusion in the form of symbiotic gestures. Humans are used to communicating in that manner is economical since they can use the modalities on their own or combine them as they see fit in order to convey meaning. When interacting through a computer game the players have to use it as a mediating artefact. In order for them to do so a designer must design that possibility and implement it into the game for the players to use. To do so successfully they need to know what communication to support.

There is currently a discrepancy in most computer games between the kinds of information players want to communicate easily and how they can
Computer games have always borrowed heavily from other computer programs when it comes to technologies that developers include in their computer games. A long time ago computer games began to include the possibility to write text messages which is a technology that has been adapted from IRC. A more recent development is the inclusion of including voice-chat capabilities into games with inspiring software being Roger Wilco, Skype and similar programs. One thing has been missed though when including communication channels in computer games that are inspired by other communication technologies. There is a fundamental difference between what is required of a program like mIRC and Skype compared to computer games. The difference concerns the specific needs that users, or players, have when they communicate with each other. In communication over IRC and voice-chat people convey information about that concerns their lives rather than time critical information. Nothing is expected to happen in the IRC or voice-chat that will endanger that person in any physical way. Contrast this with the situation faced in computer games where the game is designed to pose challenges to the player that often will affect the player's game pieces or avatar.

When we enter such a game, we’re in a situation that resembles the ordinary life of humans. We navigate a physical body through an environment and by accident our body might be damaged. We’re then in a situation where we want communication channels that provides the same or even better means of communication than we have in physical life. This might not be true in a game where each player makes her own decisions detached from other players. In a situation though where the players depend on each other for survival and success in the game then the game experience could be improved by designing communication channels capable of providing more naturalistic means of communication. Instead of looking at other software technologies for inspiration to accomplish this we need to return to the basics and observe naturally occurring human communication. Insight can then be gained about how to design truly innovation means of communication in computer games.

5.3 SUGGESTIONS FOR FURTHER RESEARCH

The purpose with this thesis has been to build up a knowledge base about communication in games in the hope of finding ways to improve the
interaction and communication between players in them. If one wants to build on this thesis my suggestion is to explore the conclusions by applying them in the design of new channels of communication in computer games.
6 BIBLIOGRAPHY


The International Bureau of Weights and Measures. (1889). *Resolution of the 1st meeting of the CGPM* (1889). Retrieved 10th, August, 2008, from The
International Bureau of Weights and Measures:
http://www.bipm.org/en/CGPM/db/1/1/
7 APPENDIX A — INFORMATION TEXT GIVEN TO THE PARTICIPANTS

INFORMATIONSTEXT FÖR FÖRSÖKSDELTAGARE FRÅN LINCON 2007

Studien som jag genomför har som syfte att utforska kommunikation mellan människor samt mellan människa och den virtuella världen när man spelar spel. Anledningen till att jag vill genomföra det här momentet tillsammans med er är för att få en referensgrupp till hur denna kommunikation går till när man interagerar med andra och med en spelvärld när man befinner sig på samma fysiska plats och använder fysiska objekt istället för via datorer och internet.

En vidareutveckling utav detta arbete skulle senare kunna vara att försöka analysera huruvida de världar och de problem som speldesigners skapar stämmer väl överens med de verktyg som tillhandahålls för att navigera och interagera med denna värld och dess problem.

Alternativet skulle vara att det finns ett glapp mellan vad som krävs av spelare och vad de har förmåga att göra, kanske för att designern omedvetet har förutsatt att kommunikation i verkligheten och i spel är likvärdig oavsett design.

Just din hjälp är mycket uppskattad för det är data från din medverkan som möjliggör att den här studien kan genomföras överhuvudtaget. Det är ändå inte dig som person utan spelomgångens progression från början till slut som jag kommer att titta på i min studie. Om du någon gång under spelomgången känner att du vill avbryta av vilken anledning som helst så är det din fulla rättighet som deltagare utan att behöva berätta varför. Varje persons delaktighet i akademisk forskning ska alltid vara baserat på egen fri vilja och intresse. Om du så önskar är du också mer än välkommen att få ta del utav rapporten när den är färdigskriven och publicerad.
The study I'm conducting has at its aim to explore communication between humans, and between a human and the virtual world when playing games. The reason I want to do this part together with you is to get a reference group for how this communication is done when one interacts with others and with a virtual world when one is located at the same physical place and use physical objects instead of computers and the internet.

An elaboration on this work could be to try to analyse how well the worlds and problems that game designers create corresponds to the tools they provide to navigate and interact with this world and its problems.

The alternative could be that there is a gap between what is demanded by the player and what they have capacity to do, maybe because the designer has unconsciously assumed that communication in reality and in games are the same regardless of design.

Your help is especially appreciated because it’s data from your participation that enables the possibility of conducting this study. Still it isn’t you as a person, but the game session’s progression from beginning to conclusion that I will analyse in my study. If you at any time during the play session feel that you want to leave, for whatever reason, it’s within your rights to do so without having to explain why. Every person’s participation in academic research should always be based on free will and interest. If you want you are more than welcome to receive the rapport when it’s finished and published.
8 APPENDIX B — QUESTIONNAIRE GIVEN TO THE PARTICIPANTS

FORMULÄR FÖR DATAINSAMLING VID LINCON 2007

Spelomgång:

Spel:

Namn:

Ålder:

Hur länge har du spelat detta spel?

Hur länge har du spelat spel överhuvudtaget?

Vad är det som gör att du väljer att spela spel? (Både i allmänhet och det här spelet specifikt)

Hur skulle du beskriva spelomgången?

Var något i spelet annorlunda, bättre eller sämre än vad du är van vid från andra spel?

Övrigt:
QUESTIONNAIRE FOR DATA GATHERING AT LINCON 2007

Game session:

Game:

Name:

Age:

For how long have you played this game?

For how long have you played games at all?

What is it that makes you chose to play games? (Both in general and this game specifically)

How would you describe the game session?

Was anything in the game different, better or worse than what you’re used to from other games?

Other:
9 APPENDIX C – EVENT SHEET

OBSERVATIONSSCHEMA

Spelomgång: Spel:

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