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Games without Frontiers

Theories and Methods for Game Studies and Design

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Gonzalo Frasca and Olli Sotamaa I consider both esteemed colleagues and invaluable friends who have stuck with me during the process from the beginning to the end. Warm thanks for long-lasting guidance and friendship go to my supervisors, Professors Mikko Lehtonen and Frans Mäyrä. Meanwhile, Jesper Juul and Espen Aarseth have provided trustworthy comraderie. The work of these gentlemen has set standards for my academic thinking.

I thank all my close colleagues and friends for possibilities to discuss, develop, and play games. My thanks go also to people who have provided valuable feedback during lectures, workshops, and playtesting sessions.

I dedicate this work to my first ever playmates; to my mother, Sirpa, and to my sister, Elina.

Omistan väitöskirjani ensimmäisille pelikavereilleni, Äidilleni Sirpalle ja Siskolleni Elinalle.

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Part I: CONTEXTS AND FRONTIERS OF THEORY

The first part of the thesis consists of two chapters: The first briefly outlines the professional context from which the author has written the thesis. The second chapter contextualises the study into the young academic discipline of game studies, and especially what is come to be known as 'ludology'.

Foreword

I have written this thesis as a consumer, researcher, and producer of games. The purpose of this short passage is to try to explain why and how I've ended up producing a study like this. It also tries to shed light on possible studies that 'could have been', if my life in relation to research and games – i.e. career opportunities, research funding, getting to know fellow researchers and game developers – would have taken different turns than those that actually took place during the last, approximately nine years. In summary, this chapter outlines the change in my interest of knowledge concerning games.

Multiplayer academic game, 1998–2007

My Ph.D. project began in 1998, and it has carried through different job opportunities, ranging from copy editing to concept design in new media industry, with academic positions in between, and ending up to the lottery industry for a significant part of the time when the work has arrived at its present, final form. Parallel to this process, my theoretical focus has shifted from culturally orientated study of texts, cultural studies, and media theory, to design research and theory. This is largely due to my own work on game designs, even though in a very specific area of the game industry.

Even though I have studied games more or less actively for nine years or so, I believe that only during the four years or so I have come to find my way in game studies. Because of this, most of my previous theoretical premises and ideas, let alone complete texts on games (published before 2003) have not found their way into this thesis, or they have been fundamentally revised.

During the last four years, I've focused solely on studying and concept-tualising their designs. The most important consequence of this focus has been that I have expanded the scope within that track to all kinds of games. The narrowing of general focus has enabled a broader focus within this specific area: I have expanded my scope to card and board games, for instance. My principal research questions concerning digital games, originating from the beginning of my thesis project, have transformed into analysing computer games' particular relation to other forms of games with substantially longer cultural histories.

It has also allowed a more sensitive approach to particular schools of game design or study. For instance, by originally abandoning narrative theory as a premise, even to a radical degree, I have come to better understand the role of narrative in games. This move has helped me to understand that games employ particular rhetoric in addressing players. Moreover, the approach has allowed the theory become less specific to a certain medium or technology, when compared to the formation of theory that goes on within contemporary game studies that are focusing on games played with latest technologies.

To position the shift in my research into the three-fold framework presented by game designers and academics Katie Salen and Eric Zimmerman, it has evolved from culture, 'the larger contexts engaged with and inhabited by the system', through to rules: 'the organization of the designed system', and onwards to play: 'the human experience of that system'. (Salen & Zimmerman 2003, 6.) The last step I have chosen to take with the help of the discipline of psychology, with its numerous branches and adaptations into social psychology and cognitive psychology. Studying the psychology of playing games was at first a tentative one, with two chapters about adapting psychological concepts to my purposes. However, as I focused into the area of player behaviour, its significance to the thesis as a whole increased considerably, and the two chapters grew into six; into a theory of its own about player experience.

Multidisciplinarity and the 'text book effect'

The orientation towards design and games as systems, or to be more accurate, towards analysis methods that provide design tools, has one visible consequence for the thesis: it may appear both semi-academic and overtly multidisciplinary at times. There is no real answer to why this is so: My only excuse is that through my life-long affinity to games, and the nine-year research/design experience, I have sought to employ theories and concepts that I see best to explain at one hand, universal aspects of all objects that fit the definition of a game, and on the other hand, the particular aspects with which certain medium and/or technology differentiate one category of games from another. At the same time, the emphasis on player behaviour has introduced a considerable amount of psychological literature to the references, but with the same 'toolbox' principle.

Multidisciplinarity also has another particular, inevitable consequence: As the thesis scratches the surface of a number of disciplines, it is not humanly possible to go quite to the depths that one would expect from a doctoral thesis. In the case of *Games without Frontiers*, this would entail individual game-related doctoral theses from the fields of psychology, rhetoric, social psychology, information science, and so on. The inevitable conclusion is not to spend a lifetime in producing these individual theses but rather, produce one where disciplines are put into dialogue with one another in creative fashion. Therefore, the thesis will also appear perhaps more text-book like, or encyclopedic, than doctoral theses usually do. I have knowingly chosen this road for the sake of accessibility and generality. However, to produce accessibility within a multidisciplinary context is not easy, as different disciplines use different discourses, and implementing a coherent, single, thesis-length discourse out of them has been a challenge, definitely. As my supervising Professor Mikko Lehtonen has perceptively noted, the 'text book effect' is also due to the state of game studies as a young discipline trying to establish its position in the academic world.

A Mindmap for a Thesis

I have tried to condense the associative threads of my thinking into the following visualisation, which is a mind map of sorts. It aims to illustrate how, in the last five years, my thinking has proceeded from interest in rules to players and their psychology, and many associated topics in between – or rather, topics that I have chosen to associate with the subject. As a result, the work has taken the form it has: an approximately four hundred pages long interpretation of what game design research should be. The central references and inspirations of the work have been included in the visualisation as well (marked with white).

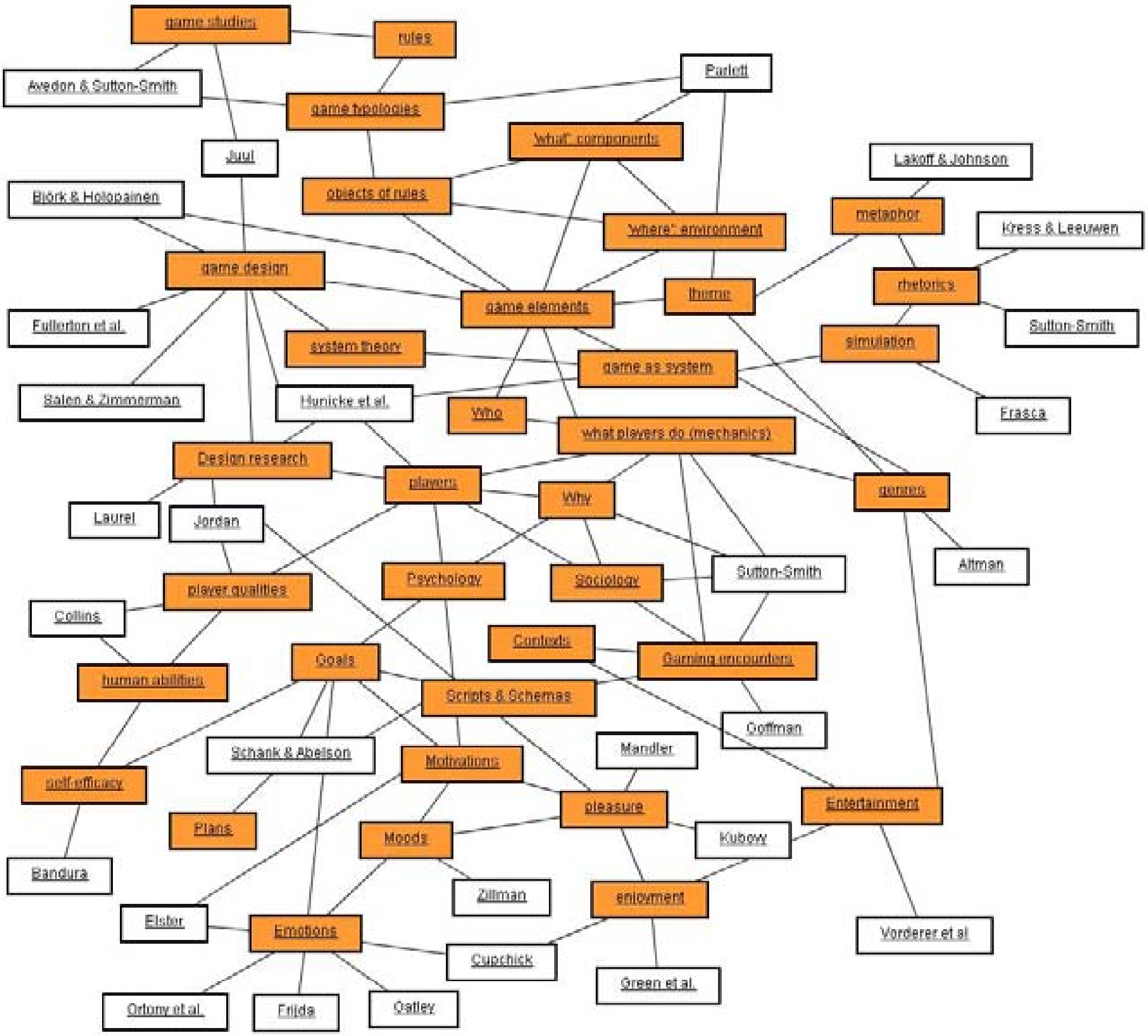

Image 1. *Mind map depicting the development of the author's thinking in relation to games.*

The above map does simplify matters in the sense that it does not portray the theories and topics abandoned during the years I have struggled with making the whole come together: theories on visual culture, technologies of vision, cultural theory of new media, audience studies, study of ideology, environmental aesthetics, narratology, critical theory, and so on. There indeed were many studies that could have been.

Studying across Frontiers

I will end with a note on the title of the thesis. It refers to several things: First, how this thesis does not focus solely on one form of games that is nominated by the technology it is operated on, such as computers or mobile phones, or the location (outdoors), or typical players (e.g, children). Rather, in *Games without Frontiers*, 'gameness' is seen as something that extends across technologies and media, taking forms in each technology or medium that suit it best. This equals the 'trans-medial' nature of games, as Jesper Juul has suggested (Juul 2003, 40–41). It is, however, bound by a formal structure that confines the term 'game' to specific objects of study. Therefore 'life', 'love' etc. are not accepted as games in these pages, even though people tend to employ metaphoric expressions about their supposed gameness. In the scope of this work, games are only seen there where a specific formal structure is found, not everywhere where there are rules and goals and challenges that do not necessarily relate to each other in any systematic, rule-bound way.

'Frontier', then, is used as a metaphor, 'game' is not. Frontier also refers to the fact that games tend not to respect frontiers between media and/or technology, and contemporary pursuits to create 'pervasive games' are the latest examples of this lack of prejudices. Frontiers are breached also in cases where similar underlying game mechanics are used in numerous games that appear different on the surface, due to a specific theme. The rhetoric statement of moving beyond frontiers also illustrates the multi-disciplinarity of the thesis. Finally, the title is also about the Peter Gabriel song, of course – it just happens, by chance, to be one of his songs that I actually like, and its lyrics – 'games without frontiers, wars without tears' – do point to fundamental aspects of games, conceptualised in what follows.

CHAPTER 1: Contexts of Game Studies

This chapter discusses the academic tradition of game studies, and the scholars, definitions, theories and methods that have taken part in creating the discipline. An outline of the history of game studies will be sketched along the way, but it is, first and foremost, an interpretation based on published and available studies in the form of books and articles. Nevertheless, the chapter serves to situate the thesis at hand into the tradition explored.

The history of various kinds of games, or the research methods employed in studying them from a historical standpoint, is not a topic of this thesis as such. Rather, historical layers of games and research methodologies become visible through the theories introduced: For instance, when I study game genres in chapter 14, the transformation of games across different media and technologies through history will become apparent. I choose to call it 'transformation' instead of evolution because, as game historian E.B. Tylor (1979, 76) has argued, lines of progress between one form of game and its supposed variant are not straightforward and simple: They are results of possible branches and permutations that are difficult to track. This also means that they are hard to anticipate for the future – in terms of designing new, trend-setting games, for instance. I believe similar process of transformation concerns game studies as an emerging, academic discipline.

In the latter half of this chapter, I will thread through the contents of the thesis and introduce the topic of each chapter, the method employed, and the questions it tries to solve. These are all situated in a context, which we will enter next.

Enter the tradition: Modern game studies

Early landmarks of game studies in the modern age have been documented by Elliot M. Avedon and Brian Sutton-Smith (1979, 19–26). This work precedes the current rise of game studies roughly from late 1990s onwards that has focused particularly on computer and video games. The study at hand will try to negotiate how the most useful methods and findings of these two traditions – 'modern' and 'contemporary' – can come together.

History and anthropology of games

Probably the most well-known modern study of games is Johan Huizinga's (1971) cultural critique *Homo Ludens: A Study of the Play-Element in Culture* originating from 1938. Huizinga's concept 'magic circle' refers to the particular enchantment of games as something detached from everyday activities with make-believe rules. It is a metaphor for games and their particular attraction that has sustained its explanatory power to this day. Magic circle has been promoted in contemporary game studies, especially by Katie Salen and Eric Zimmerman (2004) in their influential work *Rules of Play*.

However, Huizinga's book was preceded by a number of anthropological and/or historical approaches, such as Stewart Culin's studies on the games of native Americans, Chinese, etc. (Culin 1992 & 1993; see also Avedon & Sutton-Smith 1979, 55—62). H.J.R. Murray was a prominent historian of board games, both studying Chess (Murray 1913) and other forms (Murray 1951).

A notable modern entry into game studies is Roger Caillois' *Les Jeux et les Hommes* from 1958 (translated into English in 1961). Caillois looks into various sorts of games from a socio-anthropological viewpoint, and he introduces the four categories of agon, alea, mimicry and ilinx, which account for different game and play activities. Caillois also introduced an axis that describes the players' attitude to the game, ranging from free-form paidia to rule-bound ludus. Despite contemporary critique (see e.g. Juul 2003, 2004) Caillois' work presents a generic approach, and as such has notable similarities to the one promoted here.

For this work, these studies have served as a necessary background for understanding the wide world of games across different cultures.

Game theory

Game theory is another discipline that warrants attention when discussing the modern roots of current game studies. In the field of cybernetics and economics, game theory, formulated by John von Neumann and Oskar Morgenstern in *Theory of Games and Economic Behavior* (1944) gained prominent status and various applications. Game theory does have relevance to the thesis in the sense that the game of **Poker** served as an inspiration for von Neumann's inquiries into strategic choices and decisions in games.

However, as game theory mainly discusses so-called zero-sum games where the players are idealized constructs making rational and informed decisions, it does not fit into the theory at hand. Even though my theories attest for strong formality, they also try to account for the emotive responses as well as psychological and aesthetic dimensions of games and game play. These dimensions of player behaviour can essentially be seen as non-rational, even though the juxtaposition of rational and non-rational has been contested in the fields of psychology and cognitive science.

Play and simulation theory

It also needs to be noted that there is a rich and vast field of play theory originating from the latter half of the 20th century which will be addressed in the study at hand mainly through the work of Brian Sutton-Smith and his colleagues (e.g. Sutton-Smith 1972, Avedon & Sutton-Smith 1979, Sutton-Smith 1980, Sutton-Smith 1986 & Sutton-Smith 1997).

Another field that belongs to modern game studies is the study of simulation. There is a considerable canon of literature – especially evident in the *Journal of Simulation and Gaming* – that discusses simulations in the form of games. The work of theorists and designers such as Cathy Stein Greenblat (1988) are highly relevant for contemporary game studies.

Philosophical accounts, e.g. Bernard Suits' *The Grasshopper: Games, life, and Utopia*, a selection of essays from 1978 that deal with various aspects of games, have been influential to the study at hand as well, even if they are not necessarily referenced directly.

Game studies of the 21st century

Espen Aarseth, game scholar and editor in chief of the online journal Game Studies, has named the year 2001 as the 'year one of game studies' (Aarseth 2001). In the light of the studies mentioned above, he obviously refers to the inaugural year of game studies focusing on computer and video games. It is a fact that there have been studies of computer and video games before 2001. Mary Ann Buckles' doctoral thesis from 1985 is usually referred to as the oldest, but these individual instances have been more or less scattered, solitary work – Aarseth's claim holds better when it is interpreted to refer to an emergence of an academic community keen on studying the rising popularity of games played with personal computers, video game consoles, and mobile phones.

Games without Frontiers positions itself temporally to align with this shift, and the author has been part of the shift, yet as time has passed, the study has transformed towards premises found in the 'modern' game studies discussed above. The fact that the scope of the work has expanded from digital games to all forms of games is mainly due to what I will call 'systemic' view to games. By systemic, I refer to an interest towards formal elements in games, such as rules and other structures. It essentially means studying games as if standing in the core of the game as system, and looking at players in the periphery of the system, rather than standing in the periphery and observing what happens there. I have chosen to dub these standpoints as systemic vs. contextual.

The systemic approach has been referred to as 'ludology', even if not always with these exact words. 'Ludology' is a neologism resulting from the combination of the latin word 'ludus' (play) and Greek term 'logos' referring to reason and science. In similar fashion as 'narratology' refers to a set of theories on narratives and narration, ludology is a general term for studies and theories focusing on games (for more, see Frasca 2003). Thus, the modern game studies discussed earlier can be seen as contributions to ludology, and I do indeed believe that they should be treated as such – even if this constituted a form of academic colonization of preceding theories into a new canon.

Branches of Ludology

While on the subject, I believe I have to address the narrativist-ludologist debate that has been going on in the field of game studies. The supposed conflict was between scholars investigating games with an emphasis on their narrative aspects – i.e. the 'narrativists' – and ones dedicated to studying 'games as games' – i.e. the 'ludologists' interested in rules and other formal elements. Essentially this meant that the former were interested in games with strong narrative aspirations (e.g., **Myst** [Cyan Worlds, 1993], and many so-called adventure computer games), whereas the latter liked to throw the 'Tetris card' into the table, promoting games with no narrative or characters.

This branch of ludology, that came to define ludology for a short period of time at the turn of the century, gained its identity from outspoken juxtaposition to the 'narrativist' attitude towards games, which promoted the adaptation of theories on narratives into studies of games. This debate has been documented from different viewpoints by Copier (2003) and Frasca (2003). I believe the stance of 'radical ludology' came to be known and articulated via Markku Eskelinen's argument that

> stories are just uninteresting ornaments or gift-wrappings to games, and laying any emphasis on studying these kinds of marketing tools is just a waste of time and energy. (Eskelinen 2001.)

The form of moderate, applied ludology presented in the thesis at hand means that 'ornaments' are addressed as a set of elements in games, among other elements, with particular consequences for players' experience of the game. The metaphor of ornament does not contain any value judgment – rather, it begs to ask, what is the role of particular ornament in a particular game, and what are the general forms and means with which ornaments appear in games, and as said, most importantly: what are their consequences for player experiences. The theory of game rhetoric in this thesis (see chapter 13) is, then, essentially a theory of gift wrappings, if we use Eskelinen's terminology.

I've declared myself a ludologist a time or two – I guess the fancy term speaks to the pompous in this game researcher, too. I have no problem of being associated with the more structurally oriented school of game studies, or ludology, because it is an accurate description. After all, one of the functions of this introduction is to explain why this is so, not to indicate that it is the only path that studying games can or may take. As far as the contested relationship of narrative and games go, the chapters on game mechanics, genres, and rhetoric posit my stance on the role and functions of narrative in the field of games. My theory starts from the premise that one does not need narrative with its specific structural features in order to create a game, but many games, and especially the player experience that emerges via the behaviour of the game as a system, benefit from narrative devices – foregrounding, perspective, modes of address, etc. – in their various forms as a way to distribute information about goals, goal resolutions, conflicts, and characters in a game.

I guess the next set of arguments is what makes your author a ludologist: Rather than expanding the concept of narrative endlessly, I argue that similar results in disseminating information, with possible emotional consequences, can be achieved via a specific rhetoric inherent to games that is based, e.g. on the communication of rules by the game to the player and/or the design of the interface or material props (pieces, etc.) that the players engage with when participating in the game through performing the actions that the game persuades them to perform.

In the end, adopting a position here is a question of emphasis and point of view, and of course, I stand firmly defending my own perspective. It is built on the foundations of game elements, psychology, and rhetoric – rather than other perspectives, such as narrative, mathematics, etc.

Let it be made clear that I respect many kinds of approaches to the study of games and players, just as long as the researchers play and work with games – I do not see why any literature scholar who does not read books should be taken seriously. To put it in game terms, 'being game' is indeed quite a modest qualification for someone studying games.

The Method: Applied Ludology

The study at hand is ludological in nature. What does that mean, exactly? I believe it is beneficial to articulate this premise in a more detailed manner: What particular kind of ludology Games without Frontiers presents, and what are its points of departure to other branches of ludologies. This is necessary because historical evidence (such as the discussions referred to above) seems to support the belief that there are indeed numerous branches.

The approach undertaken in Games without Frontiers can best be termed 'applied ludology'. The term aims to capture the nature of the approach as one based firmly on close analysis of aesthetic and social phenomena known as games, but with methods that would be easily applicable into practice by replicating the process of analysis through a systematically outlined method. In my scholarly interpretation, the 'close analysis' approach was the focus of the branch of 'radical' ludology that emerged during the turn of the century, as referred to above.

Yet at this point, ludology largely ignored players, which makes it essentially an approach based on structuralism, i.e. theories of literature originating from the structuralist movement in 1960s by scholars such as Roland Barthes. However, there has to be room for more player-sensitive ludologies, and the methodologies and theories introduced in Games without Frontiers promote such ludologies. These ludologies define their discipline and its methods in inclusive rather than exclusive manner. The latter, exclusive approach supposedly was the ‘studying games as games’ stance of turn-of-the century ludologists (myself included).

My use of the term ludology in plural form is completely deliberate and polemic in the sense that the term has widely been used in singular form as if it would present a clear, systematically documented method. One of my arguments is that it has been documented in separate papers, conference presentations, and web sites. I believe this is not constitutive of a method. Therefore ludology is better understood as a particular attitude to the study and design of games, rather than associating it with a clear-cut method, as I have argued elsewhere with a colleague (Järvinen & Holopainen 2005). In terms of psychology, ludology has presented a particular (emotional) disposition to studying games, but that disposition has not been communicated through concrete enough methods.

Even though it is safe to presume that all writings considered ludological are applicable to the purposes of practical analysis, some are more explicit in their aims than others. E.g., it may be difficult to adapt ludological studies which employ descriptive and conceptual methods to practical analysis or design tasks; the method and its constituent procedures are not detailed enough to be replicated. Many instances of ludologies are based on schools of thought such as cultural theory, cultural studies, social psychology, etc., and their goals in producing research are deducted from their respective influences and traditions.

An applied form of ludology does not see research papers with descriptive methods as sufficient end results. Applied ludology treats research papers as springboards and sets of documentation for practical applications, such as development and analysis tools, or new games. Where applied ludology departs from the 20th century ‘ur-ludology’ described above is its explicit and pragmatic purpose to benefit game analysis and game design tasks. In the context of *Games without Frontiers*, this is mostly evident in my efforts to present results in the form of typologies, and more importantly, their adaptation to analysis ‘recipes’ which constitute a toolset of ‘rapid analysis methods’ (see Part IV). Essentially the underlying principle in such ‘quick and dirty’ analysis methods is that one does not have to know their theoretical basis in its every detail (i.e. read the first three parts of the thesis) in order to be able to employ the methods for practical tasks. I see that this serves their entry into game studies and design curricula.

Due to the premises outlined above, it is relevant to contextualize applied ludology with another discipline introduced and articulated only recently: Design research.

Applied Ludology as a set of methods for Game Design Research and Theory

The point is that applied ludology presents game-related design research, but what is 'design research'? In general, it is a line of research interested in design products, tasks and processes. In the preface to the anthology *Design Research* (Laurel 2003), Peter Lunenfeld discusses various attempts to define design research from Bauhaus to the present day. He adapts Sir Christopher Frayling's three-fold identification of key areas of design research (Lunenfeld 2003, 11):

- research into design
- research through design, and
- research for design.

These areas are described as follows:

> Research into design includes the traditional historical and aesthetic studies of art and design. Research through design is project-based, and includes materials research and development. And finally, research for design is the hardest to characterize, as its purpose is to create objects and systems that display the results of the research and prove its worth. (Ibid.)

The three approaches are useful also for situating *Games without Frontiers* into the contexts of design research. The thesis' most traditional aspect is the *research into design* by analysis of existing games, i.e. their designs, and creating methods for the analysis. The methods are intended to offers tools for design, and as such, they constitute part of the results of the study and try to prove their worth, i.e. the research is done *for* design. On other hand, one of the case studies transforms the key concepts and the overall theory of Games without Frontiers into a card game. As a part of the case study, the design process of the 'Gamegame' is documented. The documentation aims at providing new knowledge from the perspective of research through design, as well as being another part of the thesis' results for purposes of design.

Three Audiences

The fact that I want to associate the thesis with design research and design theory, and argue for more rigid and concretely applicable methods, has indirect implications for the audience of the thesis. There are three audiences for *Games without Frontiers*:

- Teachers and students of game analysis and design
- Academic game scholars developing analysis & research methods
- Designers and developers working with game concept design.

These are the primary, secondary, and tertiary audiences that the thesis is written for. The fact that I have chosen the first group as the primary audience has certain consequences for the structure, rhetoric, and emphasis of the work. I have chosen to move from the elements to the context rather than vice versa. This choice is a methodological choice, i.e. I have chosen to study games first, and gather representative samples of them, rather than gather representative samples of players and contexts.

This conceptual separation of games from their contexts for the sake of theory formation is mainly due to my background as an art scholar rather than, say, social psychologist (yet, looking at the end result as a whole, I like to think of myself as something in between). The point is in trying to understand what particular types of games 'do' to players, in the sense of emotions and experiences, rather than what players do to games. This division is not clear cut, especially as I discuss player abilities and motivations, but it serves to illustrate a choice in emphasis. More importantly, it provides a conceptual division from where to proceed in the first place: games as sets of rules and other elements.

Research Process as Design

Katie Salen & Eric Zimmerman (2004) write about the 'core mechanic' of games. They refer to the core sequence of actions that players take in a game, repeatedly. Even though conducting game research or design is not a game in itself, there is a certain circular, iterative process involved as well. The 'core mechanic of applied ludology' has taken the following circular route with my thesis:

- play >
- > comparison >
- > recognition >
- > abstraction >
- > theory formation >
- > application (play/design) >
- > observation >
- > analysis >
- > validation >
- > iteration >
- > play >

This process, starting from play of games and ending in circular fashion back to replay, highlights how research, or any form of writing, is also a design process – and a creative process. For example, the typologies and libraries of game mechanics and player abilities, for instance, have been collected and defined by starting from efforts to discern player actions in any given game that the author has played, read, or heard about, then playing them and comparing the games to each other, and trying to recognize differences and similarities. These have lead to a phase of abstraction where the mechanics have been assigned to classes with family resemblances, which have resulted into a theoretical framework which has been applied to another set of games. The applicability and comprehensiveness of the frameworks has thus been put to a test, observed and analysed, and subsequently iterated by adding mechanics, revising the analysis about their relation to goals, combining classes, renaming them, etc. At the same time, the premises of the framework have been documented, and by further rounds of iterative application by play and analysis, the final result – a design for categorizing what players are put to do in the universe of games – has been achieved. Most importantly, similar processes have been applied throughout the work, e.g., to the construction of the theory of game elements.

Games without Frontiers has also been a design process in the sense that it has gone through numerous iterations: Some of its development can be traced back to conference papers and the few papers that I have published, but behind the façade, there have been tens and tens of drafts and revisions.

CHAPTER 2: Frontier by Frontier

In a thesis, there should be a thesis, I am told. My starting hypothesis is that any known game in the universe can be deconstructed into parts with a single, unified set of theoretical concepts, and my thesis defines those concepts and methods of how to use them. Moreover, this set of concepts can be used as an aid in designing new games. I claim also that it is possible to produce a holistic 'ludo-psycho-logical' theory of the experiences players go through when playing games, and apply it for analysis and design purposes. I will reflect on these hypotheses, and their emergence to theses, in the concluding chapter of the work.

Five parts, twenty chapters

After contextualising the study in relation to historical and contemporary game studies, I will summarize each chapter of the thesis: the chapter's premise, the research question or problem it tries to solve, the methods employed and steps taken to arrive at a result, and discussion of the results in the context of the work as a whole.

The whole consist of five parts. You are reading the first part of the thesis, titled 'Contexts and Frontiers of Theory'. Second part is called 'Theory of Game Elements' and the third 'Theory of Player Experience'. After establishing the foundations of the thesis both regarding game systems and player behaviour, the fourth part, 'Studies in Game Systems' goes into more detailed studies in the interactions of systems and players. The last part presents case studies, in part V 'Applied Ludology in Practice: Rapid Analysis Methods', which is followed by conclusions and appendixes, such as the Gamegame cards and manual.

Theory of Game Elements

The first chapter of the second part begins the formation of overall theory. It basically asks 'what are games made of, generally?'

In order to understand what constitutes games in generic fashion, I will not review existing definitions of 'a game' extensively and try to come at my own concise definition. This has been already done by various game scholars, both modern and contemporary ludologists (see Avedon & Sutton-Smith 1979, Suits 1978, and more recently in Salen & Zimmerman 2004 and Juul 2005). Therefore, the analysis will go to an intricate level of what is in a game, and how do players interact with games.

Answers will come in parts, or in elements, to be precise. I was initially pondering a question about what types of rules are there in games (see Järvinen 2003). This lead to the need to define what are the entities that rules relate to, i.e. what do they govern. As a result, I adopted a systemic view to games, as discussed earlier: Like systems, games are made of parts that interact and thus form a dynamic whole (cf. Salen & Zimmerman 2004, 50–54). Players produce input to the system, directing their efforts towards one or more of its parts, and the system corresponds with an output, which is communicated through the parts. Rules dictate how this process goes – they are the gel that keeps the system intact and give players room to interact with it.

So, to solve the rule typology dilemma, the interacting parts of the system have to be examined and explained. In order to find generic elements, the attention has to be focused on both similarities and differences between games. If we call such seemingly different objects as the computer game **Tetris**, the sports game of **Soccer**, the video game **Grand Theft Auto: Vice City**, and board game **Go**, they must have something in common besides rules: There is an area reserved for the blocks and game play in Tetris just as there is a field for the ball and the players in soccer. There is an environment in GTA: Vice City that fosters the simulation of moving and driving around and there is a spatial arrangement in the form of a table with a grid in Go.

In addition, all of these games have something the player manipulates: Sets of blocks, a ball, a character and/or vehicles, and stones, respectively. There are also procedures, such as keeping track of points in Tetris, keeping time in soccer, simulating urban life with artificial intelligence in the GTA games, setting up the board and removing stones surrounded by other stones in Go. Tetris is quite abstract, as is Go, and Soccer is about two teams competing in sports, but there seems to be a specific subject matter to Vice City – something not mandatory for games, as the abstract games illustrate, but something that makes the game particular in relation to others, and the game in question quite unique with its complex computer simulation of an urban city. In conclusion, games seem to have both variant and invariant parts.

The method with which to reduce this complexity equals defining a number of game element categories, i.e. generic element classes that get realized as various instances and forms in particular games. In addition to the fundamental elements which are mandatory to make up a game, there appears to be game elements that are not mandatory, i.e. they are optional yet widely employed across different families of games. Furthermore, as mentioned, there are also at least rules that function as compound elements in the system, for instance bridging the gap between the formal system and its players in varying contexts. The sample of games for the task of defining the generic element categories is no less than universal, i.e. in theory it includes basically any kind of game that the existence of which has been brought to my attention. In practice, this sample consists of over a hundred games. I will pick out individual games from that sample as representative examples of larger wholes, such as a particular game genre, or alternatively, I will pick out individual games which exemplify an exception.

With these kinds of observations and distinctions, and a theory built around them, I want to point out how such phenomenon as reality television contests, e.g., **Big Brother** and **The Amazing Race** are games as well. Thus, I argue for a broader scope for what game studies and game design research should, and can, focus at.

Nine categories of game elements

As a result, nine categories of game elements are discussed and defined in chapter 3. They are grouped into three classes that describe their purpose for the game: *systemic* game elements, i.e. components and environment– are the formal parts of a system. *Behavioural* elements, i.e. players and contexts, are entities that make games essentially a human phenomenon. *Compound* elements – goals, rules, game mechanics, and possibly an interface and a theme – act as facilitators of the interaction between the systemic and behavioural elements, and they also govern it.

It is important to understand here that these elements have come into being through the iterative and inductive research process outlined earlier: For instance, the number of elements was established quite late in the thesis process. In the first discussion of game elements (Järvinen 2003) there were only five, e.g., players and contexts were missing. This development illustrates the shift in my thinking from a somewhat mechanistic systemic view to a broader one with a socio-psychological emphasis.

In any case, together these elements make up systems that we perceive as aesthetic objects, or, more accurately, as events, and cognitively understand as games. An important principle is that rules are *embodied* into game elements: game elements are visual, aural or tangible materialisations of rules. For example, a high order goal in a game, such as scoring points in Basketball, is embodied into the physical and spatial arrangement of a basket with a rim and a hoop, through which the ball must be thrown in order for this particular goal to be attained. The size of the ball in relation to the size of the rim is a design solution where the goal rule is embodied with a particular implementation, i.e. the elements are configured into particular relation that has consequences for the difficulty of attaining the goal of scoring points. Finally, the player's act of throwing – a particular game mechanic – is an embodiment of her effort in attaining the goal. It presents a performance that is being evaluated both by the game as a system, but also by fellow players and audience alike.

This kind of an intricate analysis of game elements, across various games, has resulted in my study to the definition of nine element categories. They help us to understand, e.g., the defining qualities of particular types of games. For instance, a host of card games are particular in the context of other kinds of games in that they do not need a specific game environment. They do not need physical boundaries with spatial relations for their components (cards, tokens, etc.) in order to facilitate game play. Then again, many variations of Solitaire indeed specify in their rules how the cards should be organised, thus producing a game environment via their component relations. This kind of setup is a way to visualise the information structure of the game, rather than constitutive of a game element itself.

I will illustrate the relationship of game elements with a set of inner circles which expand from the formal core of the system to its outer, informal rings where players and context reside. As already established, I have chosen to move from the elements to the context rather than vice versa, but the theory of player experience hopes to make the overall picture more complete with a definite emphasis on players and contexts.

Already in this phase of the theory, I have chosen to employ sociologist Ervin Goffman's concept *focused gathering* in order to highlight the function of game systems as facilitators of social interaction. Another useful concept originating from Goffman is the specific form that focused gatherings take around games. He calls this *gaming encounter*, and I have found it useful in the sense that it provides a conceptual distinction between a game system (i.e. a design for a game) and an instance when the system is engaged by players in a gaming encounter (i.e. the design being used).

In general, the thesis is built on the notion of the game elements. Thus, the first part is of fundamental importance to the rest of the work, as the other parts build on the theory and employ its terms, relating their specific questions to the framework established in the beginning. In the case studies section, the analysis methods introduced are systematically anchored into the theory of game elements.

Another case study focusing on the game element theory is the GameGame, a card game that illustrates the theory in the form of a game where the players design games by collecting the elements (as cards in the game). This approach is somewhat similar to Scott McCloud's *Understanding Comics*, a theory of comics in the form of a comic book. Thus the slogan of The GameGame goes 'Ludology meets Understanding Comics'.

Theory of player experience

In the third part, the emphasis will shift towards the contexts of game systems, i.e. behavioural and signifying elements of games. In a total of six chapters, I try to construct a holistic understanding of player behaviour in order to arrive at methods with which to analyse and design player experiences..

Studies in psychology give a wealth of information about human responses to goals, risks, rewards, successes, and other phenomena in human life. Game systems facilitate similar phenomena for players in a specific rule-bound and often fantastic fashion. The task of the first two chapters in part III is, then, to adapt these theories and findings into game-specific situations.

The result could be called ‘the psychology of the magic circle’. Considering the obvious psychological aspects of games and play, there is very little of this kind of theory available. In my interpretation, it is due to lack of theoretical discussions of games (game theory notwithstanding). This is mostly due to the situation where psychological theories have not had their ludological counterpart which to learn from and with which to integrate.

I will discuss why people play games: both their motivations to begin playing, and their motivations during a game, i.e. what motivates them to take certain actions instead of others and experience emotions while doing that. The premise is that games are played in search of certain short-term mental states, especially emotional responses such as joy and comfort, but also long-termed mental states, i.e. moods, such as happiness or pride.

The detailed level of studying this ‘in the middle of play’ necessitates finding (at least) hypothetical correspondences between certain emotional responses and particular embodiments of rules into game elements, and into configurations of game elements within game systems. The general level, i.e. preferences and inclinations to play, includes discussion of theories on entertainment and enjoyment, and more specifically, concepts such as selective exposure and mood management.

The latter is a concept coined by psychology scholar Doug Zillman and his colleagues. It refers to individuals’ conscious or unconscious needs to transform their surroundings to their liking. Consuming entertainment and engaging with art or physical exercise are among the number of activities used to manage moods. Mood management also helps to explain how individual tastes regarding entertainment take form: Experiences with positive hedonic tone, i.e. experiences that persons appraise as pleasant ones, leave memory traces that guide individuals to seek entertainment that reproduces similar hedonic tones. This leads to selective exposure to certain kinds of entertainment rather than others – for instance, some players might prefer to expose themselves to themed board games which support social ‘table talk’ rather than to abstract and complex games that emphasize logical thinking, or vice versa, depending on which they have found more enjoyable based on their previous experience. These kinds of dispositions are highlighted later also when I discuss player abilities with the help of categorizations concerning human cognitive and psychomotor abilities.

Schemas, plans, and goals

Schema is a concept from social psychology. It is used in explaining structures that organize our spatial and/or temporal knowledge about objects, events, and places. Schema theory is based on social psychology, i.e. it conceptualises the behaviour of people in social situations and surroundings. Schemas are helpful in understanding how game systems communicate goals to players, and generally how people make sense of games, and therefore we will take a brief look at schema theory in chapter 6.

Goals are something that prompt series of actions that in turn produce effects in the world. Whereas psychology stresses that in everyday life individuals may have unconscious goals, games emphasize conscious and explicit goals. A rule stating the goal (or subgoal) of the game proposes a set of actions to the player, and the actions, when completed successfully through available means ('game mechanics' in terms of my theory), produce effects in the game system. This emphasis presumably is one of the circumscribed pleasures, i.e. a cumulative effect of positive hedonic tones that games offer and to which players are willing to submit themselves to. Important psychological issues in relation to goals include monitoring one's progress towards them, linking one goal to another, and possibly ruminating about goals that one has not managed to attain. I will discuss all of these aspects in the light of games and their particular means to set up goals for players.

The fundamental nature of goals as specific instances of the *rule set* game element, and also as something that distinguishes a game from a non-game, means that they deserve detailed attention from ludologists. In the scope of *Games without Frontiers*, this entails discussion of goal hierarchies and different goal types. Universality of goals for human psyche has been widely accepted, and therefore their role and function has been promoted into high status among emotion theorists. Thus we will frequently return to the role of goals and plans, and their relation to emotions, throughout part III of the thesis.

Emotions, Cognition, and Pretense

Games engage players cognitively and emotionally, and we will discuss certain key aspects of this area in chapter 7. Many times cognitive and emotional engagement necessitates what is called self-forgetting, i.e. a willlingness to adopt another role than one's actual self, and the consequences that go with it. This willingness can be conceptualised through cognitive theories of pretense, and I will thus review two slightly different perspectives to pretending and relate them to gaming encounters.

Another topic discussed in chapter 7 is player abilities. I will conceptualise these through abilities that goals in games require from the players who are trying to attain the goals. Exercising and performing these abilities may function as a significant source of enjoyment for the player experience, and make the player return to the game to develop the required abilities. For example, the **Singstar** karaoke game (Sony Computer Entertainment, 2004), requires an ability to sing, whereas a game like Chess requires cognitive abilities related to reasoning.

In the field of cognitive psychology, both general and specific human abilities have been empirically studied, and I will take advantage of John B. Carroll's extensive work in synthesizing the field into a number of cognitive, psychomotor, and physical abilities, and review the categories' consequences for player experiences. The resulting game-related findings, known as 'player ability sets', will also be integrated in the analysis methods of part IV.

Entertainment, Enjoyment, and Pleasure

Anyone concerned with studying games is concerned with studying entertainment products or events. In chapter 8, I will proceed to review existing theories of entertainment, from the perspective of entertainment as a source of enjoyment, and games as particular subcategory of entertainment.

Pleasure is a concept related to enjoyment, emotions, and moods. Therefore I see it relevant regarding games as well. It is, however, a significantly undertheorised concept. I will take a look at some of the theoretical and empirical conceptions of pleasure, e.g., typologies, such as Intellectual pleasure, Emotional pleasure, Social pleasure, and Physical pleasure, and their relevance for the subject at hand. Pleasure seems to be a rather abstract phenomenon, which means that focus should be shifted to its antecedents, i.e. the detailed nature of the process where seeds of pleasure are sown. This means moving on to conceptualise various takes on the process of how entertainment breeds enjoyment to those who engage with it.

I will discuss theories of entertainment, and how they define entertainment as a source of enjoyment. After reviewing existing theories, I will shift the focus to the process of enjoying entertaining media products and events. The premise will be that there are certain prerequisites for both the products and their audience – and if they are met, the experience of enjoyment will occur. The linkage to the theory of game elements grows out of the two perspectives, systemic and contextual. The first, in this case, entails studying how game systems, as configurations of game elements, construct prerequisites for enjoyment in terms of game products and events. Second, the contextual perspective that relates to the theory of player experience tries to conceptualise how 'player prerequisites' shape the experience of interacting with the game as a system. These two paths will be explored in chapters 9 to 11.

Applying models of entertainment experiences

In chapters 8 & 9, I will take advantage of a model of complex entertainment experiences by scholars who have been focusing on the psychological consequences of media entertainment. Another interesting theory is that of transportation, i.e. the experience of being transported into another place by means of fiction. Communication scholars Green, Brock & Kaufman have developed the theory in order to describe the experiences of cognitive, emotional, and imagery involvement in narratives. With the theory, their effort is to explain entertainment as a source of enjoyment. I will evaluate these theories and their potential for understanding enjoyment that players seek from games.

It should be noted that these theories privilege media entertainment, whereas my agenda is to look at games, which, as a result of the configuration and behaviour of a system, individually constitute a medium each time players engage with the game. However, I see no fundamental problem of moving on to apply these theories into cases where game systems are being engaged in contexts of physical events, i.e. in non-mediated fashion. This is due to games' nature as focused gatherings which connect one or more individuals together into interaction with an information system, much like a medium does.

Thus, applied ludology treats gaming encounters as particular entertainment experiences which facilitate similar yet particular processes of enjoyment as other entertainment events and products. In media psychologist Peter Vorderer and his colleagues' theory, the following user prerequisites for entertainment in general are observed: Willingness and ability to suspend disbelief, affinity and empathy with characters, capacity and desire to relate to characters and personae, presence (i.e. sense of being in another place), and interest in a specific topic, problem, or knowledge domain. These are all valid in the context of the specific entertainment known as games.

One significant reservation has to be addressed, namely that an entertainment experience does not necessarily always seem unambiguously pleasant but rather, the enjoyment experienced might function at the level of so-called metamoods. Metamood accounts for a mental process where individuals experience unpleasant emotions on the object level, but also positive emotions and enjoyment on a meta-emotional level. This is done to achieve other goals and purposes, such as being entertained. Hence, underneath the agony of losing, being scared, or shouting in anger, the player might enjoy the gaming encounter – in similar fashion as a roller-coaster rider enjoys the ride, or a film audience enjoys suspense or horror.

Player Experience as an Aesthetic Experience

I will also touch upon the issue of how to design entertainment by looking at, e.g., media psychologist Gerald Cupchik's thoughts about aesthetics and emotion in relation to entertainment media. He basically asserts that artistic and design practices are about trying to embody a feeling into a work, whether it is a painting, novel, sculpture, script, or a film – or, as my argument goes, a game, for that matter.

This opens up the question of how to design the embodiments of rules into game elements, and how to design their interaction so as to create a game system. The goal of *Games without Frontiers* is, on one hand, to understand how psychological principles can be extracted from a game by means of analysis, and on the other hand, how to take advantage of understanding the fundamentals of player experience – such as emotions and their eliciting conditions – by taking them systematically into account in game design. Consequently, the general questions adapted from Cupchik's premises are two-fold: First, how to embody feeling into game systems (a question of design); Second, how is feeling embodied into a game system (a question of analysis)?

Thus, discussing the 'entertainment prerequisites' and techniques of creating them essentially brings up questions of design. In light of the goals of my thesis, this moves the focus towards design research. The path to that direction entails studies in game-specific enjoyment and player behaviour.

Motives for Player Performances

What has been discussed above as enjoyment has been conceptualised within the discourse of game design (especially computer and video game design) as forms of ‘fun’, ‘pleasures’, or ‘aesthetics’. Categorisations by game designer Marc LeBlanc and his colleagues are probably the best known of these, but there are others, e.g., by Nicole Lazzaro. Their problem in general is that it is not clear, at least in academic terms, what they actually describe: enjoyment, moods, emotions, pleasures, or something in between. I will try to clarify this dilemma by reviewing the different categorisations and relate them to categories introduced in academic research.

These categorisations serve as a starting point to discuss the more particular and detailed nature of enjoyment in gaming encounters. In practice, I will discuss the particularities of such concepts as transportation and effectance in terms of games. Effectance is a concept from social theories of cognition that can be used to explain how struggling with challenges can be a source of enjoyment in itself. I will evaluate its usefulness for applied ludology and the theory of player experience.

Regarding transportation, I will try to give it meaning by revising its definition in terms of ludology: Game-related transportation is an experience of cognitive, emotional, physical, and imagery involvement in the behaviour of a game system and the world it creates.

As a result of the chapter, I will arrive at a categorisation of player prerequisites in gaming encounters. It presents a ludological synthesis of the theories of entertainment and enjoyment.

Understanding Player Experiences through Emotion Categories

Emotion theorist Bernard Weiner (1986) has argued that motivation cannot be understood without a detailed analysis of emotion, and I have taken this postulation as my premise when embarking on a detailed analysis of player emotions during a gaming encounter.

Among emotion theorists, the notion of a limited set of emotions that are fundamental and universal to human beings is widely (yet not unanimously) accepted. Usually these emotions are discussed under the heading of ‘basic’ or ‘fundamental’ emotions. Besides defining basic emotions, there have been a number of efforts to construct more elaborate distinctions. They have often proceeded on the basis that discussion of basic emotions is too vague, especially concerning the relationship of basic and nonbasic emotions, and whether or not basic emotions mix like colours.

To tackle these issues in terms of applied ludology, I will briefly review general emotion categories. This functions as a springboard for a method with which to study game system behaviour and game play as phasic processes analogous to phasic emotion processes. If we relate this goal to the previous chapters on entertainment and enjoyment, the central question for the theory is how to translate the sources of enjoyment into the 'syntax' of pleasure and emotion categories.

In business terms, a product or a service offers 'a value proposal' that tries to articulate its specific worth to the consumer. In similar manner, games can be seen to offer a 'mood proposal', i.e. an articulation of what the player tries to evaluate when pondering whether a given game suites his or her mood and the direction s/he wants to manage the mood towards. The phrase 'I'm in the mood for ...' demonstrates these kinds of consumption choices. In terms of game design, mood proposal is a concept with helps in defining emotion-centred design requirements based on the emotional aspirations that players might have.

The model of a cognitive structure of emotions put forward by scholars Andrew Ortony, Gerald Clore and Allan Collins (1990) is known as the 'OCC model'. Because the model has originated from a pursuit to study the foundations of computationally tractable model of emotion, I have found it to apply well to the logical, rule-bound, and systemic nature of games. The OCC model and its distinctions will be applied for the purposes of the thesis. The result will be 'five emotion types in terms of ludology', where the emotion types defined in the OCC model will be related individually to game elements. Prospect-based emotions, Fortunes-of-others emotions, Attribution emotions, Attraction emotions, and Well-being emotions will all be studied as categories that correspond with certain game elements and their configurations within a game system.

This will pave way to case studies which will complement chapter 10: The result will be a model on how emotions of suspense, as a combination of hope, fear, and uncertainty, is elicited in gaming encounters. A set of hypotheses about player behaviour will complement the overall theory in chapter 11, as will a sample of 100+ games where eliciting conditions for suspense are analysed. These formalised models define the 'implicit players' who appear on the pages of the thesis. They are the players to whom one refers to when some tendency of action or emotional response is explicated. In the case of the thesis at hand, these implied players are based on psychological principles of behavior and cognitive schemas rather than arbitrarily supposed observations. This method of constructing a set of implied players, albeit theoretical, is an effort to narrow the bridge between theory of player experience and empirical player studies. The latter approach would help in validating or revising the hypothesis, but unfortunately the scope of this work does not allow the validation stage with sufficient samples of player informants.

Studies in Game Systems

After formulating a theory of player experience, the study will turn into details regarding game system and player behaviour in part IV. 'Game mechanism' and 'Game mechanics' are terms that often come up both in game reviews and articles written by game designers as well as in academic writings. Few have gone to the trouble of defining what the terms mean, however. Chapter 12 will focus on defining and classifying ‘game mechanics’ in relation to the overall theory of game elements and goal hierarchies.

Game mechanics in the behaviour of game systems

I will argue that game mechanics should be seen as the means that the game system affords its players to pursue the goals it states in the rule set.

In the context of the theory of game elements, game mechanics are compound elements that combine elements from other classes into one another. Most importantly, these combinations are put forward by players, within what the system affords them via game mechanics. Game mechanics connect behavioral elements – players and context – to the systemic ones. If there are no means for the players to produce input to the system, there will be no interaction and no game: Games will not play by themselves. Game mechanics are individual play performances that rules define and regulate in order for the game system to function – for the game to begin and go on. In other words, game mechanics as play actions take part in operating the game system, thus giving birth to the temporal phenomenon of game play.

Rules use game mechanics in order to force certain combinations of game elements: for instance in Chess, the mechanic of moving the pieces on the board combines the component elements to the environment element, and affords the players a specific means to take part in the game. Game mechanics also relate directly to players in the sense that they require certain abilities, cognitive, psychomotor, and/or physical, from players in order to be performed successfully in the governing ‘eyes’ of the game system.

As a result of theorising about player input and the means to produce it, a number of generic mechanics classes will be defined, in similar fashion as was done with game elements earlier. In fact, the mechanics classes are defined according to their specific relation, emphasis or dependence of certain game element or player ability. Each individual game mechanic is named according to the action it represents. The names of game mechanics are thus verbs in the form of a noun: ‘manipulating’, ‘choosing’, ‘trading’, etc. The names of the mechanics classes describe the metaphors – e.g., ‘playing is trading’ – that are used in making the production of input to the system less abstract and systemic in nature to the players.

In order to classify game mechanics, we have to chart the wide world of these means across games, and then produce classes where various instances of similar mechanics can be grouped under a generic heading. For instance, ‘aiming & shooting’ could be such a category which contains numerous specific instances of the mechanic, such as kicking the ball towards the goal or another player in football, or aiming and shooting a laser cannon in a video game with the help of an interface designed to assist the player in performing the mechanic. In analysis of individual games, we also have to consider the relation of game mechanics to the goal hierarchy, and whether a game mechanic is available throughout the game, i.e. globally in the system, or only in certain times or locations, i.e. locally. An analysis method based on these distinctions is introduced, and it can be used to classify games into mechanics-centred genres, as I suggest in chapter 14.

The classes and their respective mechanics add up to a library of game mechanics. It is presented in a separate chapter. There is also a case study of a digital game, **Wario Ware Inc.** (Nintendo, 2003), which presents an illustrative case in the sense that it is based on a set of so-called mini-games, i.e. games that mostly employ a single game mechanic and only last for 5 seconds.

An early version of the library is also applied to The Gamegame as a set of cards representing different game mechanics. The library functions as both an analysis and design tool: on one hand, it gives an opportunity to classify different playful activities that games afford, and on the other hand, it provides a tool with which to combine mechanics and find new playful activities to incorporate into games.

In connection with the theory of game mechanics, chapter 12 discusses the temporality where game systems are inevitably operated. This is discussed under the notion of game system behaviour. In practice, game system behaviour equals temporal sequences of player actions, system responses in the form of rule-governed procedures, consultation of rules, rounds of play, and so on. If one wants to analyse a particular sequence of events in a game, she will have to focus on a temporally isolated 'slice' of its system behaviour. In conceptualising player behaviour through the theory of player experience my effort is to provide a complete picture of the phenomenon of 'game play' where system and player behaviour engage with each other.

Game Rhetoric: Games as communication acts between system and players

After analysing aspects of player behaviour that game systems give birth to, we will move on to another aspect, namely how game systems employ signs and create meaning through language, images, sound, and so on.

Game rhetoric is about how the game system persuades players into interacting with it and how the system keeps players interested in the game's goals and challenges. Game rhetoric is therefore a set of communicative techniques that game designers specify as a part of the design of a game system. These techniques take material form through their use of semiotic resources and semiotic modes, as defined by communication theorists Gunther Kress and Theo van Leeuwen (2001). I will adapt their concepts to the particular communication techniques employed in games.

Emotion theorists Keith Oatley and Philip Johnson-Laird (1996) have promoted a theory of emotions they call communicative. Their proposal is that emotions are communicative due to so-called control signals within the brain which reflect priorities of goals, and thus direct towards certain actions to attain the goals. Subsequent actions also communicate emotions to other people, as the emotional control signal thus becomes accompanied by an information signal. This kind of communication accounts for the intersocial aspect of emotions.

This is the psychological basis that I will base my notion of game rhetoric upon: game rhetoric deals with the symbolic means of communication that influence the informational signals of our cognition, and subsequent emotional reactions. Player experience as a whole can in fact be seen as a communicative situation between the game system and the player(s), and there is also non-verbal communication involved, such as facial and bodily expressions. This is the essence of a gaming encounter in the Goffmanian sense.

The means of communication a game system employs can, metaphorically, be understood as the way it communicates its 'emotions' as an agent in the gaming encounter. Game rhetoric is a question of design. Theory of game rhetoric helps us to understand the particular methods of communication that different technologies and media afford to be designed into game systems. Game rhetoric conceptualises and illustrates the emotional reactions of the game system as an agent, that, to different degrees, either supports (warns, encourages, indicates, guides) or punishes (hands out penalties, gloats, etc.) the players.

These kinds of informational signals of the game system become visible, tangible and/or audible through different means of communication, such as simulation or representation. Whereas board games and card games create meaning through the use of semiotic resources, such as paper, wood and plastic, and by using semiotic modes of speech and illustrations, computer and video games take advantage of the audio-visual resources that digital technology affords. The choice of semiotic mode is constitutive to the ways of how rules become embodied into game elements. As a result, the semiotic resources used in implementing a game have considerable consequences to the player experiences it is able to offer: an emotion of fear a written passage elicits is achieved by different means than the same emotion type, when it is elicited by a visceral experience, such as a ride in a ghost train, or in the middle of being transported into a three-dimensional fictional world of a digital game.

Game rhetoric relates to one game element in particular: Theme. Theme, i.e. the subject matter or narrative framing of the game is used in contextualising the ruleset into other meanings than the rules' literal, i.e. systemic meaning. Therefore theme can be extracted much like a gift wrapping, so to speak, from the systemic elements, but it is still necessary to analyse it in relation to them.

My argument is that theme is a metaphorical construct that translates the game system and its behaviour into another form. This is a form that is possibly easier for the players to understand than the logical relations of the system itself. In their prominent study of metaphors and language, George Lakoff and Mark Johnson state that 'understanding and experiencing one kind of thing in terms of another' constitutes the essence of metaphor (Lakoff & Johnson 2003, 5). Let us paraphrase this statement into the context of game systems and themes: A theme element as a set of rhetoric techniques affords the players to understand the game system and its rules in terms of another subject matter.

To give examples, **Gay Monopoly** (Fire Island Games, 1983) or **RISK: The Lord of the Rings** (Hasbro, 2002), two board games branded, or *thematised*, into another subject matter than the original games, afford their players to understand the systems of Monopoly and Risk in terms of a sexual disposition or a popular fantasy fiction franchise, respectively. While we lack empirical validation, we can at least state a hypothesis that this kind of thematisation – i.e. embedding a game system into a metaphorical concept – gives a different flavour to the game system behaviour, and thus, the player experience of that system. This also has to do with a cognitive process called conceptual blending (Fauconnier & Turner 2002), where two or more mental input spaces are conceptually integrated in a thought process in order for the individual to be able to imagine matters that are temporally or spatially distanced. This kind of blending can be seen to take place in solving puzzles, i.e. blending the clues together into a so-called conceptual integration network which enables to think about the solution and how to get there (cf. the socio-psychological concept of 'script' addressed earlier). Making plans by distinguishing the necessary actions to attain goals is also a mental process that takes advantage of conceptual blending. The notion could be applied when analysing challenges and deconstructing puzzles in games, and also in designing such.

The topic of rhetoric is also examined in the context of a particular aspect of games. Games have an ability to simulate, i.e. game systems can be designed to behave according to another system. Examples include urban infrastructure or social life in suburbia, as in computer simulations **SimCity** and **The Sims**, respectively – or real estate trade in highly simplified and caricaturized form, as in **Monopoly**. Simplicity or fidelity may also take the form of a particular graphic or audiovisual style of presentation. Many board and card games, or pen & paper games, simulate other systems, but the semiotic resources and techniques they use are less complex and algorithmic than those employed by digital games.

These methods are also discussed and classified in relation to the semiotic modes that game designers and artists use in making their systems tangible, visible, and possibly audible as well. One case example where study of game rhetoric could be expanded is game manuals, and the particular rhetoric they employ in teaching the game to the players and motivating them to play.

Game genres

It has already become evident that efforts to classify aspects of game systems have a central role in the study, especially as a method to present research results. This approach continues in chapter 14 with a discussion of game genres. Unlike many of the other topics in preceding chapters, there is a wealth of theory on literature and film genres. There is also valuable synthesis of the studies available: I will employ one such study, Rick Altman's (1999) work, as the basis of the theory of game genres. Altman's theory uses film as its object of study, but I argue that his approach is quite generic and thus applicable to games as well – with necessary reformulations due to games' particular nature as aesthetic ojects and events. The theory of game elements outlines this particularity and therefore helps in analyzing constituents of game genres.

The research problem is formulated as an evaluation of the concept of genre itself and an analysis of existing uses of the concept in relation to games. In line with the overall focus of the thesis, all kinds of games are viewed as equals, regardless of the technology, material or medium they use in actualizing their system. Thus, I will not take for granted genres in popular use such as 'board games' or 'card games'.

The challenge of defining genres on commensurable criteria becomes quite evident during the analysis, and the conclusion is that many actual games have traits from a number of genres. In the task of finding the similarities and differences between groups of games, the concepts of game mechanics and system behaviour become central. Games are thus placed into genres according to system behaviour, i.e. according to an underlying structure of interaction between game system and players that temporally folds in similar fashion in a family of games. Therefore the result of the study is a 'cross-ludic' genre framework which defines inclusive rather than mutually exclusive genres. The framework has emerged through a detailed analysis of game mechanics and their relation to different types of goals and goal hierarchies. It is called framework rather than classification or taxonomy, because it enables flexibility in the form of different vantage points to families of games. This is to say that the genre divisions are not fixed; they can be shifted according to the variable (primary or secondary game mechanics, or different goal types, or the theme element) that is used as the defining factor or 'filter' to the whole.

Another observation is about the birth and evolution of genres which Altman discusses a length. According to his theory, film genres go through a process of 'substantification' where adjectives characterizing new genres transform into nouns – e.g. 'musical drama' becomes 'musical'. There are many similarities with the evolution of game genres, but the main finding is that due to games' interactive nature they go through 'verbification' and 'acronymization' rather than transforming from adjectives to nouns. This is evident in classifications such as David Parlett's (1999) board game genres: race, space, chase, etc.

The 100+ Games Project

The structure of the thesis is such that the theory formulated is followed by a separate section that contains specific documentation for the resulting analysis method, complemented with case examples out of a sample of games. In addition, chapter 15 summarises the toolbox of so-called rapid analysis methods.

I have used the identical sample of over one hundred games for formulating, validating and refining the analysis methods. This part of the research process I have named 'The 100+ Games Project'. The completion of the thesis is meant to serve only as a start for a systematic use of the methods for analysis, design, and teaching purposes. This ‘Infinite Game Studies Project’ is meant to function as the focus point of my pursuits to take the results into practice – to establish Applied Ludology as a set of methods for game studies and design.

There are also appendixes to the thesis: Some theories adapted for the purposes of the thesis, and empirical analyses, are not presented in their entirety in the actual chapters. This is done in order to save space, but those interested will have an opportunity to familiarise themselves with the theories in the appendixes. For example, the list of human abilities discussed in chapter 7 is found in its entirety in the appendixes, as are most of the analyses of the ‘100+’ sample of games.

Part II: THEORY OF GAME ELEMENTS

The second part of the study introduces, through two chapters, a theory about the parts that games are made of. It is based on the concept of games as objects of design: game designers produce systems with interacting parts, which players interact with in specific contexts of play. In the first chapter of Part II, therefore, concepts such as system, state, and simulation are discussed. The latter chapter of Part II conceptualises and defines nine game elements and distinctions within and across them. Players and contexts are discussed through concepts adapted form social psychology. As a whole, the theory aims to build concepts and vocabulary that function as a grounding for an analysis method, which enables identifying the game elements of a given game.

CHAPTER 3: Introduction to Game Systems, Game Elements, and Simulation

The question ”What is a game?” has been answered numerous times. Often the answer has been produced in the form of a multi-faceted definition. E.g., Caillois (1961, 8—10), Avedon & Sutton-Smith (1971, 405), Crawford (1982, 5–15), and Costikyan (2002, 9—24) have suggested definitions to serve their analytical purposes. The author has taken part in this task as well (see Järvinen & Sotamaa 2002, 9—11; Järvinen & Heliö & Mäyrä 2002, 12—14).

These and other efforts have been reviewed thoroughly by game scholar Jesper Juul, who has suggested another definition based on the previous ones. Juul's definition of game is built on six points: 1) games are rule-based, 2) games have variable, quantifiable outcomes, 3) in games, value is assigned to possible outcomes, 4) the player invests effort in order to influence the outcome, 5) player is emotionally attached to outcome, and 6) it is optional whether a game has real-life consequences. (Juul 2003; Juul 2005, 36.)

I will assume that the reader has played or knows **Tetris**, the computer puzzle game of Russian origin. Basically Juul describes what makes, e.g., Tetris a game: First, it has rules (point 1). Second, it produces variable outcomes: varying scores and degrees of progression. Third, it rates players according to the points they score, i.e. their skill in the game. Fourth, the player faces the challenges Tetris presents, and fifth, she cares about the result. Provided that the player is not betting on her own success, Tetris does not have real-life consequences (point 6), other than possible symbolic cultural capital of reaching the high score list and being an expert player. Games like Roulette – and 'Russian roulette' in particular – embody quite different options regarding real-life consequences.

I am content with Juul's definition, as with most of the others. Another widely accepted notion is that games are 'systems' (Salen & Zimmerman 2004; Fullerton et al 2004; Björk & Holopainen 2005; Juul 2005). I take this conception as the starting point of my theory – we will return to definitions of systems shortly.

My interest, then, is not to provide a host of definitions, but to acknowledge the previous ones and lead on from there, onto smaller yet significant details. This means studying games as systems holistically; as systems which engage the human psyche and its cognitive abilities to the extent that these systems provide emotional experiences and pleasures, and they do all this with particular types of communication acts, with game rhetoric. This is a highly compact summary of *Games without Frontiers* – on to the theory.

The Premise of Yet Another Theory

Let us consider for a while three games from seemingly different worlds: Football, the most popular sports game in the world with centuries-long tradition behind it, and **Prince of Persia: Sands of Time**, a popular and critically acclaimed video game from game developer Ubisoft Montreal (2003), and **Scrabble** (Hasbro, 1948), the highly popular board game about constructing words out of letters. We intuitively see each of them as games – but why is that? What do they have in common?

First of all, games have rules. This is true of all games, as, e.g., Juul's definition pointed out. Rules are prescribed guides for conduct or action, i.e. they regulate what the game and the players do. However, rules do not mean anything by themselves. Rules relate to various aspects of a game: Some rules specify the physical boundaries of the game (e.g., the size and shape of a football field, the Scrabble board) and other rules specify what the player is allowed to do in the game: acrobatic jumps, running, and sword-fighting in the case of Prince of Persia. In football and Scrabble, then again, the rules disallow sword-fighting.

My point is that rules have objects that they relate to. Rules relate to different elements in a game, and once these elements are defined, we can begin to analyse and classify games through identifying the elements they have. This enables to continue to the analysis of player experiences, such as emotions and pleasures that relate to particular elements and their combinations. Furthermore, by understanding the elements and their attributes, we can use this knowledge in their design: how to design their interaction and how to *embody* rules into the elements. This is essentially what game design in my view is about.

Before going further, it is useful to reflect on how the theory of elements discussed in the following came to be, and how it got its final shape. First of all, the theory has gone through numerous revisions since I first introduced it as a typology of rules (Järvinen 2003). Soon it started to become clear that the most interesting aspect to me are the *objects* of rules, and how rules are embodied into a game, rather than rules themselves as written statements, for instance. This initiated a process where the focus first shifted from rules to the elements, and then, regarding rules, to the communicative aspects of rules, i.e. what kind of techniques are used in embodying a rule into an element. The process has included analysis of over a hundred games in order to find out whether the elements are recognizable across different game genres in various media. Essays in the chapter 'Games as Structure' in *The Study of Games* (Avedon & Sutton-Smith 1971) served as a starting point for this inquiry, and my purpose was to expand such thinking to contemporary games. In the process, the task grew into a more thorough review and revision, and the notion of 'system' from systems theory and game design literature provided an umbrella-like shelter with which to keep the theory coherent. The pursuit for applied ludology lead the study of game elements into a direction where the aim was to present the theory in a form that would be adaptable to practical game analysis and design tasks – even without getting familiar with the intricacies of the theory, as 'rapid analysis methods'. The case studies of the thesis account for that goal, and they are the most concrete hands-on results of the thesis.

The end result documented in this and the next chapter is a based on three broad areas of inquiry:

1. induction from the '100+' sample of several kinds of different games,
2. both academic and non-academic literature on games, and
3. creative observations enabled by the knowledge of various sorts of games.

The last aspect is evident especially in the way I have chosen to name the elements. To make the theory accessible for a wider variety of readers, I did not want to use neologisms as names for the elements. Rather, I opted either to choose an intuitive term, such as 'component', or to give established but quite hazy terms, such as 'game mechanics', more rigorously defined and unambiguous meanings. My experiences in teaching the theory and play-testing GameGame, where the theory is employed, have provided necessary feedback for fine-tuning the theory and its terminology.

It is a matter of fact that during the first years of the 21st century, the amount of game design and research literature has multiplied. Still, in my experience most of the literature functions at its best on an inspirational level (e.g. Koster 2005), or is strongly design-orientated (Salen & Zimmerman 2004; Fullerton et al. 2004). These are important contributions as such, but they rely quite a lot on the reader's personal ability and experience to find practices and methods to transform the inspiration into concrete results – especially considering 'close analyses' of games (a term borrowed from study of literature and the arts). Therefore my effort is to give tools and methods for this concrete work, yet by going at it the hard way, i.e. threading through academic waters with necessary rigorousness and dissatisfaction to easy answers. This entails not taking terms and concepts, such as 'genre', 'mechanics', or 'rules' for granted.

The theory is not, by far, the first of its kind. A number of similar theories and models have already been referred to in the introductory chapters, and others will be discussed later. I would say that in spirit the most like-minded theory is the MDA ('Mechanics, Dynamics, and Aesthetics') framework by Hunicke, LeBlanc, and Zubek (2004), as they liken games to artefacts rather than media and argue that a content of a game is its behaviour. In dictionary terms, behaviour has been defined as the way in which a natural phenomenon or a machine works or functions. In these pages, it is understood as the way a game system and its players function together in a gaming encounter.

This stance will be strongly evident on these pages. Yet I argue that few other similar theories about games have been pursued as systematically and with as many concrete applications throughout a book-length study (Juul 2005 is one). I do not know any such theories that have been adapted into a form of a game, as I have done with the GameGame. These are my main defenses for bringing out another formal theory of games into the world.

Games as systems

As mentioned above, system proved to be a concept that enabled me to build an analogy from games and their elements to other constructs that operate in similar fashion.

The premise is, then, that games are systems. A definition of a system states the following, for instance: A system has to have 'many constituent elements which have some property in common' and that these elements have a structure, i.e. recognizable relationships among the elements (see Krippendorf 1975). Hall & Fagen (1975, 52) provide a definition where a system is 'a set of objects together with relationships between the objects and between their attributes'.

I will use the term game system when referring to this structural feature of games. Other game scholars have chosen the same option. In *Rules of Play*, a book about game design fundamentals, Katie Salen and Eric Zimmerman (2004, 49–55) analyse several definitions of systems. They conclude with the following definition: 'A system is a set of parts that interrelate to form a complex whole' (Ibid. 55). The matter of wholeness is in line with the logical nature of game systems, as a change in one part of the system causes change in the total system (cf. Hall & Fagen 1975, 59). This is quite true of rules, for instance: a change of a single rule most likely breeds change elsewhere in the system.

Games as information systems

As rules need to be communicated and governed, this means that there is exchange of information involved. Game systems are also information systems (Salen & Zimmerman 2004, 203–11), and it is because of this that games have found such a welcome home from computers, as they are specific tools to process information. Moreover, all exchanges of information within a game system involve time and possibly space (cf. Krippendorf 1975, 155). Thus, game systems are *dynamic* systems: they transform over time, i.e. during game play. They also optionally expand their effects outside the system, which means that game systems can be either open or closed. In any case, game systems have structure, function, and history – features of a dynamic information system (ibid. 142–3).

The notion of system also includes the idea that there can be subsystems, the behaviour of which might not be completely analogous with the original (Hall & Fagen 1975, 57). Regarding game systems, however, the subsystems are hierarchically structured. This is evident when there are games within games, i.e.

so-called ‘mini-games’ which function as subsystems, as their dynamics are subjected to the total game system.

Rules embodied into the parts of the system

The next chapter consists of defining the parts that make up any game system. Game elements as embodiments of rules bind a game into the structure of a system. Whereas rules, such as goals, are mostly verbal to start with, most game elements are tangible to the player as material and physical objects. Rules are embodied into game elements: a goal rule such as how a goal is scored in football, becomes embodied, first, into the game environment, i.e. the pitch, with special significance bestowed on the space that goal posts, the horizontal bar and goal line as physical constructs define as the ‘goal mouth’. Secondly, the goal rule is embodied into another object in the game, which is the ball that players are allowed to kick within the boundaries of the pitch. This game element I will call a ‘component’, and, consequently, the component’s location at any given moment on the game environment is relevant for the goal rule. In other words, if the component crosses the boundaries of the pitch in the very spot where the goal is demarcated by the posts and the horizontal bar, a goal is scored.

Game states

Games are systems that produce various states of affairs during the course of play. In practice: the score changes, and/or the challenges take different shapes, players or their representations lay in different locations on the game environment, and so on.

Games are ‘state machines’, so to speak. Juul (2003) proposes, following system theorists, that it is the rules that provide ‘a system that can be in different states, it contains input and output functions and definitions of what state and what input will lead to what following state’. In his introduction to general systems theory Gerald M. Weinberg (1975, 87—8) cites an unknown author who has suggested that ‘a state is a situation which can be recognized if it occurs again’. Weinberg uses a light switch as an example of a simple system with input and output functions and recognizable states. Concerning games it can be concluded that games need recognizable states so that rules can refer to clearly recognizable situations and define how they are to be resolved. This is necessary in order for the game to go on, i.e. there has to be a possibility to move on to another state.

As we gathered above, game system is an information structure as well. In similar fashion as any system, a game gives output to the players, who produce input to the system, and it responds in light of the state that the system is in. This dynamic takes place whether one is playing Scrabble or football, or Prince of Persia. In Scrabble, each turn to construct words by a player produces a new game state that is visible in the board – i.e. there is a specific configuration of elements and a particular technique in the game to communicate the state of the game to its players via the board, with its grid, and the alphabet pieces occupying spaces in the grid. The player whose turn it is considers her turn in light of the state, which includes the information about the alphabets in her possession. In similar fashion, a football player makes decisions depending on states that consist of his or her own position, the position of other players and the position of the ball in the football pitch. The players, the ball and the pitch make up a whole, i.e. a system governed by rules that we know as the game of football.

Games states as carriers of information

When playing a game, the player interacts with the system and its current state. So we see that game states need to be communicated to the players, and in light of systems theory, this means that there is information involved. The game states indeed contain all relevant information about the relationship of game elements in a given moment. Game states present information concerning how the game elements are put or shaped together in particular form or configuration. Therefore they need to be stored in the system, and as game systems are dynamic in nature, and also systems with feedback, there is constant movement of information in and out; between the players and the system. Once again, computers as information technology are particularly well equipped to handle these kinds of information flows.

In conclusion: game state is information which contains data of how the game elements are configured (in relation to each other) and their attributes in one specific moment of time. Mutually exactly similar game states seldom appear in games once they are under way. The image below illustrates a game state of **Pong**, the early video game (by Atari, 1972), and how the different game elements are configured in relation to each other in one moment in time:

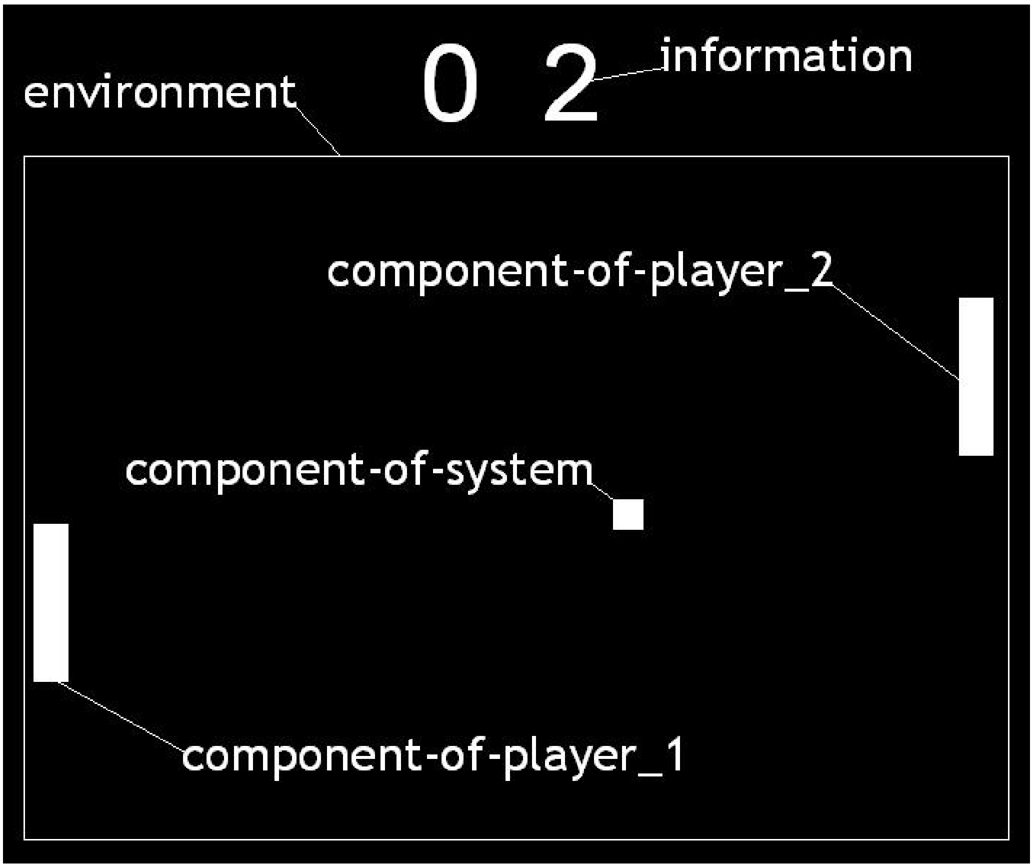

Image 2. *The game elements of Pong (Atari, 1972) configured into a game state. The ownerships of the three different component elements (the bats and the ball) are indicated.*

Game states as temporal reference points

Whereas board and card games often depend on the players to introduce a rhythm to the game, video games are especially suited for creating a self-imposed and varying rhythm to the change of game states. For instance, Tetris' individual states change with each block that appears, always presenting a renewed challenge for the player. Each different position of the block can be seen as an individual game state. The game always proceeds in light of the current game state and its resolution. When the player has dealt with the block, the states related to that particular object are resolved, and another one is able to follow. This starts an algorithm – a procedure that produces a new block – defined in the rules. Resulting situation and points score present a change in the game state on another but related level, which is essentially a parallel storage of information (to keep score). We can easily imagine a board game version of

Tetris, but it would lose the ruthlessly accelerating rhythm we know the game from.

As the changing game states operate on an axis of time, they constitute the temporality of game play. State changes mark temporal reference points for the game: A goal scored in a soccer game is an example of a change in game state but also a temporally meaningful event in the game, as it will be attributed a specific time value in the statistics. Statistics and scores generally represent information from a particular game state, such as information about time and/or specific comparative values such as scores from home team and visiting team.

In general, the duration of a game equals the total duration of all game states from state 1 (the 'clean' beginning state once the game is ready to start) to state n (state that confirms victory or end condition, i.e. a specific rule). Game states are always temporary, but their duration varies considerably across different games and genres. Their relation to each other can also be different. States follow each other in temporal hierarchy. The following state is always influenced by the result of the previous one, as there will be new information: the new state might present a more difficult challenge, if the previous one was dealt with successfully. Tetris as a system functions this way.

There might be correlations between individual instances of playing a game. Game states as storages of information enable this. Home and away ties, periods, etc., present examples where the final game state of one temporal whole is carried to another as its starting point. In 'sudden death' type of situations, the end of the game, and thus the victory condition, is tied to one change of major game state. This is the case in simple digital games like Pong as well, where missing the ball causes the unfavourable change of game state. This state is possibly a terminal state tied to an end condition, i.e. 'game over'.

Game states as waypoints to attaining goals

There are also game states of different degree and nature. In Chess, **Texas Hold'em Poker**, or **Golf**, individual states are easily distinguishable from each other – a completed move, bet, deal, or shot always introduces new states. Then again, in football, there are major and minor game states: major states have to do with the score line changing, i.e. when a high order goal is completed by scoring a goal, whereas the changes in possession of the ball are considered minor states as they relate to lower order (yet instrumental) goals. This is true for the positions of an individual block in Tetris while it is descending. Both Tetris and football players spend most of the game dealing with minor game states, but often only the most significant changes in game states are explicitly acknowledged by the game system: the system not only stores this information, but it communicates it explicitly by displaying a change in score, etc.

These communication acts will be discussed under game rhetoric later in the thesis. In any case, in both Tetris and football, the players' task is to work towards attaining goals, and this can not happen without changing game states. Thus, as players are monitoring their progress towards attaining goals, they are essentially monitoring whether game states change into one another in a way that is favourable in relation to the goals they are pursuing. Therefore understanding game states is important for players.

To continue the set of questions this chapter is trying to answer, the notion of games as systems brings us to the most important one: ”What makes an individual game system behave, i.e. change its states, as it does?” To answer this question, we have to look towards the parts that contribute information to the game state through their interaction: game elements.

Overview of Game Elements

There are nine game elements in total in the model at hand, and individual games combine them in variant ways. As game designers write game concept briefs or game design documents, what they do, in terms of the theory presented here, is that they specify the elements used in a particular game, their relationships, and various qualities and attributes of each element. Rules are the specific means used in defining relations between the elements, and the design of individual elements and their behaviour within the system is about embodying rules, such as goals, into the system.

One way to visualise the game elements and their relations to each other is presented below. In the illustration, a game session around a table is abstracted into the element classes. The arrows pinpoint at how players interact with systemic elements via compound elements by using game mechanics (trick taking in card games, for instance) which, in effect, instantiate relationships to other elements (e.g., cards, respectively). Players interact with each other both in ways acknowledged by the game system, i.e. their interaction produces information to the system, or external to it (’off-game’ as it is called), i.e. in ways that do not produce information to the system. The player-to-player interactions may be mediated, as in online games.

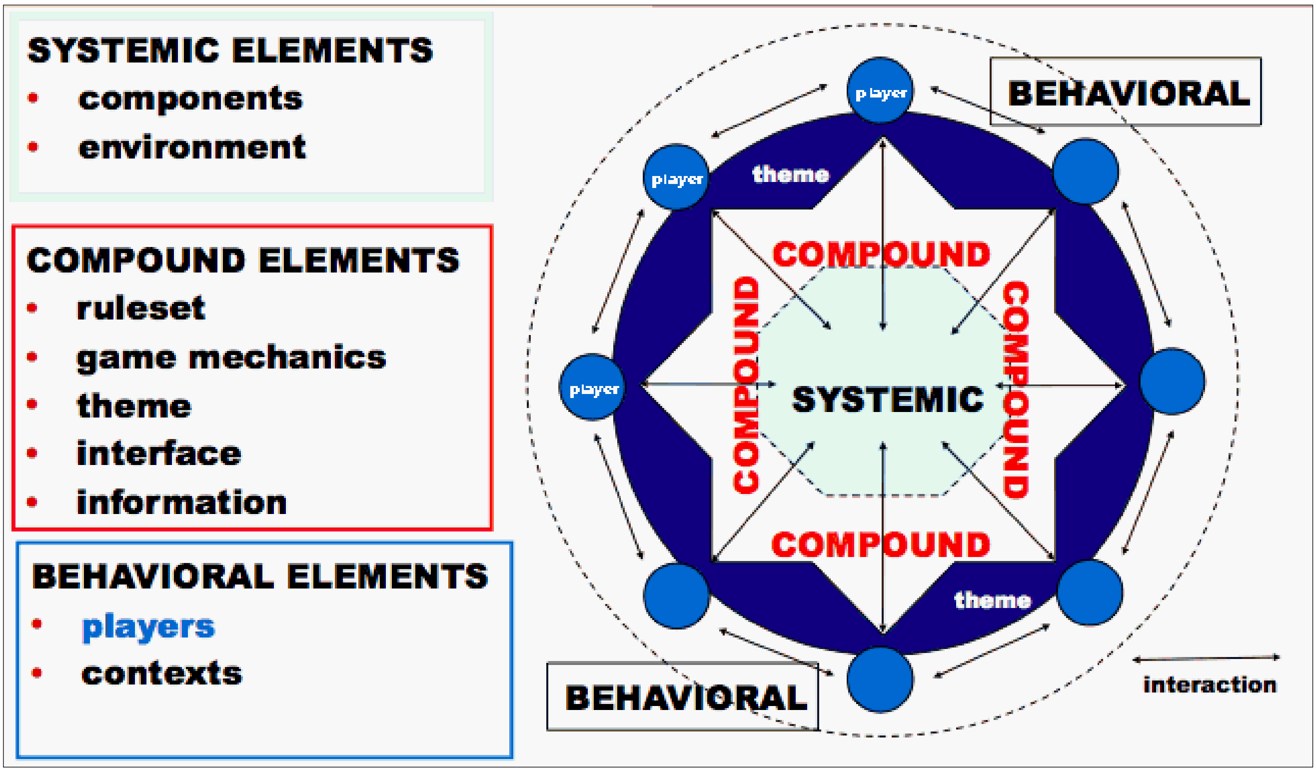

Image 3. *Game elements overview*

Three categories of game elements

I have divided the elements into three categories: Systemic, Compound, and Behavioural. In each category, there are two or more element classes. The elements are discussed as element classes, as there are numerous possible implementations of a particular element in a particular game. E.g., a character, such as Pac-Man or a figure in a board game, is a particular instance of the component class, while a 8x8 grid or a three-dimensional virtual world are instances of the environment element class.

Next chapter gives an introduction to game elements. Moreover, game mechanics will be dealt in later chapters (12), and the 'game rhetoric' discussed in chapters 13 & 21 is related to the theme, rule set, and information elements, in particular. Chapter 14 on genres more or less discusses game systems as a whole, even though particular attention will be paid to the game mechanic element, and the most significant set of rules within the rule set, i.e. goals. Players and contexts are game elements that will be addressed with the theory of player experiences in part III of the thesis.

Identifying game elements

Let us take a quick example of how game elements can be identified in a game. **Star Wars Chess** is a chess game that has been branded with the Star Wars trademark. It is a game that uses at least five of the elements: 1) it has *components* in the form of Star Wars character figurines, 2) a *rule set* that states how the components are arranged and moved, 3) *game mechanics* which enable players to move components, and 4) a traditional chess board as the *game environment*, which also organizes and stores 5) *information* about game states. These elements are enough to produce the dynamics of Chess as we know it. Yet Star Wars Chess is not exactly similar to most Chess sets. This is because there is also a sixth element: A *theme* adapted from a popular fiction franchise. The Star Wars license is evident, on one hand, in transforming traditional pieces into Star Wars characters, but it is also apparent in how the generic conflict of ’black’ and ’white’ troops becomes thematized, so to speak, as a war between the ’Empire’ and the ’Rebel’ forces as they are represented in the fictional universe of Star Wars. It brings us to the seventh and eighth elements, the *contexts* of Star Wars and Chess, and the *players* who interact with the system. Finally, a digital version of the game would require another compound element: An *interface* such as a mouse or a keyboard so that the players would be able to perform the mechanics needed to access the intangible virtual characters on the screen.

Particular configurations of game elements in relation to one another can be understood with the metaphor of a formula, where game elements are variables in a sum that makes up the system:

game system = components + environment + ruleset + information (+theme) (+interface) + players + contexts

We could then define possible alternative values for the variables, such as ‘token/character/etc’ for component, ‘grid/world/etc’ for environment, and so on, and celebrate that we’ve uncovered the formula behind games. However, this kind of formula does not help to explain how the game is being played, and what kind of experiences it would provide. This is essentially because the relationships of elements are more complex than simply combinatory by addition, and specific attributes of elements and their consequence for the system as a whole are lost in this kind of equation. As game systems are essentially dynamic rather than static systems, the whole that the elements make up is something other than a simple sum of its parts: it consists of behaviour rather than straightforward addition.

Attributes of game elements as keys to analysing game play

The use of the formula metaphor is in helping us to recognize the elements in the first place. After that we can proceed to study their attributes, such as who has an ownership of a particular element, which bring us closer to the study of the behaviour of the system, i.e. game play.

By minimum, an ownership attribute can be assigned to each game element, i.e. all parts of the game system belong to either the players or the system itself, and these agents exercise control over their possessions. Therefore conceptualising element ownerships through a three-fold distinction to

- *element-of-self* (you as a player),
- *element-of-other* (other players), and
- *element-of-system*

opens up a vista of the different roles and relationships individual elements have: a goal-of-self might be opposed to goal-of-other as an opponent, it might be conquering a component-of-other that is your main goal in a game, or keeping guard of environment-of-self (as, e.g., in the game known as **King of the Hill**).

We will return to game element attributes in more detail in the next chapter. Generally, they allow us to see similarities and differences between games, or enable us to make general observations, such as that all games seem to be about ownership, to varying extents.

Game Systems as Simulators

In this introductory chapter to a number of central concepts of my thesis, there is one more theme to discuss. It has to do with game systems' simulative aspects. As games function as systems, it is quite intuitive to think that another, existing system might be transformed into a game system. This kind of adaptation produces a particular relationship between the system being simulated, and the system simulating it. It is relevant to pay attention to this problematic also because there is a lengthy tradition of academic studies of simulation and games, as was mentioned in chapter 2.

Looking at the contemporary game development in all fronts, a significant number of games seems to employ a theme with contemporary, historical, or fantastic origin. This means that they are modelling something: the theme has a so-called referent in other media or real-world phenomena, or the games are producing a 'what if' scenario of a fictional, fantastic world. In these cases, there is a referent, i.e. something that the game denotes, but it is imaginary.

So are these games also simulations, and what is a simulation, exactly? Simulation has been promoted especially in connection with digital games as a key concept to understand how they function and where their potential for expression lies (Frasca 2003). Many definitions of simulation in research literature are quite technical, i.e. associated with creating different simulations with the means of computers (e.g., Zeigler et al. 2000), or alternatively, they are philosophical in nature, drawing from critical theory and the social sciences (see Cubitt 2001).

For the purposes of this discussion, a definition that helps us to understand the systemic yet aesthetic nature of simulations is necessary. The definition has to take note of uses of simulation for entertainment purposes – i.e. not only reproducing or modelling actual events and systems but also creating make-believe worlds and events. Definitions with similar premises have been hard to find, but we will refer to a pair of them in what follows.

Cathy Stein Greenblat has written about designing games and simulations for pedagogic purposes. The simulations created and proposed by Greenblat are mostly board games and role play scenarios with a simulative logic. Greenblat (1988, 14) defines simulation: 'A simulation is an operating model of central features or elements of a real or proposed system, process, or environment.' Greenblat emphasises certain critical dimensions of simulations: first, simulation is a dynamic model, and second, only selected elements of the referent system are included. Finally, according to her there can be several different sorts of referent systems (ibid.).

Game scholar Gonzalo Frasca wants to broaden the notion of simulation from computer-based simulations to non-electronic devices, such as toys. Computer simulation is the primary method that has been used to study the modelling of systems (Frasca 2001a, 24). Greenblat has echoed this by stating that computers can be employed 'to explore mathematical models of structures and processes' (Greenblat 1988, 18), i.e. computers enable processing of information in dynamic and complex fashion. In dictionary terms, computer simulation has been defined as 'the use of a computer to represent the dynamic responses of one system by the behavior of another system modelled after it.'

Behaviour is the key concept for our purposes. It suggests that the referent systems provide models of behaviour that game system imitate, stylize, and simplify in different ways in order to make the experience entertaining, persuasive, and/or memorable.

Game simulations as models of behaviour

Frasca adopts the notion of system – appropriately for the work at hand – to encompass the different 'processes' and 'environments' that were mentioned in Greenblat's definition. Frasca formulates his definition of simulation around the goal of modelling the behaviour of a particular system to a certain extent:

> to simulate is to model a (source) system through a different system which maintains to somebody some of the behaviors of the original system. The key term here is 'behavior'. Simulation does not simply retain the – generally audiovisual – characteristics of the object but it also includes a model of its behaviors. This model reacts to certain stimuli (input data, pushing buttons, joystick movements), according to a set of conditions. (Frasca 2001b.)

I will name the source system, i.e. the object of simulation, as A (cf. ibid). The resulting model, i.e. a particular instance of simulation, is named B. It is useful to think the relation of the model to the source system as a circle located within a larger one. The large circle represents A. If one reduces the smaller circle B from A, the result of the equation points out the features of the source system that have been left out or simplified in the simulation (see Järvinen 2003 / 2005 for more). This general principle applies to simulations across game media and technologies. Board games, for instance, often simulate travel, economy, war, or nature: **Niagara** (Rio Grande Games, 2004), for example, simulates the flow of a rapid with the help of glass props and 'river' procedures associated to them.

So, when is a simulation not a game? According to the theory of game elements, a simulation is not a game when it does not include explicit goal rules in its rule set. Greenblat (1988, 14) writes about the specificity of game-simulations: 'The term game is applied to those simulations that work wholly or partly on the basis of players' decisions.' She goes on to describe gaming simulations that incorporate characteristics of games, such as roles, goals, constraints and payoffs. Greenblat finishes with the following statement: 'Gaming-simulation, then is a hybrid form, involving the performance of game activities in simulated contexts.' (Ibid. 14–15.)

In the terms of my overall theory, games that pursue the simulation of another system employ a specific rhetoric of simulation, e.g., by persuading players to relate the system to its referent (see chapter 13). The rhetoric means used relate to the referent model's behaviour, e.g., in a real-world context (sports, economy, etc.), such as the humanitarian crisis in the browser-based game **Dying in Darfur** (MTV Games, 2006; see case study in chapter 20).

Another aspect that Greenblat discusses is the distinction between role playing and gaming-simulation. She argues:

> Role playing is an element of gaming-simulations, but the latter also include other components. In most role-playing exercises the participant is assigned a role and given the general outline of a situation; from there the action is freewheeling. In gaming-simulations, on the other hand, roles are defined in interacting systems. That is, emphasis is on the role as it interacts with other roles; the model creates the basis for the dynamic interaction, and includes the constraints, rewards, and punishments referred to above. (Ibid, 15.)

The latter half of the cited passage actually describes quite accurately what happens in role-playing games (both so-called tabletop and live action role-playing games), where it is the game master that governs the interaction (possibly with the help of a rule book) by giving out challenges, rewards, punishments, i.e. assigning value to the player's actions. The game master performs as the proxy for the game system, in similar fashion as referees do in sports games. The conclusion is that when thinking about role play in relation to simulation, it is necessary to make a distinction between role-playing games and role-playing exercises. In the latter, there is play as pretending, but there are no explicit goals within the system, or they are not monitored and valorised in similar fashion as with games.

Overall, Greenblat's discussion is useful for our purposes but does not provide entirely satisfactory answers, because it is clearly bound by her premise of creating simulations that, on one hand, have references in reality, and on the other hand, serve mainly pedagogical purposes.

Frasca explains the difference between games and other simulations with the help of Roger Caillois' (1961, 13–14) distinction between paidia and ludus, the different nature of 'play' and 'game'. Basically paidia refers to spontaneous forms of play, where there exist only few rules, ephemeral goals (if at all), or they can be changed, whereas ludus refers to the more inherently game-like structure with pre-determined, fixed rules, such as explicit and concrete goals.

Frasca argues that simulations structured with ludus rules follow a binary logic (winning/losing) that is suited for traditional game structures, whereas simulations with paidia logic have potential to illustrate more complex relations and processes, such as human relationships. However, in this process, the latter become other kinds of simulations rather than simulations structured as games. (Frasca 2003, 230–231.)

So, clearly every simulation is not a game. Games, with their rules, are one particular way of creating a structure for simulation (cf. ibid.). Therefore it is justifiable to discuss certain kinds of simulations as games.

But does every game have some simulative characteristics? Is Tetris or Windows Solitaire a simulation, and if so, what are their referent systems? Are some game systems more relevant to discuss from the perspective of simulation than others? Probably yes, and yes. We can begin to answer this question by looking at games' tendency to either create a system from scratch, or transform an existing one for purposes of play. In the latter case, the referent material has to be, more or less, conceptualised into a system in order for it to function as a basis for a game (as a system).

This task will be addressed already in the next chapter, when we discuss the relationship of theme and other elements in a game system. The initial answer would be that games necessitate behaviour but not simulation – i.e. a ruleset that only refers to itself affords game system behaviour, yet it has no referent behaviour model (other than other games, possibly). **Tic-tac-toe** serves as an example of such a game which is 'only rules'.

Simulation and behaviour are concepts that highlight the fact that game systems can be built with quite ambitious and serious purposes, to illustrate how aspects of the world operate. Indeed, highly complex simulations of whole worlds have been built into games, both in 'analogue' and digital forms with different referent systems:

- role-playing game as simulation of a fantastic science fiction world: **GURPS Cyberpunk** (Steve Jackson Games, 1990)
- board game as a simulation of horror fiction: **Arkham Horror** (originally by Chaosium, 1984; re-released by Fantasy Flight Games, 2005)

- computer game as a simulation of urban social life: **The Sims** series (Maxis, 1999-)
- board game as a simulation of a sports, e.g., soccer: **Subbuteo** (Hasbro, 1947)
- video game as a simulation of an entertainment phenomenon: several wrestling games, such as the **WWF Smackdown** series (THQ, 2000-)
- video game as a simulation of animal behaviour: **Nintendogs** (Nintendo, 2005)
- computer game as a simulation of the rise and fall of civilizations: **Sid Meier's Civilization** series (originally by Microprose Software, 1991-)
- online computer game as a simulation of a fantasy world and its social dynamics: **World of Warcraft** (Blizzard Entertainment, Inc., 2004-)
- online computer game as a simulation of evolution of species and universes: e.g., at the time of writing still unreleased **Spore** (Maxis, forthcoming 2008).

Conclusion: Games as Worlds

However, a game does not have to model a universe in order to build up a world. From a socio-psychological perspective, however 'small' world there emerges through the behaviour of the game system, it is still a world. To conclude the chapter, I will briefly elaborate on this aspect of games.

In Part III, I will discuss emotions in relation to games. Before we reach emotions, we are dealing with cognitions, i.e. means people have for relating to the states of affairs of the world with the help of, e.g., perceptions, knowledge and memories. Therefore there is a need to establish ground for the ways in which we cognitively process game systems. Andrew Ortony, Gerald L. Clore, and Allan Collins are cognitive scientists whose theory of emotions I will discuss and adapt later. Their model aims to explain how individuals cognitively categorize the world, and because of this, it is of use already here. According to the 'OCC model' there are three major aspects of the world upon which individuals' cognitions focus: *events*, *agents*, and *objects* (Ortony et al. 1990, 18).

From the perspective of social psychology, games are social encounters. They are 'world-building activities' (Goffman 1961) which are understood with the help of metaphorical concepts. The potential aspect of game systems as simulators of worlds, real or fictional, supports this standpoint from another angle: the likeness to the referent system makes the game system and its simulative traits easier to understand as they evoke contexts where the referent system is already familiar.

Thus, the metaphor 'game is a system' can be logically extended to the form 'system is a world', which logically produces the metaphorical concept 'game is a world'. Games are worlds inhabited by players and other game elements under the law of the rule set and the metaphor of the theme. Translated into the 'language' of the theory of game elements, this means: in games as worlds, there are:

- events: game mechanics, game system procedures according to rule set (e.g., goal resolutions)
- agents: players, game system agency via rule set
- objects: components, environment, information, goals as stated by the rule set.

This division is intuitively simple yet hides layers of complexity, when we start to ponder the relationships of the three aspects, i.e. questions of ownership, power, desire, agency – all questions integral to game play. Thus we will descend from categories regarding the world to categories found inside the miniature worlds of games (cf. Gingold 2003). In any case, the combination of events, agents, and objects illustrates that games do not warrant being studied as static objects alone, but as the dynamic behaviour of the three aspects as a whole.

CHAPTER 4: Theory of Game Elements: From Game Systems to Their Contexts

In this chapter, we will examine game elements in detail. The previous chapter was meant to give a brief overview to the theory of game elements and its grounding on the notion of games as systems.

The detailed discussion of each element class will proceed from the 'heart' of game systems to their peripheries where the borderline of system and its contexts begins to blur. This logic is in line with the general systemic perspective of the thesis, i.e. the discussion will proceed from systems to contexts rather than vice versa.

Components: The Element of Play

Components are objects that the player is able to manipulate and possess in the course of the game. These objects are usually pieces, figurines, cards, credits, tools (weapons, keys, etc.). Besides their physical appearance, components may have other *attributes* that carry information, such as value in different forms: points, money, energy, etc. In other words, information as a compound element (of which more later) is often embodied into components as their attributes.

Components are also objects that move, literally or metaphorically, in a game: they are objects of movement or transactions. Therefore component ownership is a valid criterium for their classification, because game components are always under the control of either players or game system. Thus, there are three types of components, seen from the perspective of a player:

- components-of-self: components possessed by oneself and controlled by oneself
- components-of-others: components possessed and controlled by other players
- components-of-system: components possessed and controlled by the game system

Let us look at these types one by one: First, the character or object that one controls is an example of a component-of-self. These components function as a representative of oneself in the game. Components might be represented as characters, spaceships, or pawns, for instance, and usually this entails simulating aspects of the behaviour of the referent (e.g. the flight of a spaceship or the movement of a character). The players' points and possessions are components-of-self as well: chips in Poker, money and houses in Monopoly, roads and resource cards in the board game **Settlers of Catan** (Mayfair Games, 1995), the squad of players with certain abilities in a sports game – these all serve as examples of components-of-self.

The function for components-of-self is to provide a tangible point of interest for the player and a representative of self in the game. Components-of-self and their attributes serve to point out the player's success, standing, or location in the game.

Characters or the self as component

When the component under player control is represented as a character (with respective simulation of behavioural traits), it is often called 'player character'. According to similar logic, Characters controlled by the game system are called 'non-player characters' or NPCs. However, to keep in line with the theory, it is relevant to call these special instances of game components as *character-of-self* and *character-of-system* respectively. (In a multiplayer game, there are also characters-of-others, of course.)

However, all games do not have components that function as representatives of the players. In physical games such as sports, often the player is there to present herself. The self becomes the component, and one's own attributes – such as abilities and skills – become part of the information in the game system. This case is the straightforward example of how the goals of the player, i.e. goals-of-self, become one with the component-of-self.

In games where the component-of-self functions as the representative of the player, the degree to which a player adopts the goals of the character-of-self for oneself is a matter of motivation and engagement with the game system. This adaptation can be strengthened by means of characterization, i.e. embodying attributes to the character-of-self that the player is supposed to find empathic – or counter-empathic, in case of characters-of-system and/or characters-of-others which embody adversary.

Concepts such as *recognition*, *alignment*, and *allegiance* have been used to explain such processes towards characters in film narratives (see, e.g., Smith 1995), and they can be applied into analysis of game characters as well (see Lankoski 2006). In terms of the theory of game elements, such concepts account for the thematisation of component attributes through the metaphor of a character, i.e. understanding components in terms of a psychological being. Alignment and allegiance may then be examined through component ownership attributes, and relationships within the overall game system.

Component relationships between self, other, and system

This brings us to the relationships between various types of components, and relationships between components and other elements. The relationships between components are often reverse: From the perspective of other players, or the game system, your components are components-of-others. If alliances or teams are formed, these relationships change accordingly and there will be shared components. These are similar to components-of-self but the self is expanded to a collaborative unit, such as a pair or a team.

Generally I argue that the three-fold distinction (self–other–system) is useful in the sense that it enables to point out the fact that in single player games, all components-of-others belong to the game system, i.e. the game system assumes the role of an adversary agent. The abundance of single-player games for computers and game consoles is partly due to the fact that they can animate and simulate components-of-system with automated algorithms, which is something that preceding game technologies have not been able to do, at least not in as versatile manner.

The distinction to self, other, and system also articulates quite a universal game dynamics, where the goal of the game is to gain possession of the components-of-others, displace them, or something similar – and the others try to do the same to your components. This duality and conflict of the self and others is significant in the psychological context of playing games, as we will see in later chapters. The triangularity of self–other–system is also useful when we articulate games in terms of worlds with events, agents, and objects.

All games have components that the players' actions are directly or indirectly related to. Their possession might be temporal or limited, yet they play a significant part in the game and its outcome. A ball or a die are these kinds of components. Components-of-system function as tools, antagonists, co-operators, systems, resources, or props in the game. Once you or your team gains possession of the ball in football, it becomes a component-of-self, the self being the team in this case. As a result, football and many other ball games are largely contests of who possesses the key component of the game, i.e. who has power over its ownership attribute. By default, footballs, basketballs, etc., are components-of-system which makes possessing them precious yet fleeting in nature, due to conflicting goals between the competing teams. In games like this, referees usually act as game system proxies to govern the contest for ownership.

Let us summarise by asking a simple question: Why do games have components? There are two inter-related reasons, which run parallel to the above categories:

1. Components provide a source of identification for the player, usually in the shape of possessions, resources, and/or representatives (characters/pieces). In other words, components-of-self are the reference point for the player's motivation to play the game, and succeed in it. Components in the form of characters provide a focus for potential empathy or counter-

empathy, but this is dependent on how the player's relation to the character is positioned – a character may be treated as a mere proxy or a 'cursor' if it is primarily seen as an instrument to attaining goals rather than one that the player can develop an empathic relationship or even identification with.

2. Components provide the player with challenges in the form of adversaries, obstacles, resources or possession to be had, etc. They are potential objects of interaction, tools to play with and against; to own and to desire. They afford exercising control, i.e. opportunities for experiencing so-called self-efficacy (Bandura 1997). Components-of-others or components-of-system are the reference point for player needs and desires, the actions she wants to take in order to influence the course – i.e. the states – of the game. Characters-of-others evoke either empathy or counter-empathy, depending on their relation to the player's goals. Components often embody goal rules.

Image 4. *Components on the game environment in the board game Samurai (Rio Grande Games, 1998). The environment presents an abstraction of the map of Japan. Thus, the game simulates geographic proportions of the country with low resolution.*

Environment: The stage for game play

Environment element embodies the physical or virtual constraints of the game system, and as such it embodies rules that specify the spatial arrangement of a game. As a consequence, other game elements relate to the environment element in tangible ways: Components reside within the game environment or are introduced there, and in case of a specific game environment (such as a board), player actions via game mechanics are enacted in relation to it, as, e.g., moving pieces and building houses in Monopoly demonstrates. Game events, agents, and objects all take place in the environment, and thus it is quite central to game systems and the worlds they build.

Whereas sports games necessitate a physical environment, and board games require a two-dimensional miniaturisation or abstraction of an environment, a particular characteristics of digital games rises from their need of a specific virtual environment. In the universe of games, the environment does not always need to be specifically dedicated for playing the game. This is true with numerous card and dice games. With digital games the game environment is a fundamental aspect of the game and very specific to each individual game, as games such as **Super Monkey Ball** (Amusement Vision, 2001), **Doom** (Id Software, 1993), and **Tetris** (Alexey Pazhitnov, 1986) demonstrate. Unlike **Tic-tac-toe**, one can not engage with such game environments flexibly on a piece of paper, as they simulate space and the behaviour of objects and agents within it.

Usually game environments are designed according to certain principles that guide and confine the player into certain paths, events, and even atmosphere within the environment. These principles are used in embodying rules concerning spatial constraints into the environment element. More specifically, forms of spatial organization (see Chen & Brown 2001) are used to create paths that allow and constrain movement. They function as the techniques and principles with which the game environment embodies the rules of the game.

The more abstract the game is, the more visible is the spatial organization. Examples include board games with circular or linear paths, and also other forms that have been adapted to games, such as grids and mazes (which contain ready-made spatial arrangements for goals and end conditions). With digital games' level or world design, architectonic types and expressive forms (see Págan 2001) are used in communicating the theme of the game, and similar techniques are used with settings of LARPs. Archetypal settings such as castles, planet surfaces, space stations, industry complexes, dungeons, urban streets, etc. are used as rhetoric devices to communicate the spatial rules through a specific implementation of the theme element. Many board games try to attain similar purposes with illustrations, or specific environments for play will be assembled, as is the case with Pinball machines.

Environments also have attributes:

- *Part/whole:* This attribute defines the relation of the environment to possible other environments, or to a larger whole: an invididual grid in a larger grid is a part of the whole, a 'level' in a computer game of the puzzle or platform generes is part of a continuum of levels, and so on. This attribute often defines a particular function for an environment that is a part of a larger whole.
- *State*: Whether the environment, or particular location in it, is occupied or unoccupied, i.e. in the possession of players or system (e.e., the gird spaces in Chess or Tic-Tac-Toe), or has another function (e.g., moving) within a larger whole.
- *Scale*: the relation of environment size to component size, and relation to possible real-world referent

- *Vectors*: suggested or imposed directions of movement.

For instance, in Tetris the introduction of components into the environment reduces space, while the essential goal of the game is a ‘preservation goal’ (see chapter 6) having to do with establishing unoccupied space into the environment by making the components disappear via rules of combination. Tetris also imposes the up-down movement vector, which brings a sense (and emotion) of irreversibility to the game. In board games their paths or grids are used to communicate the vectors of movement that are allowed, i.e. the paths embody and govern rules between components and what players are allowed to do with them in relation to the environment (through game mechanics such as ‘placing’).

Game environments can be broadly classified into three following types, which can be designed, either into physical or virtual form:

- Boards/fields: These are either static individual environments that are used to confine the interaction of components according to requirements in the ruleset (**Pac-Man**, Tetris, arenas and fields in sports games), or ones which provide the basis for adding components (the board game **Carcassonne**, or the computer gaming-simulation Civilization). In these cases, the function of the environment element is mainly to embody rules through visualisation of geometrical relations, e.g. embodying them into the shape of a grid.
- Setups: Even if no particular environment is needed, the other elements need to be arranged in a fashion that communicates the game state to the players. Therefore a particular setup is by minimum needed, as with **Black Jack**, where the players’ cards are placed on one side of a table, and the cards of the house are on the opposite.
- Ecosystem(s): Often these kinds of environments are divided into parts or levels, but game-worlds also exist as seamless ecosystems with simulated physics, vectors of movement, forces of nature, and such. This is especially evident in the online worlds of so-called Massively Multiplayer Online Role Playing Games (MMORPGs such as **Everquest**, Verant Interactive / Sony Entertainment, 1999-), or in complex simulations of urban environments such as ’Liberty City’ in **Grand Theft Auto III** (Rockstar Games, 2001). Here the function of the environment element shifts towards thematic purposes rather than functioning as a material and functional embodiment of the ruleset.

An interesting hybrid of the above categories has been seen in the digital game **Shadow of the Colossus** (Sony Computer Entertainment, 2005), where the player’s goal is to slay a number of mythical colossi. They are game characters and environments at the same time, as the player has to literally stand on the shoulders of giants in order to defeat the colossi. In terms of the theory, the colossi present characters-of-system that function as parts of environment-of-system as well. This is an example of transitions between game elements which we will discuss in more detail at the end of the chapter.

Rule set: The Element of Goals and Procedures

My premise is that rules are embodied in other game elements, yet it is possible to extract rules as a specific, individual game element class. Rules produce each individual possibility and constraint that a game has to offer for its players. These rules are communicated to the player via game elements and their behaviour. A manual or a rule book functions as a documentation of rules: it explains them. However, it is only through the rules' embodiments into game elements that players experience rules as the behaviour of the game system. Any motivation for players to spend their efforts in competitive situations of games is a consequence of how the rule set functions as a compound for the game system. This embodiment takes place via communication and entails a rhetoric that will be discussed in chapters 13 & 21.

At its core, designing games equals designing rules, i.e. constructing a rule set, or implementing existing rule sets for new games. The latter method is common with so-called house rules or modifications ('MODs') built on the premises of commercial games, and for, e.g., role-playing games there are numerous popular and established rule sets, such as Advanced Dungeons & Dragons.

Whether the rule set is an original or an adaptation, it is obvious that rule sets contain different types of rules. There are ones that govern the number of participants and their interrelations, ones that tell in what succession the game advances, ones that set a point system, ones that define the boundaries of the game environment, etc. In other words, different rules point to different game elements.

My argument is that all different types of rules have to do with particular game elements and we can make better sense out of the multitude of rule types with the theory of game elements. While rules are by their nature verbal and conceptual, elements are visual, aural and/or tangible. This leads to the fact that often rules are embodied into other, non-verbal elements, such as components and environments.

Individual rules in general are not game elements themselves. They are constitutors of game elements; they state game elements' qualities and attributes. This multitude is why I want to discuss them as a set. Still, I want to emphasize a specific rule type over others, because it is used to motivate the player's actions and desires: Goal rules. This is mainly because I see explicit goals as the main difference between games and 'non-games', i.e. phenomena and objects that might resemble games but, by definition, are not. Toys and social gatherings, such as a dinner party, are examples of such non-games with many similar elements to games – they might easily be conceptualised as systems – but lacking in explicit goals. They often also lack unambiguous victory or end conditions, i.e. types of rules that are closely related to goals, or possibly equal them. Therefore extracting goal rules, or end conditions, or victory conditions as special instances of the rule set is particularly important. It is also crucial in order for the theory of game elements to work as an analysis or design tool.

Different goal categories in rule sets

We will discuss the psychology of goals in detail later, but already at this point it is necessary to take a look at a categorization of goals in human activity.

In a classic study of human knowledge structures, Roger Schank & Robert Abelson introduced a taxonomy of goals. Their taxonomy's premise is in an observation according to which in human activity 'there is a smallish set of goals which appears over and over again' (Schank & Abelson 1977, 112.) This kind of inquiry into general goal categories is relevant in light of ludology, as game goals come in different guises and themes, yet there seems to be 'a smallish set' of game goals that appear, over and over again.

Schank & Abelson identify seven standard goal forms: There are three forms that involve striving for desired states, two forms that involve avoidance of undesired states, and another two that involve intermediate subgoals for any of the other five forms (ibid.) I have paraphrased Schank & Abelson's goal forms (ibid. 112–119) with their characteristics and examples, into the following list:

- *Satisfaction goals*: recurring biological needs, such as hunger, sex, and sleep.
- *Enjoyment goals*: activities optionally pursued for enjoyment and relaxation, such as travel, entertainment, exercise, and competition.
- *Achievement goals*: realizations of some valued acquisition or position, such as having possession, social relationships, and skills.
- *Preservation goals*: preserving or improving conditions or states of people, position, or property, such as nurturing one's child.
- *Crisis goals*: special class of preservation goals which are set up to handle imminent threats to valued persons or objects, such as coping with illness, seeking cover from a storm, or generally to do something about a matter urgently.
- *Instrumental goals*: Any goal which, when achieved, realizes a precondition in the pursuit of another goal, but does not in and of itself produce satisfaction.
- *Delta goals*: Similar to Instrumental goals but they are pursued through general planning operations rather than 'scripts', i.e. procedures known beforehand.

In the context of games, it is the Enjoyment goals that people pursue when they seek particular competitive, rule-based entertainment we know as games. However, when in a game, players are usually presented with a hierarchy of goals which includes Achievement and/or Preservation goals, and most likely intertwined with Crisis goals and Instrumental goals. Games that facilitate general rather than strictly procedural, goal-driven planning, might also present Delta goals.

Whereas Schank & Abelson categorised goals in light of their inquiry into human knowledge structures, game scholars Staffan Björk and Jussi Holopainen (2005, 277–338) have identified a number of game design patterns for both goals and goal structures. They define 20 patterns for goal structures and divide them into three groups: Goal characteristics, relations between goals, and relations between goals and players. In addition, there are 26 goal patterns which include Capture, Conceal, Delivery, Gain Ownership, Overcome, Traverse, etc.

We will return to these categorizations with more detail later (in chapter 6), but here their function is essentially to illustrate the different type of goals that a ruleset element may include, and thus give a general overview of what types of objectives games present and how they are embodied in other game elements. My argument is that specific game goals (e.g. according to Björk & Holopainen) can be categorised into general goal categories (such as Schank & Abelson's) of human psyche: ludological goal categories, such as 'Gain Ownership' is an achievement goal, and 'Guard' is a preservation goal, and so forth. This 'translation' between the two domains of inquiry, which aims to test their credibility, will be found in chapter 6.

Rule set in action: Procedures

Rule set becomes concrete to players as a rule book or a manual, and during actual play, as procedures concerning game elements that the rule set states. It isn't surprising, then, that procedure is a term that is found in game studies and design literature quite often (e.g. Fullerton et al 2004). According to a game theorist E.M. Avedon (1979, 422), game procedures are 'specific operations, required courses of action, method of play'.

In Avedon's terms, procedures seem to be action that both the players and the game system take. Here I want to make a distinction between procedures and what I term game mechanics: Procedures present the rule set element in action, i.e. agent of a procedure is always the game system, even though it may delegate this agency to the players. In turn, when game mechanics are performed, the agent, i.e. performer, is always the player, not the game system. This distinction is useful because players often perform game mechanics such as running, jumping, etc., whereas game systems do not – rather, they perform, e.g., measuring procedures such as keeping time for the runners.

Thus we will define procedures as actions that the game system takes. It takes actions with following purposes: 1) for assigning value to different game states and outcomes by handing out rewards or penalties, and 2) for governing the interrelations of game elements, or their attributes. Both types of procedures handle information within the system.

Let us look into examples of how the rule set element acts through procedures: In **Monopoly**, a procedure is carried out when a player lands on a specific 'chance card' square on the game environment. The rule set states that player has to pick up a card which potentially changes the game state by handing out a reward or a penalty. Whichever it is, it is taken care of by a procedure stated in the rule set (e.g. 'Pay 1000 dollars tax to the bank'). If the player ends up in on a property owned by another player, she has to pay her rent according to a particular rule stated in the rule set. Both instances are examples of procedures which are imposed on the player by the game system. The primary game mechanic, i.e. what the player does, in both cases is a moving mechanic complemented with a submechanic of rolling a die.

Procedures as algorithms

In digital games, procedures are mostly automated via algorithms, whereas in many other types of games they are delegated to players or a referee – i.e. one has to pick up a chance card instead of receiving it automatically. Often in digital games the behaviour of components-of-system is implemented with algorithms or artificial intelligence (AI), which presents a specific way to use algorithms for the purposes of game play. Algorithmic procedures enable both simple and highly complex phenomena: The increasing speed of Tetris blocks; the behaviour of opponents in computer Chess or a digital sports game.

In story-driven digital games, narrative progression is achieved by the game system through procedures that serve the implementation of the theme element through narrative techniques (e.g., so-called cut-scenes are procedures with which to narrate something about the game and its world to the player). If non-digital games have narrative content, the system delegates its narration to the players as procedures, e.g. as ’story cards’, ‘scenarios’ or ’paragraphs’ to be read in particular states (e.g., the chance cards in Monopoly, or story elements in the card game **Once Upon a Time**, Atlas Games, 1993). Alternatively, the system gives room for the player’s personal expression, as happens in role-playing games. Procedures can also be used to bring a chance element to the game, and distribute information to players concerning their progress in the game: Draws in Lottery and Casino games, and dealing of cards and distributing winnings in Poker serve as examples of particular rules being instantiated through procedures and embodied into them.

Rule set facilitates game play

Again, why do games need a rule set and its subsequent procedures? The answer is that rule set defines every aspect of the game system. Procedures run the game system; they provide players with information about states of the game and provide them with challenges, rewards, punishments, sense of drama, etc. Whereas game mechanics are player-driven operations to influence game states, procedures are system-driven operations which respond to player operations.

Procedures are courses of action or algorithms specified in the rules, and as such they illustrate the fact that there is always intelligence present in a game system, and thus every game system is always an information system. Therefore procedures as ‘required courses of action’ (Avedon, above) obey the causal logic of ’if condition A is true, action B follows from that’. Dressed into a more familiar discourse of game rhetoric, it might be paraphrased as, e.g: ’If a player lands on chance square, she has to pick up a chance card’.

Game Mechanics: What the Players Use

Game mechanics describe one possible means with which the player can interact with game elements as she is trying to influence game states in order to complete a goal. The practical realization of a game mechanic is a sequential combination of game elements, originating from a player's choice to perform the game mechanic. The combination results to an input which enters the game system, possibly via another player's failure to respond with a corresponding game mechanic (e.g. being unable to hit the ball back in Tennis), or via the game system's failure to respond with a counter-procedure, embodied into, e.g., a character-of-system's behaviour according to algorithms of artificial intelligence. In any case, the system processes the input in light of the game state, and responds with procedure(s) documented in the rule set.

Moving a character (component) on a field (environment) by clicking on it with a mouse (interface) presents an example of a sequential combination of game elements put forward by the player. This sequence embodies the player's effort. It is an instance of a player performing a game mechanic that is quite prevalent in the realm of computer games (e.g. in The Sims). Game mechanics have prescribed consequences to the game state, if they meet the criteria by which they are successful – e.g. the throwing mechanic in basketball is evaluated with criteria about whether the ball goes through the hoop or not. Thus, game mechanics assign causal relations between game elements and game states.

Let us have another example, from a game of tennis: Two players are in the middle of a ball, exchanging hits. Hitting is the game mechanic which combines with the ball component and is subordinated to a goal rule that relates to the pitch: 'Try to hit & aim the ball so that it falls within the spatial constraints of the game environment and your opponent is unable to hit it back.' The game system does not have to acknowledge the exchange of hits before a misplaced hit out of bounds or to the net, or a legitimate hit that the other player is unable to return, takes place. Only then does the game system have to act via a procedure which changes the score to reflect the new game state. (This is, consequently, why style of play often does not matter – for the game system, it is only the end result that does.) This example presents a case where the input to the game system proceeds in relation to how and if players (or player vs. system as an agent) execute corresponding game mechanics in relation to each other. In case of a failure in performance, the game state changes favourably to the one that was last to perform the mechanic according to the criteria stated in the rule set. Overall, this discussion highlights challenges that qualitative performances present for formal evaluation in games: if and when such evaluations are delegated to human referees, it is likely that discussion about their preferences and judgments will follow.

Game mechanics are essential elements in that they are always about doing something significant in the game, because they relate directly, or via an instrumental relation, to a goal in the game. If goals are imperatives ('Guard!')

put forward by the game system, then game mechanics are the verbs with which players respond.

In everyday experience, performing game mechanics are what playing a game is about, as they imply player action and performance – in other words: play. Therefore game mechanics are best described with verbs: Choosing, guessing, moving, aiming, shooting, collecting, kicking, trading, performing, bidding, etc. Thus the nature of a game mechanic, i.e. the action it conducts or simulates, might come to define the game experience for the player. For instance, jumping defines ski jumping, and guessing characterizes quiz games. In chapter 12 and Appendix B the reader will find a library where the wide world of game mechanics is collected and categorised under general classes. It is also employed in the GameGame case study.

Information: What the System and the Players Need to Know

Besides component and environment attributes, in many games there are scores and statistics. These all are instances of the information element.

As a compound element, information is related to all the other elements as a fuel of meaning. For players, it has two-fold relevance: information is gained and information is produced. Distribution of information from the game system to the players can be either imperfect, i.e. the system is designed to conceal something, usually related to goals, or it is perfect, i.e. the players have access to all the information that the game system stores.

David Parlett (2000, xiii) writes about playing cards as components specifically designed to both reveal and conceal information. Besides the wide universe of card games played with the 52-card deck, a simple game of **Memory** presents an example of the first case, a game of imperfect information, and Chess presents example of the opposing case. It is immediately obvious in the light of this example that the configuration of information element in the two games has considerable consequences for the play experience. In Memory the goal is actually to reach perfect information through a goal of pairing, and in Chess the goal is to reduce information from the system by displacing components. (See also Salen & Zimmerman 2004, 203–11.)

The information element, then, has three kinds of ownership in the same sense as components and environment elements do: there is information-of-self, information-of-others, and information-of-system. Quiz games, such as **Trivial Pursuit** (Horn Abbot, 1991), serve as a quick example of a game where the information element is distributed between the three ownership statuses: you as a player have information regarding the answer to trivia questions, but it is not necessarily equal to the one that other players have, and in the end, it is the system that possesses the information that distinguishes a correct answer from an incorrect one. Games like Trivial Pursuit also illustrate how information can be an instrumental element within the game mechanic of answering questions; the 'content' or 'message' of a communicative game mechanic.

When players perform game mechanics, they produce new information to the system or effect information that already exists. This means that the complexity of the system as an information system is proportional to the number of game mechanics and the complexity of information that is produced as they are performed. The more freeform the information produced by mechanics is, the more complex methods of interpretation the system has to have. Thus, in role-playing games and Ice Skating, or in the popular television game show format about a dance contest, **Strictly Come Dancing** (Format Entertainment, 2004), it is the human proxy (or proxies) of the game system that evaluates the consequences of the game mechanics which are based on verbal and/or physical expression. At the opposite end of the information spectrum there are traditional lottery games like Lotto or Keno, where the game mechanics of choosing numbers produces completely unambiguous information to the system. It is then processed and the winners are determined by mathematical procedures of draw and matching.

Four types of information

The variety of games at large means that there are different types of information stored in game systems. It can be categorized according to the structure it is organized into, i.e. according to games as worlds:

- *Information about Events*: outcome infromation, e.g. success and consequences of game mechanics.
- *Information about Agents*: player roles, attributes (e.g., resources, standing and location in the game), including system-operated players (AI).
- *Information about Objects*: the attributes of components.
- *Information about System*: information in the form of procedures stated in the rule set & information contained about game states, the complexity of which is defined by the configuration of game elements, i.e. the complexity of the parts of the system as a dynamic whole.

This global structure leads to various information types, based on how the information is communicated to the players: by signals, displayed in matrixes, sent as messages, embodied in game elements as direction vectors and the like, or structured into particular modes with which to convey information, e.g. in narrative sequences. We will return to this aspect of the information element in connection with the theme element, and in the theory of game rhetoric (chapter 13).

It was established already in the previous chapter that the game system needs to store information of game states, and it employs the configuration of game elements in this. The game state of Chess is configured as the relationship between game components and game environment, and it is accessible to players as the pieces on a board at any given moment. In computer and video games, the game state is composed onto the confines of a screen display. In any case, both screen information in the form of score counters, energy displays, etc., and set-ups of cards and boards on a table, function as metaphors of the game as an information system; both function as media, but they address different senses by using different semiotic resources and modes, thus producing different experiences in terms of modalities.

Information can also be stored outside of the system into statistics that can be used in consulting different histories of the game. These can be used in different ways, for instance in such a manner that information is stored between gaming encounters, and fed back to the system when play resumes. The save functions of computer and video games operate like this. They store the game state and when the player 'loads' the game, the game state is re-established. Sports leagues, or any game-related league formats function in a similar way, but only the most relevant information is stored, i.e. information about terminal game states such as final score and its consequences to team attributes, such as points in relation to other teams. These relations are presented in the form of league standings.

To conclude with, information is a crucial compound element class which is used to keep track of the game states and element attributes incorporated into them. Information is also an element which game designers use to modulate the arousal and curiosity of players by producing states of uncertainty and certainty. Running a game, i.e. game system behaviour, transforms information values in the system, because game states change from one into another, and because of this game element attributes possibly change as well. This transformation of information presents a form of system behaviour, and can therefore take the shape of behaviour of another system – i.e. produce instances of simulation.

Let us conclude with a rapid analysis of a game as an information system. Strip poker is quite interesting in this sense. There is a information storage with the card game of Poker in the system, but we are more interested with the 'strip' part. There are two kinds of components in the game: the cards as components and the players as components. The player components have attributes in the form of clothes. Let's say that each participant has socks, panties, trousers, and a shirt to start with. Thus there are five attributes to each player (we presume that each player has two socks), and the system stores this information as a value of five for each player. Once play proceeds and players have to strip a garment at a time (when losing a hand), the respective information values decrease until one of them goes down to zero, thus denominating the losing player.

For the players, the experience of information is of course quite different: as attribute values decrease from the perspective of the game system, visual information that piques the interests of the players increases, as more flesh becomes visible. Players are components with an attribute 'clothes-of-self', which relates to a preservation goal. The achievement goals of Poker are instrumental to these overall goals, i.e. to stay clothed the player has to keep on winning the Poker hands. In conclusion, the dynamics of information in game systems may work in inverted fashion in relation to the perception and human experience of information, i.e. as information that is interesting to the players' increases, information instances and their values within the system decrease.

Image 5. *Image: Information element as the container and communicator of game state. The board game* ***Marvel Heroes*** *(Fantasy Flight Games, 2006) contains a multitude of components with various attributes. As a consequence, the amount of information to be stored into game states reflects on the complex set-up of the game when compared, e.g., with Tic-tac-toe. The complexity of the information is due to the literary theme the game tries to capture in terms of a game system.*

Theme: Metaphor for the ruleset

The next compound element we discuss is theme. Game theme is the subject matter that is used in contextualising the rule set and its game elements to other meanings than what the game system as an information system requires. Whereas a rule set, at minimum, provides a context of meaning for the game system, the theme provides another layer of meaning for everything that takes place in the game. Whatever the theme is, the guiding principle is that information in the game system is interpreted or translated into the terms of another system.

An important concept in identifying the theme from the rule set is the concept of metaphor. Theme can be understood to function like a metaphor in relation to the game system. George Lakoff and Mark Johnson (2003, 5) have stated that the essence of metaphor is in 'understanding and experiencing one kind of thing in terms of another'. Thus the theme element is what game designers use in transforming the information systems specified in the rule set into systems that give birth to fantasy, drama, and other factors contributing to player experiences. Besides obvious commercial reasons, this is why themes in games often employ conventions familiar from other areas and genres of popular culture: Science fiction, Sports, Crime, Fantasy, Romance, etc. The Star Wars Chess game I have already used as an example is fitting here as well, as it uses the Star Wars franchise metaphor in 'thematizing' Chess.

If there is no specific theme, as in abstract games, there is no metaphorical level. The game system is presented purely in its own terms. Thus, the game's rule set as a constituent of the system takes the function of the theme element. This is evident in games like Poker, **Sudoku**, sports, etc. However, it is important to note that few if any game systems exist 'purely', as they always enter cultural contexts, such as game histories and traditions.

Thematisation: The process of implementing a theme

A game theme is formally made up of how the information element consisting of game components and environments with their attributes, game mechanics, and the rule set, are transformed by specific means and styles of representation – game rhetoric – to metaphoric form.

Players are included in this process in the sense that they are given metaphorical roles in relation to the game's goals: They will experience themselves differently during the game, but then again, there are different degrees to this kind of self-forgetting – I can walk into a soccer field as myself but I will represent the team, it is the 'soccer-player-me' that enters the field; I will enter a casino as myself, yet as a 'casino goer'. The transformation of players according to the metaphor into specific roles is at its most evident and concrete in role-playing games, and especially in live action role playing games (LARPs), where players are persuaded to forget oneself by adopting a 'character' with the help of donning costumes and assuming traits of a character, much like an actor on a stage.

In any case, I will call the process of constructing the metaphor as thematisation. Thematisation can work in two directions. Either:

- There is a theme which requires a system, or
- There is a system which requires a theme.

In any case, the task to construct the metaphor remains: Either there is The Spiderman the comic series which will be turned into a game, or there is an existing game system (i.e. game design, possibly according to popular genre conventions) that will be adapted to the fictional universe of The Spiderman. These two alternative paths can also work as alternative design methods when designing a game.

Themes are made of information that has been organised with a guiding subject matter, such as ‘superheroness’. Thus the theme consists of a setting (era, location) and a motivational psychological element, such as conflict, which have corresponding game elements: environment and rule set with its goal rules, respectively. Game theme gets its material form in the representation, and possible simulation (modelling of behaviour) of game components, rule set procedures, mechanics, and environments. To give an example: A psychological game theme like ’betrayal’ would require that the components are characters and that the rule set would govern their social interaction, stylizing such feelings as trust and mistrust into possible courses of action via game mechanics. In this case, the system would be thematized into a metaphor of betrayal: into the metaphorical concept of ‘betrayal as game’.

Theme can be used in order to ’disguise’ familiar game elements into new forms, thus producing grounds for different experiences. Even though the theme or technology between two games may be different, there might exist similar or even identical set of game elements beneath. This is true for many card games, where the theme has been ’pasted’ on top of a well-known configuration of game system, and does not necessarily influence the game play directly. This is an instance of ’weak’ thematising, and the example game from the previous chapter, Star Wars Chess, presents a fitting example once again. Another example of weak thematising is the standard 52-card deck, where the numbers 1-52 are divided by four and thematised into the four ‘families’ of hearts, clubs, spades, and diamonds. In other words, every fourth set of 13 cards in the deck is interpreted in light of specific category, rather than treating the 52 components as a homogenic whole.

Constructing a metaphor in either of the two directions consists of creating and choosing communication techniques from the resources that the medium chosen for the game makes possible. In practice, thematization consists of a set of communicative techniques with which the rule set and the elements it governs is framed towards the meanings, such as ‘Spiderman-ness’, that are pursued. The metaphorical meanings that designers want to communicate through the theme have to be recognized and mapped onto the game system, or the other way, from the game system onto the theme. In the case of Spiderman, where we have an existing theme, the conclusion might very well be to map the player role, and thus the component they possess and control, to the main character of Spiderman, i.e. Peter Parker, and afford the consequent superhero abilities of Spiderman as game mechanics for the players.

The Spiderman example serves also to show how, in terms of literary theory, that theme can be used to maintain the diegetic coherence of the game, i.e. the coherence of the world where the game’s events occur. The diegesis includes objects, events, spaces and the characters that inhabit them, including things, actions, and attitudes not explicitly presented in the work but inferred by the audience. That audience constructs a diegetic world from the material presented in a narrative; or the game elements building the world of the game.

Diegetic coherence is always evaluated in relation to an existing fictional universe, such as the Spiderman universe preceding any games, with its settings, values, and characters. Theme also produces potentially different audience interpretations and expectations, which can be motivated not only by actions related to the goals and purposes of the game, but also by theme-related characters and conflicts (see Lankoski & Heliö 2002).

The most prominent part of a theme is often the graphic design, or the audiovisual style, or the physical setting that the game employs, i.e. how it represents its components and environments in images or in material form, and possibly in sounds as well. In a parlour game, such as **Hide & Seek**, the theme is embedded into the physical surroundings (i.e. embodied into the environment element) and the subsequent goals set for the players – an office space, for example, could be thematized to function as a metaphor for a maze. The game theme is also embodied in the literal and verbal rhetoric of the game, i.e. what names and descriptions are given to actions that take place in the game, and how rules are regulated. Theme can also be subordinated to an over-arching narrative that dictates the progress in the game via characters, challenges, worlds, etc., and through the different environments, components, and procedures employed in them.

Theme also produces and answers potentially different audience expectations. A Persian theme that echoes 'Tales of 1000 Nights' creates different kinds of expectancies than a theme with a moustached Italian plumber character called Mario (in the **Super Mario Bros.** digital game series by Nintendo).

Besides Star Wars Chess, weak themes can be found in games such as **RISK: Lords of the Rings** (2002), which replaces the original theme of Cold War with the war in Middle Earth. Strong thematisations are found in games with aspirations for storytelling and characterization: the **Final Fantasy** (Square, 1998–) series is an example among digital games; role-playing games serve as examples of similar aspirations among game systems which take advantage of other semiotic resources.

The process of thematisation basically comes down to the relationship of the chosen subject matter or brand or fiction franchise, and the information element of the game. The prerequisite for 'strong' thematization is a complex information structure, which usually has either of two consequences:

- The theme is too complex to function as a metaphor for a dynamic system, which means that parts of it must be executed as narrative procedures (e.g., the 'cut-scene' cinematics of video games).
- The theme's complexity increases the complexity of the game as an information system, i.e. the information stored in game states gets more complex, which leads to multiplication concerning other elements: components, environments, ruleset, etc. (E.g. board games like **Marvel Heroes** see image earlier, or **World of Warcraft: the Boardgame** by Fantasy Flight Games, 2005.)

Image 6. *Image: Two dice thematised for a 'lovers' game' with two semiotic resources: text used for defining place and illustration used for depicting position.*

Thematization as semiotic design for game rhetoric

The visible and tangible layer of game theme emerges from so-called semiotic modes (Kress & van Leeuwen 2001) that are chosen. Different modes are resources and techniques – written language, speech, narrative, material for props, etc. One aspect of game design practice is choosing and combining different modes: a designer working on a digital game chooses between different modes when, for instance, deciding whether communicating a certain rule via animation, speech, visual illustration, or a combination of all these modes. The technological game platform, i.e. a specific game console or computer operating system with their respective input and output systems, both enables and constrains the available semiotic modes. Digital games present possibilities for diverse use of audiovisual modes, whereas games played with boards, cards and props enable the use of tangible materials and physical settings. These different modalities have to do with techniques of game rhetoric, and we will focus on them in chapter 13.

Interface

In case there is no direct access to the game system, interface is the medium through which players produce input to the system. Interface is needed to project the player's agency to the game system, and often this result in visual, aural, and/or tactile feedback to the player. The important distinction here is between direct and indirect access, because it could be argued that an ‘interface’ exists to any kind of game, as a means to gain access to the game system and its elements. However, my argument is that cards, pawns, tiles, and boards are all accessed directly, whereas virtual characters, or the ball in pinball, or the drawing machine in a state lottery are not. All these kinds of game systems afford the player an interface to interact with the game elements. Usually the game mechanic is directly connected to the use of the interface, and thus interfaces are able to afford particular types of game mechanics. For instance, the karaoke game **Singstar** for Playstation 2 (Sony Computer Entertainment, 2004) manages to implement a game mechanic in the form of singing with the help of the microphone interface, and the camera peripheral used in **EyeToy: Play** (Sony Computer Entertainment, 2003) makes the same possible for bodily gestures and motion.

Whatever the specific interface is, as an input device it also functions as a carrier of information. The above example shows that specific design and integration of interfaces is one of the particular traits of digital games. When players engage with digital games, the interface is constantly present as a part of the player experience. Therefore it can be used – deliberately or not – in increasing the difficulty of a particular game, or more generally, emphasizing interface mastery as an important skill. Martial arts and skateboarding games are examples of digital game genres where mastery of game mechanics through an interface, and the psychomotor abilities it requires, is a critical success criterion.

Interface functions as both the gateway and the gatekeeper to playing games that require it. As the interface is the only way to engage with the system in digital games, its role in the system design gets emphasized to some degree in all digital games. Learning how to play digital game presupposes learning how to use the interface, which means that interface becomes a crucial part of the game’s rule set. Compared with a trivia parlour game, provided that the players can speak, they do not usually need to learn anything when compared to players of digital games who have to access interface peripherals and their (more or less) arbitrary control and input schemas.

This raises a question of whether a tennis racquet or an ice hockey stick is an interface or something else, such as a component. The answer is that racquets, stick, and the like are used as tools in enabling and/or amplifying the effect of game mechanics. Playing tennis with the palm of your hand would be possible but not very effective. However, because such direct contact with the ball is possible, I will not relate these tools to the interface element but rather to the game mechanics. In other words, a general class of aiming & shooting game mechanic has been implemented in Ice Hockey in such a manner that the players are allowed and bound by the rules to use a component in the form of a stick when pursuing the goal of scoring.

Players

The most relevant aspect of players in the context of the theory of game elements is that players make the game system meaningful with their actions and decisions. However, this behaviour is modulated by the game system and its elements – to a varying degree: For instance, the level of difficulty or easiness is bound to affect the amount of negative and positive emotions evoked in the players. If a game does not feel rewarding, or the likelihood of winning or succeeding seems small, few will play.

Game design is a practice where designers more or less deliberately direct players into patterns of behaviour that can be anticipated – otherwise, all rule books and manuals would be filled with holes. In practice, there often are holes (or bugs), which testify for the difficulty of completely anticipating player behaviour. Another aspect that the game designer can not fully anticipate is the intensity of emotions that a game evokes, but the designer can deliberately try to achieve a certain atmosphere, emotional disposition, and mood to the game, in similar fashion than artists do with their respective crafts.

Psychologically speaking, players have moods – persisting emotional states – that affect their performances and personal tastes regarding games. If there is a genre of games where the player element is especially strong, one can start looking at multiplayer games and role-playing games in particular.

From the systemic perspective, the relevant player qualities can be deduced from game elements. They are, starting from the system core and reaching towards the periphery:

- *Player possessions*: ownership of elements, components in particular
- *Player agency*: player affordances in relation to elements, embodied into game mechanics
- *Player abilities, knowledge, and skills*: sets of cognitive, physical and psychomotor abilities necessitated by goal hierarchy and game mechanics (possibly via operating an interface), and their learning curve in developing the abilities into skills.
- *Player organisation*: players' relation to each other, possibly via different roles

Player qualities listed above are attributes with which the game system, and the game designer as its creator, can profile players. This means anticipating how players are able to affect the behaviour of the game as system. The roles the system assigns the players might have specific significance in relation to a particular element, such as components. The players' abilities to possess components and the attributes thus dealt out have relevance for the game dynamics and rule set as well, as do the way that players are organised in relation to each other – as individuals, in pairs, or teams. Player organisation also has consequences for goal rules, or it is a consequence of them.

The game system does not have to acknowledge the motivations of players, but they can be modulated with goal structures, such as goal hierarchy. The learning curve has to do with the development of players' abilities into skills, which, from a cognitive perspective, equal general cognitive abilities, such as perceptual speed, induction, visual memory, and others. (These will be discussed with the theory of player experience in chapter 7). If the possibility spaces regarding player choices and actions are deliberately narrow or e.g. dictated by chance, development in player abilities and strategies will be minimal. The wider the possibility space of player choices e.g. regarding alternative game mechanics, the more individual strategies will be adopted, and there will be room for players to hone their skills and develop strategies. This is possibly related to the manner in which the game system distributes information on the perfect-imperfect axis.

This brief discussion will function as a preliminary introduction to the problematic of conceptualising player behaviour. However, as we will discuss contexts, we will inevitably discuss players, especially in social contexts. Seen from the contextual perspective to game systems, player motivations, and practices in between games, are among the most relevant ones.

Contexts

In its simplified meaning, the context element includes the time and place where the game takes place, but these factors have considerable repercussions to the game. There are several contexts to any game: the context of football is a cluster of factors having to do both with the game's popularity, tradition, players, national histories, and the sports industry with its media coverage. Such contexts are numerous and complex, whereas the context of a recent digital game is confined into somewhat narrower contexts of digital game cultures with shorter histories and different audiences. However, the theme of any game might expand its contexts considerably, as, in the case of a game with a theme that draws from mythology (e.g. Prince of Persia series), history (the computer game **Europa Universalis**, the board game **Axis and Allies**, etc.), or contemporary events.

The context of a game can be endlessly expanded to surrounding cultures, but in order to be useful, the line has to be drawn somewhere, at least when embarking on a concrete analysis, or design, of a particular game. Where actually to draw the line is a question of perspective. Someone interested in the cultural status of a game has to take a very broad perspective to both the historical and contemporary aspects that make up the context, such as audience, public opinion, sales, advertising, etc. A relevant contextual factor is that the contexts influence players, the formation of their tastes, gaming habits, and so on. If the player element is about the player's behaviour and relationship to games specifically, then contexts are something that expands to the players' personal histories and habits that affect, for instance, when, where, and with whom they play games.

Encounters in Game Contexts

At this point, I have chosen to seek the help of a social psychological perspectives in answering the why and how. The psychological standpoint will be on the agenda in later chapters, so we will focus on sociological perspectives in the following pages.

To help in understanding game contexts, Erving Goffman's essay 'Fun in Games' might seem dated, but I have found it useful in conceptualizing social encounters in the contexts of games. Goffman introduces the concept of focused gathering to discuss certain types of social arrangements that occur when persons are in one another's immediate physical presence. According to Goffman (1961, 18), focused gatherings involve for the participants the following 'communication arrangements':

- a single visual and cognitive focus of attention
- a mutual and preferential openness to verbal communication
- a heightened mutual relevance of acts
- an eye-to-eye ecological huddle that maximizes each participants' opportunity to perceive the other participants' monitoring of him/her.

Goffman argues that these arrangements give birth to a 'we rationale' for the duration of the gathering. Goffman's examples of focused gatherings include a couple dancing or making love, but most importantly, he focuses on games as exemplary representatives of focused gatherings. He also discusses another type of encounters which he calls 'situated activity systems'. These are encounters which require specific physical activity and attention, e.g., a surgery in an operating room. In another, related essay 'Role Distance' Goffman discusses different roles in situated activity systems.

All these aspects are relevant for the theory at hand. Keith Oatley is an emotion theorist whose work we will address in connection with the theory of player experience, but because of that it is even more relevant to note his interpretations of Goffman's thinking. Oatley (1992, 354) summarises that 'Goffman is concerned to use the structure of games to discover the structure of face-to-face encounters more generally.' With *Games without Frontiers*, I will try to use the structure of face-to-face encounters to discover structures of player interactions in game contexts.

Structure of Focused Gatherings

Goffman distinguishes several structural aspects common to different focused gatherings. He classifies those under three categories: Rules of Irrelevance, Realized Resources, and Transformation Rules.

Rules of Irrelevance refers to the behaviour where 'participants are willing to forswear for the duration of the play any interest in the esthetic, sentimental, or monetary value of the equipment employed' (ibid. 19). This is essentially the same phenomenon that Huizinga's notion 'magic circle' describes. Goffman talks about the 'structure of inattention' (ibid. 20) that focused gatherings produce for their participants, and which leads to a 'redefinition of reality' – concepts, again, which resemble Huizinga's notion of second-degree reality that emerges for the duration of a game and which may transform, e.g., a field of sand into a Tic-tac-toe grid. In conclusion: just as the rule set establishes the relevant rules, at the same time it implicates that everything not mentioned in the rule set is irrelevant, at least form the perspective of the system.

What is important in light of the player element is that rules of irrelevance also mean that 'certain properties of the participants will be treated as if they were not present' (ibid. 20–1). Furthermore, Goffman deduces that 'participants will hold in check certain psychological states and attitudes' (ibid. 23). This is due to the nature of the gathering which imposes this code of conduct, i.e. a contract between the players. There will be 'focused interaction', similar to the activities of buying and selling in between shopkeeper and customers in a shop. Everything in the shop serves its subgoals, as individuals take roles of customers and adopt their subsequent behaviour (choosing objects for purchase, exchanging money, etc). In a focused gathering like this, other matters are disattended. Goffman also argues that other undertakings besides desires and feelings are held at bay for the duration of the encounter: for instance, what has happened before and what is scheduled to occur afterwards (ibid. 25). This supports my belief that the fascination of games is partly due to their nature as systems that create their own, separate worlds with 'endogenous meanings', as game designer Greg Costikyan (2002) has put it.

The next structural aspect common to focused gatherings is 'realized resources'. With this, Goffman refers to 'locally realizable events and roles' that implicate 'a matrix of possible events and a cast of roles'. Goffman sees that games as specific kinds of focused gatherings generate particular roles and identities; games are engines of meaning. This leads to their nature as 'world-building activities', i.e. they include materials that are locally available to the participants to build up a world. (Goffman 1961, 26—28.) In terms of my theory, the realized resources equal the particular configuration of a game system and the means with which it is distributed, i.e. made available, to players.

The final structural aspect is 'transformation rules'. According to Goffman,

> a locally realized world of roles and events cuts the participants off from many externally based matters that might have been given relevance, but allows a few of these external matters to enter the interaction world as an official part of it (ibid. 31)

This means that focused gatherings have clear rules to deal with information or resources that are brought to the encounter from outside it, i.e. in similar fashion as a game system defines whether to include contextual information to the game or not. It can be concluded from this that designing and analysing so-called pervasive or mixed-reality games is about focusing on defining or deconstructing their transformation rules.

Dynamic of Encounters

The reason why Goffman is interested in these types of social encounters is that he sees them having important consequences for three key socio-psychological concepts: individual, communication, and interaction. Focused gatherings transform each of these three for the duration of the encounter. In terms of my thesis, these three concepts are discussed through the theory of player experience, game rhetoric, and game elements, respectively.

According to Goffman, individuals transform into two aspects in a focused gathering:

- into participants with an ’interest-identity’
- into players, i.e. into game-agents.

The next transformation has to do with communication: rather than communicating in an every-day manner, communication transforms into ‘moves made or taken’. In terms of my theory, what Goffman discusses are the performances players perform via game mechanics, and which always produce a certain rhetoric of meaning, as defined by the game system, in the process.

The final transformation has to do with how interaction between individuals transforms into a ‘gaming encounter’, where the context seeps into the game itself: ’A play of a game has players; a gaming encounter has participants’ (Ibid. 36). In other worlds, the interest-identity of their off-game selves transforms into the player identity, and vice versa: the self adopts goals, and goals are imposed on the self.

Indeed, Keith Oatley has summarized Goffman’s views about the roles games afford and elicit for players:

> To be a player simply means generating moves that are legal according to the rules of the game. To be a participant is to take on the goals of the game as one's own. Only as a participant will one experience emotions. Only as a participant will one be excited by the possibility of an attack on the queen's side, feel glad to start putting up hotels on one's property, or feel anxious to avoid serving another double fault. Emotions that occur in relation to goals we have adopted are real. One may be engaged in a role, experiencing what happens in it as happening to oneself, and indeed shaping one's selfhood. (Oatley 1992, 355.)

Transactions within the ‘magic circle’ depend in part on what individuals import with them into its membrane. The focus of interaction and the role players adopt mean, according to Oatley, that ‘what we import of ourselves undergoes a redefining transformation. This allows a range of expressiveness within a role.’ (Ibid., 358.) This implicates the promise of games to offer possibilities for different selves to be experienced, which is at its most concrete in role-playing games, but should not be overlooked in general: I argue that there is a complex, coercive rhetoric which game systems (and their designers) employ in persuading their players to perform and play.

In connection with roles, Goffman also introduces the concept of 'Engrossment' (ibid. 38) which refers to the participants becoming carried away by the activity of the encounter; becoming spontaneously involved in it. In the context of game studies, I know only of Gary Allan Fine's study of table top role playing, *Shared Fantasy* (Fine 2002/1983), where this concept has been employed. Goffman writes about how game rules govern the 'game moves', and the structure of the gaming encounter governs self-mobilization, expressive behaviour, and other spontaneous involvement in the game. Goffman anticipates contemporary online games played via Internet when he discusses how play-by-distance games (e.g., play-by-mail Chess) can not mediate this spontaneous aspect of the encounter. This has been recognized in contemporary digital games where the interface is used to project the spontaneous involvement into the game system and avatars. In online games, chat channels and other forms of mediated non-verbal communication ('emotes' etc.) try to bridge this gap.

Goffman's notions seem highly relevant for the theory of game elements, and they explain the role of the context and player elements in relation to the system as a whole. Goffman acknowledges the important aspect that to have fun in a game is not to be without dysphoric emotions. However, sadness, fear, or any other emotion – euphoric or dysphoric – in games takes place 'at one remove', and one can escape the game when it is not fun anymore. (Cf. Oatley 1992, 356.) This premise is fundamentally important when we discuss games and emotions in later chapters.

Games with and without Contexts

My academic background is in cultural studies, where context has been the issue of numerous debates and theories. The stance of 'radical contextualism' argues that contexts are not backgrounds that provide additional information but they always exist together with the objects of study, as part of them rather than on the outside (Lehtonen 2000, 111). Even though I acknowledge this argument, I would also argue that for practical game design tasks the context has to be simplified to certain extent, and a line has to be drawn to the perimeter of the contexts – otherwise the design will never begin, as the analysis expands endlessly to the surrounding meanings and culture. The point is also that acknowledging and respecting the complexity and multiplicity of contexts can be achieved in different ways. The structure of focused gatherings has already opened one perspective for us, and when I will embark on the study of player experiences in part III, context is present through such psychological concepts as 'eliciting conditions' (in relation to emotional responses) and 'mood management' (in relation to individual preferences in games).

My understanding of the relevance of context is also evident in the visualization of the theory of game elements. In it, the perimeter of context is not drawn on the formal perimeter of the game system, nor at the exact level of the players, but somewhat further out. I would thus call my interpretation of the magic circle and its reach one of pragmatic contextualism, which is in line with the agenda of applied ludology.

Element transitions

In the process of extracting the abstract game element classes from samples of various games, it has become evident that during game play, not only do the statuses of game element ownership attributes change, but game elements may also transform into one another. Therefore, before summarising the fundamental aspects of each game element class that game systems might contain, it is useful to analyse which elements can transform into another. I have compiled a table below that lists possibilities for transition that I have identified from the empirical sample of game designs in this study (the list is not meant to be exhaustive). The transitions work into both directions. There are also examples of what kinds of transitions are found in games.

element	**to**	**element**	**example**
component		environment	Components become the environment, e.g. tiles placed on a board create the game environment, as in **Carcassonne**, or in Dominoes.
ruleset		component	Rule set as components, as in the card game **Fluxx** (Looney Labs, 1997), where individual cards introduce new rules to the game.
component		information	Clues or other pieces of information embodied into componens, lottery numbers and sports bets are fed into the system as information
component		game mechanics	Components enable certain mechanics, e.g. tools, weapons
information		theme	Any games with a theme
players		components	sports & other physical games

element	to	element	example
environment, component		information	maps, MODs, player-generated content
interface		game mechanics	games with special interface peripherals: **Dance Dance Revolution** dance mats, **Guitar Hero** guitar controller, etc.
context		information	Sports betting & other 'mixed-reality games'

Table 1. *Game element transitions and examples.*

Game elements: a summary

To summarise, I will characterise the three-fold distinction systemic–compound–behavioural (see illustration in page 54) briefly, before giving more examples of the game elements themselves.

Systemic elements are quite fundamental to games, but they are of no use without the other elements – components and environment might provide something to play with in themselves, but they are not enough to give birth to a game, as there needs to be something that defines how they are allowed and meant to interact, and to what purpose, i.e. what goal their interaction serves for the players.

By their nature, compound elements create connections between game elements. Rule set is the glue that keeps a game system together and puts it in motion by motivating players with goals and victory conditions. Game mechanics give players tools to pursue those goals, possibly with different strategies. Information runs through the system in order to guarantee that the game state is known to all parties involved, and it is displayed and communicated through the behaviour of other elements. A Theme invests the game system with meaning other than what the system would contain as an information system. Interface enables indirect access to the game system when direct access is impossible.

Behavioural elements are the most complex and informal to describe and define, but I have striven to abstract their key qualities in light of the theory and its goals. We will learn more about the psychological principles of player motivations, cognitions and emotions later, but at this point it was necessary to discuss players from the perspective of the system.

To end the chapter and Part II of the thesis, let us summarize its main topic: the theory of game elements. The game element classes defined above were component, environment, rule set, game mechanics, information, theme, players, and contexts. Respectively, here are some examples of each game element:

1. *Components*: a deck of cards, pieces in a board game, a football, a character such as Pac-Man.
2. *Rule set*: Defines goals: ‘Guess 7 correct’, ‘Score more points than your opponent’, ‘Be first in goal’, ‘Save the Princess’, and also states procedures such as dealing of cards or a throw of a die, game system or referee actions, game component behaviour by artificial intelligence (AI) in digital games.
3. *Environment*: a board, a field, or a virtual environment in a digital game
4. *Game mechanics*: Throwing in Basketball, Hitting in Tennis, Placing Dominoes, Manoeuvring in Gran Turismo, Guessing in Lottery games, etc.
5. *Theme*: the subject matter of the game, such as real-estate market in Monopoly, or a fictional context such as ’the matrix’ in the film-licensed digital game Enter the Matrix, or a historical event (World War II in the Axis & Allies or Medal of Honor game series), etc.
6. *Information*: The game state visualised on a score board, or a screen display, and/or component attributes such as value or number.
7. *Interface*: The tool to access game elements via game mechanics when direct access is impossible. Examples of interfaces include game pads, dance mats, mouse, steering wheels, etc.
8. *Player(s)*: the human factor in the game: their behaviour, mood, relationship with games, game tastes.
9. *Contexts*: the physical location of the game, the time, players’ personal histories, and other informal, external aspects to the game-system that possibly affect the game experience.

At least a) components complemented with rules governing their behaviour, b) information to store the game states and component attributes and relations, c) a game mechanic to give players something to do, and d) a goal that the mechanics are designed to help in completing, combined with a end or victory condition, are required to make a game: For instance, dice and card games are types of games that take use of the two primary systemic elements. Player and contexts are elements that are external to the game system yet always present when the system displays behaviour, i.e. a game is in session. The behavioural, dynamic aspects of these elements are what make games psychologically compelling.

Whatever the set of elements in an individual game is, the players interact with the elements via game mechanics, which will be named with generally descriptive labels or verbs: ’point-to-point movement’ found in Chess and many board games, or ‘choosing’ serve as examples (see chapter 12 for more). Game mechanics are compounds for game elements: by minimum, they combine the player into the game system, as they give players opportunity to play through performing according to their abilities and skills. For instance in Chess, it is a particular type of movement mechanic which combines the player to the components (pieces), and through them, to the game environment (board).

Why is it that all games require at least a rule set, information, components, and mechanics? The answer is that otherwise the players would have no motivation (goals) nor means (mechanics) to play the game, nor objects (components) to focus their actions towards, nor feedback from the game system regarding their actions (information and ruleset procedures). Themes and interfaces are elements that are genre-specific or technology-specific in nature, but nevertheless common enough to warrant their own element types.

Two Applications of the Theory

I will end the chapter by giving an example of how to produce an analysis of three different games by identifying their game elements and their ownership status within the game system. This simple analysis method will be documented also in chapter 15, where I summarize all the analysis methods formulated in the study at hand. Part II of the thesis will end with a brief introduction to another application, this time in the form of a card game designed around the concepts defined in the theory of game elements.

Identifying game elements: An example of an analysis method

What follows first is meant to give an early idea of how the theory of game elements is applicable for practical analysis tasks, and how it can be applied to gaming encounters that take place in different contexts of play: as a social outdoors event, or at a board gaming evening, or as computer-mediated entertainment in solitude. The analysed games are, respectively, the outdoors game **Pétanque** (originating from early 20th century, it is a member of a family of 'boule' games), a board game **Pingwin** (Phalanx Games, 2003), and a browser-based computer puzzle game **Alchemy** (Popcap Games, 2004).

Image 7. *Men focused on a gaming encounter of Pétanque (left). Photo taken by the author in Barcelona, December 2006.*

Image 8. *A game state in Alchemy (above).*

Image 9. *Player performing a movement game mechanic in a gaming encounter of Pingwin (left).*

The results of analysing the three games are presented in the table below. It contains a description of how a particular game element and their ownership status is implemented or how it appears in each game. If the element, or a particular ownership status, is not found, it is marked 'not applicable': n/a for short.

Table 2. *Analysis of Game Elements in Petanque, Pingwin, and Alchemy.*

Game element & ownership (when applicable)	**Games**		
Systemic elements	**Pétanque**	**Pingwin (aka Hey!That's my Fish!)**	**Alchemy**
Component-of-self	'boules'	two penguin figurines; fish in the form of environment tiles	rune symbols: 8 different in 5 colours; skull symbol; tile symbol
Component-of-other	boules of other players	figurines; fish	n/a
Component-of-system	'jack'	the fish tiles not in possession of any player	n/a
Character-of-self	n/a	n/a	n/a
Character-of-other	n/a	n/a	n/a
Character-of-system	n/a	n/a	n/a
Environment-of-self	n/a	environment tile occupied by component-of-self	grids in the environment with an attribute of 'gold', i.e. grids where the player has placed a rune and thus has 'transmuted' it to from lead to gold
Environment-of-others	n/a	environment tile occupied by component-of-other	n/a
Environment-of-system	the playing 'terrain'	environment tile occupied by no player	9 x 8 grid for the rune symbols, with the individual grids having the attribute of 'lead'
Compound elements	***Pétanque***	***Pingwin* (aka *Hey!That's my Fish!)***	***Alchemy***
Ruleset	All rules governing game elements (boules, jacks, ends, players, and terrain) and their interaction See: http://www.petanque.org/news/rules/official_rules.shtml	Written manual	System (computer) governed rules regarding all game elements (rune symbols, points, grid attributes, etc.)

Ruleset: Goals-of-self	land components-of-self as near to the component-of-system as possible, or, hit component-of-other with component-of-self in order to distance it from the component-of-system	Gather points by collecting the environment tiles with attributes (i.e. number of fish); prevent other players from doing the same	Fill the grid, i.e. change the grid attributes from lead to gold, by placing appropriate rune symbols; subgoals of placing individual rune symbol and completing rows or columns in the grid with symbols
Ruleset: Goals-of-other; other as opponent	land components-of-other as near to the component-of-, or, hit component-of-self with component-of-other in order to distance it from the component-of-system	Same as above	n/a
Ruleset: Goals-of-other; other as team-mate	see goals-of-self	n/a	n/a
Ruleset Procedures	measuring of distance from components-of-self & others in order to determine which component is closest to the component-of-system; governing turn order & points scoring	Remove 'deserted' environmental tiles with no penguins occupying them from the game	Various procedures automated by the game system: removal of completed rows or columns, points scoring, etc.
Game mechanics of-self	throwing	moving, collecting	placing or discarding
Game mechanics of-other (as opponent)	throwing	same as above	n/a
Theme	n/a	Penguins	Alchemy, runes
Interface	n/a	n/a	mouse peripheral
Information-of-self	game state (all information is available to all parties)	number of collected fish, i.e. sum of the attributes of component-of-selves	see information-of-system
Information-of-other	game state	see above	n/a
Information-of-system	game state	game state	game states
Behavioural elements	***Pétanque***	***Pingwin (*aka *Hey!That's my Fish!)***	***Alchemy***
Players - self	self or self as collective, i.e. team, against other or others	self against others	self against system
Players - other	same as above	same as above	n/a
Players - system	n/a	n/a	n/a
Contexts-of-self	various	various	various
Contexts-of-other	various	various	n/a

Contexts-of-system	History of Pétanque, outdoors games, various	board games, 'tile placing games', games with penguins, penguins, various	computer games, browser-based games, casual games, puzzle games, rune symbols, alchemy

The table format presents an analysis framework in the context of the theory of game elements, and it can be used as an analysis template. The dynamic nature of game systems is evident in the descriptions of the elements, as they contain references and depencies to each other. Yet this is precisely the function of identifying game elements: to understand in detailed fashion what the parts of a game system are, and then to move on into conceptualising and analysing their interaction. The development of the template into an analysis method is found in chapter 16.

The subject of the following part of the thesis, the theory of player experience, aims to produce a better understanding of the behavioural elements.

The GameGame: Theory of Game Elements Meets Understanding Comics

> In GameGame, players compete in designing games. Players collect and trade cards in order to create a complete game design. In between, one player gets to play a game publisher, while the other players try to sell their game concepts to her. In the end, the best game design is decided in a vote. Let the best game win!

The above is the introductory quote for the card game I have designed as an application of the theory of game elements. This effort has been similar in spirit to comic artist Scott McCloud's book *Understanding Comics*, which illustrates the forms and techniques of comic art by means of the art form itself, i.e. in the form of a comic book.

In similar fashion, Gamegame tries to make an interpretation of ludology accessible in the form of a game. As the subchapter title shows, I have indeed used 'Ludology meets Understanding Comics' as the tagline for GameGame. The game has another function as well, as it can be used as a brainstorming exercise for coming up with new ideas for game concepts. The iterative design process of the game has been documented elsewhere (Järvinen 2005), so this chapter serves as a brief introduction to the case study.

Theory as game / Game as Theory

The objective of the game is to collect cards which make up a design for a game. There are mandatory cards that each design should have, and extra cards that the player may use to make his/her design more effective and sophisticated.

Image 10. *GameGame cards, Release 2.0.*

There are cards representing goals and other fundamental elements in games, adapted from the theory presented in this chapter. During play, the players have to invent what these abstract game element classes mean in their game concept: what is the goal, what does the player do, what is the theme of the game, and so on. Furthermore, they have to specify how the elements interact, because it is the interaction of the individual elements that puts a game into motion.

The fact that certain elements – e.g. goal and victory/end condition, – are defined as mandatory ones is in order for the design to function as a game. There are also deliberately scarce resources in the form of budget and asset cards that aim to give room for strategic choices.

The game also stylizes the design process of a game with two rounds of play. In between, there are 'milestones' where players explain, their concepts to others. The game encourages the players into role-playing as they have to sell, i.e. verbalise, their design idea for the player that possesses the 'producer card' at that time. The selling game mechanic is implemented for pedagogic purposes as well, so that the players would also learn about game structures in the process of playing the game.

GameGame as Research and Design Process

Gamegame can be seen as a result of design research, as discussed in chapter 1. It has been developed through an iterative process of prototyping and playtesting (as suggested by, e.g. Zimmerman 2003 & Fullerton et al 2004).

After a series of iterative deisgns through playtesting with game scholars, designers, and students, the 1.0 version of GameGame was released online at gamegame.blogs.com in September 2005. Version 2.0 with rule modifications, new card design, and a proper rule manual followed in Feb 2006. This timespan also illustrates the development of the theory behind the game, and as a matter of fact, there would be need for an updated version 3.0.

I have employed the game in a number of workshops both in industry contexts and in game design curriculums. In connection with the game, a game concept document template can be used to write down the concept that results from playing the game. The game has been translated into German and Finnish by fellow researchers.

Image 11. *GameGame workshop at University of Bergen, Norway, March 2007.*

PART III: THEORY OF PLAYER EXPERIENCE

To start with, as players we all have play experiences. We engage with a gaming encounter, where goals and emotions circulate between the self and other. If one wants to study the general principles of this kind of human activity, one has to focus on what constitutes a 'player experience'. I will use this term to cover the psychological, cognitive, and emotional aspects of gaming encounters.

In this part of the thesis, consisting of six chapters, I will review various theories on emotions and cognition and synthesize a theory for the purposes of applied ludology. It aims to shed light on the complex nature of player experiences and explain their theoretical basis in psychology. This means exploring many facets of the issue: What is it that motivates players to engage themselves into a game with rules, and what kind of pleasures do they seek from playing games? What can game studies and design learn from the psychology of goals and plans? Do games, by and large, privilege some cognitive abilities over others? How do players – hypothetically, at least – react to various kinds of game events and elements? Is it possible to deduct that certain kinds of emotions are elicited via particular configurations of game systems, particular game mechanics, or particular interaction between self and others? Finally, what kinds of emotion categories are there, and how do they relate to categories of games?

As someone not schooled in psychology, embarking on the task of writing this part of the thesis was, at least personally, a step over another frontier. Getting familiar with the enormous body of work written about human motivation, emotions, cognition, goals, and the like, soon began to appear as an overwhelming task. What to include, what to leave out, and on what basis? It soon became obvious to me that a thesis of its own could be written about psychological aspects of games. It also became apparent to me that I am most probably leapfrogging across schools of thought and inter-disciplinary debates, as I was not able to find cross-references in the psychological literature where I was expecting to find them.

Nevertheless, I have proceeded to synthesize a toolbox of theory for the analysis and design of player experiences. I have tried to solve the above-mentioned dilemmas by certain choices in focus. Their particular nature is meant to reflect the approach and focus of *Games without Frontiers* as a whole. Thereby I will focus on three specific psychological phenomena: goals, emotions, and the reciprocity of self and other.

1. Goals

In my theory of game elements and systems, goals are highly important. They are a specific but privileged instance of the rule set element. Other game elements (see chapter 4) are designed in order to afford the pursuit of goals, i.e. to facilitate the fundamental objective given to players when they play a particular game. Studying the psychology of goals presents a holistic approach, as goals are found in all kinds of games across media and technology. A different choice, such as choosing to study psychological appeal of game characters, would have presented a case on another level of inquiry, as characters are seen as one particular instance of a specific game element class (components) in the theory at hand. Yet, goals are often embodied into a character, which testifies for their omnipresent nature in the design and play of games.

Usually when theorists discuss player actions and rewards in games, they discuss ‘reward schedules’ based on the behavioural concept of reinforcement. Positive reinforcement equals a positive reward or sense of progress, negative reinforcement equals removal of something unpleasant. (See, e.g., Loftus & Loftus 1983, 13–26 and Salen & Zimmerman 2004, 344–5 on these issues.) I have chosen another set of concepts, because there is not really much to say anymore from the perspective of reinforcement theory other than yes, it happens in games, and yes, there are indeed many examples. I believe that an informed, nuanced understanding of goal forms and hierarchies, goal attainment, goal substitution and goal monitoring all provide us with a holistic perspective to players and their experiences. I would argue that this premise presents a welcome, largely unexplored path compared to the somewhat mechanistic view of player behaviour that reinforcement theory suggests.

We find many approaches to be adapted for applied ludology in contemporary psychology. One of them is theories of emotion, where the functions of games are discussed in relation to roles in social interaction. Emotion theorist Keith Oatley writes:

> Games are also ancient. They are models of recurring types of interaction in society, perhaps those that fascinate us or demand the development of abilities of motor skill or problem solving that are too difficult or risky for real life. [...] [G]ames seem as if they may be defined as activities that offer players top-level goals. Players adopt these goals and then see what it is like to interact with others on the basis of a given system of rules and operations. (Oatley 1992, 202-3.)

In general, I find it puzzling how few (if any) discussions of goals among game studies and game design literature have taken advantage of the enormous amount of study that the subject has drawn within psychology and social psychology. Most discussion of goals in game design literature take the concept for granted and rely on tacit knowledge and implicit notions of what goals are, and how individuals pursue them, rather than relying on explicated knowledge and research on the subject in the context of human psyche. Therefore I see that there is void, and I will try to fill it.

2. Emotions

I will start from the following assumption: The road to attaining goals is beset by emotions. As playing games equals taking actions and choices in order to attain goals stated in the rule set, games give birth to experiences of particular emotional nature. Without understanding broadly the different emotional potentials and conditions for emotions at work in games, we lack fundamental dimension of holistic understanding of games as aesthetic products and events.

We have established in the previous chapters that a group of games differ from one another due to the fact that their 1) systems are combined from different elements, 2) the interaction between elements is arranged in different ways, and finally that 3) the elements can be configured or implemented with different styles and/or materials to fulfil their crucial function of embodying rules. Thus the emotions that different game systems produce are bound to differ to certain extent, both categorically and individually. Still, due to the goal-related nature of games, there will also be some 'universal' emotion types that will be found, if not across the universe of games, at least across genres. These include such emotions as hope, fear, loss, and pride – all having to do with uncertainty and its resolution, i.e. phenomena games live out of. Still, there is plenty of reason to study the emotional potentials of games in order to find subtler distinctions of game-related emotions and their constituent factors.

In addition to the above two areas of focus, there is another, a more abstract theme that runs through this chapter. It is necessitated by the fact that games are often fundamentally social in nature.

3. Self and other

Reciprocity of self and other – regardless whether the other is another human being or a game system as an agent – is a phenomenon that resurfaces at many points. Anyone who engages in the analysis of games will soon make the observation that there is a constant relationship and tension between the player and her own goals versus the other player's goals (which might be identical); the player and her possessions versus the possessions of other players; the opportunities, chances, and space to act of one player versus the others, and the strategies of one player versus the strategies of other players. The tension is elicited by the artificial conflict that the game imposes by its rules, especially those that specify goals.

These relationships will be concepualised with respective notions of self and the other, especially in the context of emotions. Emotion theorist Keith Oatley refers to this aspect when he discusses his and Johnson-Laird's communicative theory of emotions. It necessitates a degree of separation of self and its actions from others for the sake of analysis and understanding, yet privileging the individual is not meant to imply that the self is unique and separated from society and the relationships it allows and imposes (Oatley 1992, 113–4). Adopting similar premise is necessary, I believe, in studying games and player behaviour. This problematic is concretely evident when we discuss emotional attribution of one's own and other players' actions, or the actions the game system performs as an agent, and how people appraise these actions according to emotional processes.

It has been argued that the main question of cognitive science is essentially a design challenge: how to design a mind. This includes charting out and anticipating the potential problems the mind would have to face, what kind of considerations it would have to do, etc. (Oatley & Jenkins 1996, 252.) This dilemma is upon us when we consider player experiences, and because of it, we are, in fact, *analysing and designing players rather than games*. With the help of the theory of game elements this task can be incorporated into a holistic analysis and design framework, which is what *Games without Frontiers* attempts to achieve as a whole.

CHAPTER 5: Key Concepts in Psychology in Terms of Ludology

> These games sure provoke some heavy duty feelings.
>
> – David Sudnow, *Pilgrim in the Microworld*

As the quote from David Sudnow's intricate phenomenological account of playing video game **Breakout** (Midway Games, 1978) reminds us, games tend to evoke emotions. From personal evidence, most of us are familiar with the fact that game-related emotions can be both positive and negative in tone: pride and joy when we're succeeding, reproach and distress when we're losing. There seems to be something in games that compels the human psyche in general, and all too often this experiential side of these aesthetic phenomena is left unexplored in detail. Therefore the next chapters of my thesis will concentrate on the psychological nature of games. The discussion that follows will constitute what I call a 'theory of player experience'.

This chapter takes a look at a number of basic psychological concepts in the context of games. We begin with a general discussion of why people play games. It will serve the formation of a theory concerned with how players' individual tastes get formed within an ecosystem of entertainment consumption choices. I will continue onto definitions of key concepts in psychology (emotion, arousal, mood etc.). Each concept will be examined from the perspective of games and game play, so that the psychology of emotions discussed will have already and always a ludological flavour. The following chapters will continue with a discussion of goals and plans, cognition and pretense, entertainment, and emotions specifically in relation to games and their players.

I see that the theory introduced here has implications for analysis and design, and they can be articulated into the following questions: Is it possible to systematically study emotional reactions in relation to games, and moreover, adapt the concepts and findings into designing such game systems that deliberately give birth to certain types of emotional reactions? How has this been done until now? Is it the task of the game designer to condition players into certain emotional and cognitive behaviour? In terms of theory, the questions go: How can game designers modulate emotions during game play through the design of the game system, and its elements? What could be the method for a game scholar to study the emotional potential and disposition of a game? Are there methods to analyse conditions that elicit emotions from existing games, i.e.

to analyse the so-called eliciting conditions and action tendencies that emerge for players through engaging with game systems and their elements?

I will expand the notion of game states (see chapter 3) to emotional player states, player motivations, and moods, and provide a method for this kind of analysis. This will require adapting concepts such as appraisal, arousal, pretense, mood management and matching for the purpose of understanding the psychological dimensions of games. Theories that we will discuss also include Reversal theory and Schema theory, and other theories concerning scripts, goals, emotions, motivation, and cognition. In summary, the chapter introduces an approach to understanding players' emotional engagement with games and a set of useful concepts for analysing it.

Premises for a theory of player experience

Systemic or computational views about human behaviour can be criticized as being more or less reductionist in nature, i.e. reducing complex and nuanced phenomena to simplistic generalizations. However, it is important to understand that in order to be analysed, complex phenomena have to be reduced to less complex models, and this is indeed my purpose (cf. Grodal 1997, 11–12). My aim in building the theory is to remain sensitive to aspects of player behaviour that present themselves as less formalisable. Still, once one tries to build a theory with implications for practical analysis and design tasks, especially concerning logical systems like games, the choice to embark on charting the general 'psycho-logical' potentials (cf. Ortony, Clore & Collins 1990, x) of player behaviour becomes a valid option.

Essentially this approach equals modelling players: Positing implied players into the analysis and design process, and thus trying to anticipate the nature of the resulting player experience in similar fashion as game designers anticipate player actions when defining rules. Implied players are hypothetical constructs of players that the game is targeted at and to whom the game is supposed to afford interaction with its game mechanics and other elements. Implied player is the one who embodies the 'player position' that a game system invites its supposed players into – in similar fashion as texts like film and literature posit their audiences into reading and viewing positions. In terms of design, implied players are the players who the game designer imagines will be playing the game, yet they are an idealisation. (The concept is a translation of Wolfgang Iser's 'implied reader' in literary theory, see Iser 1980). The argument is that with the help of the theory introduced here, the implied players in each design, whether in a completed and realised game or a sketch, become visible. As a result, there are tools to acknowledge, analyse and design implied players.

In previous work, I began theorising about player experiences with the help of Mihail Csikszentmihalyi's flow theory (see Järvinen, Heliö & Mäyrä 2002). I have since found it too general and vague for detailed application to game analysis or design purposes. The basic idea of flow and optimal experience are interesting and useful as such, but I have not found a way to take these notions beyond their general descriptiveness, i.e. to transform them into detailed enough analysis or design considerations. In my view, other game scholars and designers have not been able to do it either, and have also acknowledged the problems of the concept (see Salen & Zimmerman 2004, 350–2). Actually flow's suitability to characterize leisure activities has been questioned by a study of flow and quality of experience. The study indicated that individuals spend more work time than leisure time experiencing flow (LeFevre 1988, 317). However, the leisure activities examined in the study were low-challenge and low-skill in nature (reading, watching TV etc.), rather than games which present challenges and demand varying amount of skill, in somewhat similar fashion to work activities. [1]

Please note also that I am not discussing emotions in the sense of the 'emotioneering' that computer game producer David Freeman (2003) promotes. Even though shades of emotioneering might be evident in the following theory under the concepts of modulation, designing for hedonic tones, and mood management, I do not believe that the relationship of games and emotions can be reduced to narrative techniques employed in (digital) games, as Freeman apparently does. As should be already obvious, in the theory formulated here, the emotional potential of game systems is dependent on many other elements than rule set procedures with which to incorporate narrative progress into the dynamics of a game system.

Existing Theories on Player Experience

The theory of player experience introduced here is largely built on theories and findings regarding cognition, emotions, and aesthetics. They are subsequently applied to the specific theory about game elements, as outlined in the previous chapters. Some of the observations that I make might seem trivial – for instance, that interpersonal emotions are communicated better in a situation where the players are physically present in the same space while playing than when mediated across distances – but still, these kinds of 'axioms' have rarely been voiced aloud in relation to games with a backing of psychological theory.

Most psychological and/or behavioural views to games have been either derived from economical game theory, where rational players engage in a zero-sum game, or by game designers who have focused on issues of balancing the challenges and rewards of a game into a pleasurable whole (see e.g. Hopson 2004, Salen & Zimmerman 2004, 341–356). Then again, when games and play

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[1] I believe the concept of flow has the most relevance to game studies and design regarding issues of balancing the dynamics of a game design as close as possible to the optimal scale between boredom and anxiety. This discussion has been addressed by other scholars (e.g. Salen & Zimmerman 2004, Sweetser & Wyeth 2005).

have been examined from the perspective of psychology, seldom has the examiner had game studies and design as a background, rather than psychology or another discipline. Loftus & Loftus' (1983) treatise on the psychology of video games is an example of this kind of premise, where games are examined from the perspective of psychology. Here, psychology is examined from the perspective of games and play.

More interesting cases of game studies in the realm of emotions are put forward by Klimmt (2003), Lazzarro (2004), Perron (2005) and Sweetser & Wyeth (2005). My approach differs from the above in the sense that it tries to expand the discussion into a number of relevant concepts theorized in the realm of psychology – instead of few selected ones, such as arousal, flow, or emotion. More importantly, along with the general approach of *Games without Frontiers*, the theory of player experience does not limit itself to a specific game medium or technology. I believe that with this kind of approach it is possible to understand the psychological fundamentals of player experiences, and avoid attributing too much significance to a specific feature of a game system (possibly implemented with a particular technology): e.g., particular visceral nature of video games or physiological nature of sports games, when there are other psychological factors at work as well.

On the other hand, it is not relevant to dismiss such differences – rather, I argue that they can best be understood by studying the material basis of the different game media. Game rhetoric as a set of communication techniques will present my approach to this issue. This is in line with the belief, and evidence already presented, that there are common elements to games of various different historical or technological origins. The discussion will proceed on the assumption that the said congruence reaches to aspects of human behaviour in relation to games as well. In fact, I argue that psychological evidence is the cornerstone of any theoretical generalizations to be made about game play and the formal structures that facilitate it. This is why the following chapters are crucial to the thesis.

Thus my rather ambitious effort is to sketch an overview of the relationships of goals, choices, moods, emotions, and games, where seemingly trivial details about human behaviour accumulate to a complex yet accessible whole that enable holistic understanding of games' psychological nature.

Bridging Action and Experience

Different perspectives to the psychology of emotions and aesthetics have been argued for: There are behavioural and constructivist approaches, and in the field of emotion theory, there are action-orientated and experience-orientated approaches. My aim is to bridge these different approaches to a holistic theory of player experience.

There are a number of reasons for this. First, games at large support both goal-oriented motivation and aesthetic behaviour, i.e. an intrinsically motivated activity (cf. Cupchik 2001, 70). As such, an approach from a single perspective would probably leave some genres of games unexplored.

Concerning emotion theory, I will adapt concepts from both the action-orientated and the experience-orientated lines of thought. It is different aspects of the action-orientated cognitive theories that, in my review, serve best to explain why people play games in general, and which games and genres they choose to play in the broader context of consuming various media and spending leisure time. Action-orientated emotion theories help us in understanding how people behave when they enter the gaming encounter and what kind of experiences and emotions are elicited while playing. In my interpretation, behaviouristic theories of arousal and cognitive theories of stimulus situations are both needed to explain game play as human activity, but they do not rule out phenomenological theories on aesthetic experiences. However, I see that the first are more applicable to practical analysis and design tasks, and therefore they will make up the core of the theory.

We will now go through a series of key concepts that I have found useful to draw from when constructing the theory. The first significant one, selective exposure, I have brought along to deal with the puzzling fact that individuals, as players taking part into a gaming encounter, are willing to subject themselves to artificial conflicts and uncertainty.

Selective exposure to artificial conflict

It was established in earlier chapters that games are built out of elements, such as rule set and game mechanics that persuade players into engaging with conflicts and challenges that are embodied into game elements and their relations. Even though the conflicts that are hereby born are mostly artificial and temporally bound in nature, this fact begs the question 'Why do players willingly and consciously expose themselves to conflicts and challenges?' If individuals are, as is generally believed in psychology, inclined to maximize gratification and minimize aversion, for instance by trying to minimize uncertainty, why would they subject themselves to a potentially distressing activity characterized by uncertainty of outcome – such as playing a game? Before we go to the intricacies of game designs, we will take it for granted that people do indeed engage in this kind of masochism and play games. Why is it that some individuals prefer different kinds of games than others? How does this kind of selectivity come to be?

An answer is provided by looking at the notion of selective exposure. Dolf Zillman and Jennings Bryant (1985a, 2) define it as 'behavior that is deliberately performed to attain and sustain perceptual control of particular stimulus events'. Zillman & Bryant state numerous examples of selective exposure: Following the flight of a bumblebee, reading the newspaper, watching television, etc. Different amounts of effort is spent in attaining this exposure – basically people are willing to go into different sorts of trouble in order to expose themselves to a leisure activity, such as games.

Zillman's and Bryant's specific area of inquiry is exposure to communication, which they see as 'situation- and disposition-specific' (ibid. 7.). This is true for playing games as well, and the discussion on the contexts of game systems and their players in chapter 4 (on game elements) was essentially about the same subject. Players have personal histories, social relationships, and tastes in relation to games, and these dispositions affect their willing exposure to the focused gatherings known as game encounters. The context of playing games constitutes a social circumstance for consuming this particular form of entertainment, and these social conditions also 'are capable of fostering enjoyment and preferences that seem otherwise unlikely' (Zillman 1988, 168) as consumption choices are often made within a group, not by individuals.

What is under particular scrutiny in this chapter is the psychological nature of player dispositions. This standpoint is translated into a hypothesis, according to which players expose themselves to games in the search for not only individual emotions, but in the hope of gaining specific moods, i.e. emotional states that sustain for some time after the game has been over. The mood also possibly carries over to other activities, i.e. an 'excitation transfer' takes place. Focusing on entertainment consumption in general, Zillman & Bryant (1985b, 157) argue that individuals:

> behaviour regarding their choices in entertainment grows from a situational context and that affective and emotional states and reactions play a key role in the formation of rather stable content preferences.

This presents evidence for my game-specific hypothesis: game systems, with their rules and behaviour, present particular forms of 'stimulus arrangements' (Zillman & Bryant 1985b, 158–163) that individuals fond in games take advantage of. Stimulus arrangements have certain common elements. Zillman writes: 'individuals move themselves to locales that constitute alternative environments and that provide opportunities for mood-altering experiences'. Individuals need not necessarily abandon their immediate environment, as they do when embarking on, e.g., a holiday trip abroad. It is here that media technologies step into the picture: as our control over the immediate environment is generally rather limited, media is used to engage with representations that move stimulus environments to individuals. (Zillman 1988, 149.) Decks of cards, board games, and video games, are all packaged for domestic consumption to facilitate this. The particularity of sports and outdoor games in this sense is due to them requiring the players to move outdoors or to a specific 'alternate environment' in Zillman's terms.

Another viewpoint to essentially the same behavioural phenomenon is found in reversal theory. According to Michael J. Apter, people seek or happen to reverse their mental modes from one to another (e.g. from boredom to excitement) by entering conditions or settings that strongly exert reversals to certain direction. Thus people visit to casinos, cinemas, sport grounds, spas, and the like that provide reversal-inducing events and situations. (Apter 1989, 47–50.)

In the context of consuming entertainment, playing games can be seen as another form of 'selective environmental stimulation', i.e. individuals seek to arrange their environment in particular ways, and may or may not be aware of their motivation. (Zillman 1988, 148.) Still, experiences that provide the positive hedonic tones leave memory traces (Zillman & Bryant 1985b, 158–163). These traces accumulate to personal preferences in stimulus arrangements, i.e. they guide players to play within the genres, player formations, and specific contexts that they find pleasurable.

Zillman and Bryant (ibid., 176–186) refer to a number of studies that indicate that there are gender differences in coping with aversion, at least in relation to entertainment choice, even though results are not entirely conclusive. Still, males seem to, e.g., not be eager to discontinue a noxious mood state but rather perpetuate it in order maintain an emotional readiness for retaliatory actions (ibid., 178, see also Zillman 1988, 164–5). In practice, agitated males preferred exciting and/or violent entertainment instead of calming one.

This would explain the polarization between genders in the popularity of certain game genres that simulate violent conflicts, such as the first-person-shooter genre ('FPS') of computer and video games. The genre mostly presents hostile scenarios and challenges that need to be solved through simulated violence (games like **Halo**, **GoldenEye**, **Doom**, etc.). These games also privilege cognitive abilities which seem to be predominant with males (see, e.g., Sherry 2004).

Findings such as these again relate to the notion of games as forms of artificial conflict (cf. Salen & Zimmerman 2004). Oatley & Jenkins (1996, 292) have stated that such emotions as anger, fear, and contempt equal emotions of competition; they are 'emotions that underlie conflict'. The conclusion would be that among males the preference for the continuation of noxious mood states is related to their increased willingness to enjoy 'the emotions of competition' that conflicts, be they artificial or not, seem to support.

In chapter 10 I will introduce game-centred emotion typologies. They present particular categories of games in light of what kinds of different stimulus arrangements there generally are in the world of games.

Playing for positive hedonic tones

In essence, playing games has a 'hedonic' premise, i.e. maximising pleasure is the guiding principle:

> [I]ndividuals are inclined to arrange – to the extent that they are capable – internal and external stimulus conditions so as to minimize aversion and maximize gratification. Both minimization and maximization are in terms of time and intensity. (Zillman & Bryant 1985b, 158)

Even though games elicit negative emotions as well as positive ones, I want to make the point that the moods that players seek from them are, in the end, positive in tone (we will return to this paradox from the perspective of so-called meta-moods in chapter 7). In terms of psychology, 'individuals are motivated to perpetuate and increase the intensity of gratifying, pleasurable experiential states' (Zillman & Bryant 1985b, 158). In this sense games are indeed 'fun' – few play to suffer, or if they do, they do it for a sweet kind of suffering, so to speak: the masochistic pleasure that safe and rule-based struggling is able to elicit, just as long as it is for a temporally circumscribed duration. At least in popular understanding, games are supposed to offer moods that generally induce a positive hedonic tone. In other words they evoke pleasure and joy in the individuals participating in the gaming encounter.

Selective exposure explains reasons why individuals play certain kinds of games and how their tastes develop, but it does not explain what goes on regarding affects, emotions, and moods during the game, i.e. in relation to the behaviour of a game system in the actual act of consuming. For instance, in Zillman & Bryant's (1985b) tests of their selective-exposure hypotheses, in which people were shown television programs, the programs are described in general nature, e.g. as 'exciting' versus 'relaxing', or by their genre ('sports', 'drama', 'comedy'). There is no analysis of their specific narrative or semiotic content, or structure by means of, e.g., narratology. With games, where the player is always an agent that engages with the game system, choices and actions are taken also during the game, and the moods contributing to those choices and resulting from their outcomes are crucial. Therefore they will have to be analysed in more detail.

This is hinted at in the following statement:

> Individuals are apparently sensitive to the effects of a variety of properties of available messages, and they apparently employ this sensitivity to select exposure to messages that are more capable than others of achieving desirable ends. Generally speaking, these ends are excitatory homeostasis, the maximization of positive affect, and the minimization of aversion. (Zillman & Bryant 1985b, 186.)

Translated into the context of a specific form of entertainment we call games, the 'properties' mentioned in the quote account for different configurations of game systems: e.g., the pleasure of repeating a particular game mechanic again and again (in Tetris, Pong, Slot machines, etc.). The aspect of game systems as communication systems can not be overlooked either: Players also seem to be sensitive to the rhetoric and modes of address designed into games.

Moreover, the 'desirable ends' in the quote from Zillman & Bryan include matters such as winning or succeeding, social interaction, aesthetic appreciation, etc. Without doubt, there is variance among different player types with different tastes in how combinations of these phenomena elicit hedonic tones. The reference to 'excitatory homeostasis' points to views of cognitive psychology, where human behaviour is in essence seen to operate as a system that seeks stability, much like a thermostat. In case of external conditions causing a temperature change, a thermostat makes correcting operations, i.e. either lowers the temperature in the room or sets it higher. In the case of humans, one manifestation of homeostasis is that bored individuals seek excitement whereas stressed ones seek relaxation. This is what excitatory homeostasis is about, and it is in concrete relation to changing game states and challenges during a game. Reversal theory, originated by Michael J. Apter, will help us in dealing with these phenomena. Before discussing it, we will discuss games' relation to players' moods.

Playing games as mood management

Games evoke emotions, and emotional episodes accumulate to building up a mood. Mood is a maintained emotional state that persists for a longer period than an emotional episode: from hours to months. Mood can also be understood as 'a disposition to respond emotionally in a particular way' and it might be unconscious. (Oatley & Jenkins 1996, 125, 379; Frijda 1986, 252.) In this case moods persist after and in between playing games, but an individual game session may give birth to a mood in the latter sense, i.e. as a tendency to follow a particular emotional response pattern to cope with a given situation (Oatley & Jenkins 1996, 83). According to emotion theorists, the human affective realm can be divided into three causally linked domains: Emotions lead to moods that lead to dispositions (Ibid. 124.)

Typically games do not evoke positive emotions only, but negative ones, too: frustration from difficulty, disappointment from failure, resentment against opponents, and so on. Still, as players we do wish that the overall mood resulting from playing a game is positive in tone. Otherwise few would play, unless there is masochistic motivation for playing, or a pathological one, such as addiction. Even though we might lose every once in a while, there is a certain pleasurable quality to playing itself: our effort might have been satisfying enough, or the game might have produced visceral pleasure through beautiful images and sounds, or suspense and excitement though its unpredictability, or we might enjoy the social interaction that emerges from game play, and so on. These are the kind of moods that individuals seem to seek from games, and game systems also promise certain emotions, pleasures, and moods, in marketing slogans if nothing else.

However, there is a psychological principle at work as well. Playing games has been characterised as an 'autotelic' activity, which means that its purpose is itself only, and there are no other instrumental functions or purposes to it. Therefore the motivation to play is in most cases intrinsic rather than extrinsic. Extrinsic motivations manifest if the game system is an open system and it acknowledges information from system contexts (such as other systems) to be imported into it, meaning that there is a prize of some kind – money, status, fame

– for the winners. The point is that it matters also outside the system, i.e. motivations expand to the contexts of a gaming encounter.

In the field of media psychology, selective exposure has been developed in connection with the concepts ’mood management’ and ’matching’. They are geared towards explaining individuals’ choices regarding entertainment in particular. The concepts have been used to explain how individuals seek and select media products – novels, films, tv series, comics, games – that are to their liking. In other words, individuals selectively expose themselves to certain kind of entertainment. (Zillman 1988, Zillman & Vorderer 2000.)

Zillman and his colleagues have studied the effects of entertainment on moods. The premise with experimentation has been in a general theory of affect-dependent stimulus arrangements (Zillman & Bryan 1985b). In brief, the theory defines hedonistic propositions ‘based on the assumption that individuals are capable of selecting environmental stimulation that serves either the minimization of aversion or the maximization of gratification’ (Zillman 1988, 148).

Playing games for fun, excitement, suspense etc., equals playing them in accord with the hedonistic propositions and in search of them. The capability of individuals to select stimulations progresses from at first incidental arrangements of stimulus to systematic preferences of hedonically positive arrangements, due to the memory traces that these pleasant arrangements leave.

Thus, mood-specific preferences are born in this so-called operant learning process. These projected preferences are formed, maintained, and altered in the context of consistent effect patterns if they exist, i.e. if there are ‘particular forms of entertaining stimulation [which] have particular mood-altering effects’, and most importantly, they have these effects with regularity. (Zillman 1988, 152.) This postulation hints at a hypothesis about different game genres having different emotional constituents embodied into genre conventions.

We return to the notion of excitatory homeostasis: Bored individuals seek excitement whereas stressed ones seek relaxation, and once those seeking excitement gain the desired positive mood, there are efforts to maintain it or reproduce it:

> individuals habituate to the stimuli that evoke strong excitatory reactions, and this well established circumstance […] promotes the selection of similar yet different stimuli for the continued evocation of strong excitatory reactions that characterize positive moods of great intensity. (Zillman 1998, 160.)

The premise is that individuals engage themselves with entertainment in trying to achieve a desirable mood, i.e. positive feeling about themselves and their surroundings that possibly includes other people.

As consumers of entertainment, we match our preferences and tastes to the products that we end up liking. Matching is media consumption through trial and error, which constitutes operant learning. This is what happens with games as well: as players, individuals prefer specific aspects of games, be they challenges, goals, themes, contexts, and/or game mechanics that suit their tastes and the desirable moods they associate with playing games. By trying out different games, we find those we like, i.e. those that evoke positive hedonic tone by providing excitement and relieving boredom. On the other hand, we also find those we dislike: those that elicit anxiety and boredom with negative hedonic tones.

Often players develop a taste for certain genre, for instance, and begin to expose themselves consciously and systematically to the emotions and moods it promises to deliver, because the positive hedonic tone of the particular ludic stimulus arrangement has left a memory trace of pleasant nature.

In chapter 8, I will analyse theories that define prerequisites for enjoyment in the context of consuming entertainment, and adapt and complement their findings for applied ludology.

Reversal Theory and Metamotivational modes

It is useful to complement the theories of mood management and selective exposure with a more general approach to theories of motivation and emotion. Reversal theory discusses our 'ways of being' as modes that have to do with emotional states and motivations. Michael J. Apter writes about meta-motivational modes related to 'arousal-avoidance' and 'arousal-seeking'. They conceptualise the ways with which individuals seek pleasant excitement from entertainment, leisure, or recreation products or activities. According to Apter's theory, individuals engage in these activities in order to switch from one meta-motivational mode to another. Often this is done in the hope of reversing hedonic tones from unpleasant to pleasant. (Apter 1989, 16–18.) In the context of consuming entertainment, games can thus be seen as specific category of tools for inducing reversal.

Telic and paratelic modes

The central concepts of reversal theory in light of games are the so-called 'telic' and 'paratelic' metamotivational modes. As the prefix suggests, they are mental modes that organize and interpret our motivations (ibid. 17). The telic mode assigns *the goal of an activity* as primary, whereas the paratelic mode assigns *the activity itself* towards a goal as primary (ibid. 33). According to Apter, the telic mode provides pleasure 'from the feeling of movement towards the goal, of progress and involvement, as well as the attainment of goal itself', whereas in the paratelic mode 'pleasure comes primarily from the activity'. Apter lists a number of properties to paratelic mode, such as 'immediate sensual gratification', 'satisfaction of skilled performance', and 'the continuing interest in seeing what will happen next' (ibid.) which all are highly relevant in terms of games. With paratelic mode, the pleasure comes from the mental and/or physical abilities that the activity – playing the game – at once, necessitates by requiring the player to perform them, but also affords them, i.e. gives a willing player the possibility to enjoy performing the abilities.

Apter's theory echoes Daniel Berlyne's notion of 'ludic behaviour'. Berlyne pioneered psychology of arousal and conflict, two issues that are closely related to games. He has discussed behaviour where 'perceptual and intellectual activities are engaged for their own sake and not simply as aids to the handling of practical problems' under the term 'ludic behavior' (Berlyne 1960, 4–6).

If translated to the discourse of game studies, the division of telic and paratelic metamotivational modes can be seen as reflecting Roger Caillois' (1961) division between the free-form play associated with paidia and rule-based ludus. His pairing accounts for paratelic and telic modes, respectively. The logic would thus be that 'telic players' play games for the sake of winning and 'paratelic players' play for the sake of playing the game as a pleasant activity; as a stimulation of the set of abilities that the game requires them to perform. We will look into studies of human abilities in detail in chapter 7.

In general, it can be concluded that games afford paratelic modes, as Apter writes that 'activities of the paratelic mode are turned inward on themselves, cut off from the rest of life and encapsulated in their own 'bubbles'' (ibid. 36). This essentially equals a description of the magic circle, or the 'membrane' of Goffman's focused gatherings (chapter 4), or the endogenous meaning (Costikyan 2002) of game systems. Yet, in case of abnormal behaviour such as addiction, the question about the player's metamotivational state becomes more complex.

Causes of reversals

Apter also discusses in detail the causes for reversals between the meta-motivational modes. He defines three types of reversals from telic to paratelic mode, or vice versa (Apter 1989, 47–51):

1. reversals contingent on an event or a circumstance that cause paratelic mode to reverse into telic mode,
2. reversals caused by frustration that might effect reversals either way, and
3. reversals caused by satiation, i.e. an internal dynamic that leads inevitably to reversal to either direction unless one of the two other type of reversals takes place first.

In my interpretation, the first two types are relevant during a gaming encounter. Surprising or chance events, or strategically important choices, frequently appear in games to effect reversals. (They also function as eliciting conditions for emotions, as we will see later.) There is also the aspect of frustration effected either by a highly difficult challenge or opponent, or, e.g., by having to constantly consult the rule book or manual, which does not lend itself very well to the 'flow' of paratelic activities, i.e. the pleasant cognitive or psychomotor abilities that the player likes to perform are interrupted by other, less pleasant activities. The third type, satiation, typically occurs when the game has served its temporary purpose as a stimulus arrangement, i.e. when players are content with discontinuing the game.

The concluding hypothesis would be that games with few options to act, i.e. with few game mechanics, such as in Go or Chess, have tendency to induce telic play which privileges attainment of goals and subsequently strategic thinking, whereas games with multiple game mechanics favour paratelic play. The digital game **Grand Theft Auto III** (and subsequent sequels) presents an example of a game where the telic motivation of completing a mission, i.e. a goal, can be substituted, due to e.g. frustration, by 'playing around' with paratelic motivation in the simulated urban environment the game system facilitates. Furthermore, a game like **The Sims** can be argued to favour paratelic motivations with its 'doll house' design and play metaphor. On the other hand, there are games with few mechanics, such as Tetris, which introduce a tempo, that directs the player towards paratelic mode, but as the game's tempo increases (as does the difficulty), the activity becomes closer to a telic mode, as the player is only able to focus on goals and nothing else.

The above examples present brief analysis of how metamotivational modes have been modulated in existing games, and such analysis can be used also as a 'reverse engineering' method to design points of reversal into a game. We will return to this aspect when discussing players' emotional reactions and their eliciting conditions in chapters 9 to 11.

Arousal

Arousal is another key concept for the theory of player experience that deserves to be discussed at more length. Besides perceptual and intellectual activities, emotional arousal is part of ludic behaviour (Berlyne 1960, 5). Arousal is defined as a state of alertness, with both the nervous system and the body prepared for action (Oatley & Jenkins 1996, 375). The stimulus that individuals seek and arrange for themselves are largely about satisfying desire related to arousal, regardless whether it is a desire for arousal-seeking and excitement, or a desire for arousal-avoidance and relaxation. Being ready to play, paying attention to what goes in the game, and eagerly taking part in it, would characterize an agreeable degree of arousal in the context of a generic game encounter. Thus we also see that arousal is a necessary state to fully engage participants into a focused gathering.

Arousal has been a contested yet attractive term in psychology (Evans 1989, 90; 96). The intensity and degree of arousal is an important part of the concept: according to so-called optimal arousal theory, arousal can be too high or too low at any given moment. The level of arousal has to do with an individual player's performance in a game and the resulting emotional episodes and moods. Whereas Optimal arousal theory states that 'performance and felt pleasure are optimized at certain moderate levels of arousal' (ibid. 90), Reversal theory suggests a relation of binary opposites where 'there are two totally opposed ways of experiencing arousal, one in which arousal becomes increasingly pleasant as it increases, and one in which it becomes increasingly unpleasant as it increases' (Apter 1989, 16). This argument can be seen in the light of events in games versus ones in everyday life: tha game events elicit pleasant fear whereas an everyday event elicits fear that is unpleasant.

Part of the problem of the arousal concept is due to its generic nature: It describes a very general physiological process of encountering stimuli that have some meaning for the individual, and the term itself carries many irrelevant or inaccurate connotations, as Parkinson (1988) has noted. In case it has meaning, then it has potential to elicit an emotion and the so-called action tendency that results from experiencing the emotion.

Therefore one needs to contextualize the arousals. In his discussion of video game pleasures, Torben Grodal (2000, 201) writes: 'The situational context cues a dominant action tendency by means of a cognitive analysis of the situation, resulting in cognitive labeling of the arousal.' He connects emotional experiences to the phasic nature of emotions: 'there is a cause, an arousal, a cognitive appreciation and a labelling, followed by some actions that remove the cause of arousal' (ibid.). Grodal describes meeting a lion in the desert as an example of the arousal-emotion process, and how differing contexts modify the arousal: If one is safely travelling in a photo safari vehicle, the resulting arousal produces delight, instead of the presumable fear in the case where one would be walking unarmed in the same desert.

The above situation has to do with hope of an event wished to occur, or conversely, fear of an unwanted event. In general, fear is an emotion that induces anxiety, and interrupts ongoing action by narrowing the individual's attention to the environment for signs of danger or safety (Oatley & Jenkins 1996, 265–6). In games, fear manifests often, but the situational context of the 'magic circle' and the artificiality it brings to the context modifies the emotion of fear to quite a different degree than in an actual life-threatening situation (cf. Grodal above). Still, fear of losing or of any other game-related displeasure does hold true as an emotion that forces the individual to pay increasing attention to the environment: Most often it forces the change of current plans to a direction or another. Game themes like horror create fictional contexts where fear might be elicited by thematized preservation goals, such as zombies or vampires threatening the 'life' of the character-of-self. Thus, the theme, as it suggests certain imagery and atmosphere can be considered a modifier that affects the intensity and nature of all subsequent emotions, in case a player is disposed – through selective exposure – to enjoy the 'safe fear' of horror fiction.

As we have seen, arousal has to do with emotions. Therefore it is necessary to conclude this chapter with an introduction to the concept of emotion in terms of psychological theory.

What is an Emotion?

Contemporary psychology of emotions has its roots in 19th century western thinking, especially the writings of Charles Darwin and William James. Theoretical writings on emotions have since progressed through a long period of academic negligence to wider spectrum of methods and theories, some of which will be addressed in the following. (Oatley & Jenkins 1996, 2–35.)

It is believed in psychology quite generally that, first, ‘emotions depend on evaluations of what has happened in relation to the person’s goals and beliefs’ (Oatley 1992, 19). Second, it is believed that emotions induce a mental ‘state usually caused by an event of importance to the subject’ (Oatley & Jenkins 1996, 377). The logical conclusion from these statements would be that as long as a player is willing to become a game-agent (in Goffman’s terms), and cares enough about the goals of the game and the social situation to ‘play well’, as Bernie DeKoven (2002) would say, games contain inescapable conditions to evoke emotions.

Emotions are made out of two parts, an underlying mental state and associated feeling tone:

1) the core of an emotion, i.e. a mental state of readiness for action, and
2) a phenomenological tone, which is the conscious/unconscious feeling of emotion. (Oatley 1992, 19–20; Frijda 1986, Oatley & Jenkins 1996, 96–7.)

This two-fold structure might be translated into a situation where I realise that I’ve won a game – this induces presumably (1) a mental state of joy and readiness to end the game, and it is accompanied with (2) a tone of resolution that could be characterised as ’what it feels like winning’. The point is that the emotion resulting from the favourable outcome is not only constituted by ‘joy’ but there are unconscious and quite abstract mechanisms at work as well.

In addition to the mental state and tone, there usually are certain accompanying phenomena to emotions (Oatley 1992, 20–21): First, there is *conscious preoccupation*. It refers to the attentional properties of the emotion, such as inner dialogue, or what Marcel Danesi (2002), on his treatise on puzzles, calls ‘insight thinking’. In the case of games it is exemplified, e.g., by thinking about a solution to a puzzle or a counter-move to an opponent’s move. This kind of preoccupation is at the heart of Goffman’s notion of focused gatherings. Second, there is bodily disturbance which includes both the autonomous nervous system and other physiological processes. Thirdly, there are recognizable expressions, which consist of outward expressions, such as facial gestures, bodily postures, and tones of voice. Finally, readiness for certain kinds of action has been included to the phenomena accompanying emotions (Oatley & Jenkins 1996, 377).

The quantitative dimensions of emotions are *duration* and *intensity*. As a physiological reaction, an emotional episode lasts typically for seconds or minutes. However, the subjective experience of emotional episodes might last considerably longer. When the emotion relegates into a ‘background state’, it becomes a mood. (Oatley 1992, 22–4.) Variables affecting the intensity of emotions, just to list a few examples, include proximity (the temporal distance to the emotion-triggering event), unexpectedness (the probability of the event), desirability (how desirable the individual sees the event), and combinations of variables such as these. (For more, see Ortony, Clore & Collins 1990, 59–84.)

Jon Elster makes an important point about the distinction of emotions and their long-term consequences, i.e. how emotions transform into emotional dispositions. According to Elster, we can take "emotion" either in an ‘occurrent’ or in a dispositional sense:

> Occurrent emotions are actual episodes of experiencing anger, fear, joy, and the like. Emotional dispositions are propensities to have occurrent emotions, such has irascibility, faintheartedness, or what we call a "sunny disposition." Prejudices such as misogyny or anti-Semitism are also emotional dispositions. (Elster 1999, 26.)

This observation relates to the discussion of taste preferences regarding games, via selective exposure and mood management, and also explains qualitative varieties in emotional episodes between individuals. Furthermore, along with telic and paratelic modes, it sheds light on different play styles and strategies.

Phasic Nature of Emotions

Emotions are usually seen as a process with certain phases. The phenomena described above do not happen all at once. Rather, emotions are caused, run through a process, and the process is followed by consequences. (Oatley & Jenkins 1996, 98.) Frijda’s (1986) proposal of emotion as a set of phases has been widely accepted. In conclusion, emotions are phasic in the following order:

1) Appraisal: the recognition of an event as significant
2) Context evaluation: thoughts on plans and how to cope with the event that caused the emotion
3) Action readiness: a juncture to one’s action and willingness to respond with another action
4) Physiological change, expression, action: bodily and expressive effects of emotion. (For more, see e.g. Oatley & Jenkins 1996, 98–122.)

Appraisals as key moments

The evaluations of events, termed *appraisals*, constitute a fundamental stage of the process of experiencing emotions. Oatley & Jenkins (1996, 375) give a definition of appraisal: '[E]valuation of an event on a number of criteria. A set of appraisals determines what emotion (if any) is produced by the event.' Among theorists, appraisals are mostly seen as causing emotions (Roseman et al. 1996), or characterizing them (Parkinson 1997), but in any case they are regarded as a fundamental part of emotional experience (cf. Zeelenberg et al. 2000, 524). Thus appraisals should be paid specific attention when analysing emotions in the midst of events typical to games: goal resolutions, performances of game mechanics, rule set procedures, and so on: players conduct appraisals of all these.

Phases of an event in Tetris

As a games-specific example of an emotion process let us imagine a situation where someone is playing Tetris. The game system enacts a procedure of producing a new block on the top of the screen. It is a long block made of four squares. The player recognizes the block appearing, makes an appraisal (phase 1) that the block is significant for her success in the game, as it would fit nicely into an open spot among the composition of the blocks. Thus, the player starts planning how to guide the block into the desired position (phase 2: context evaluation), and realises that she must rotate the block into vertical position (phase 3: action readiness). This produces a juncture into the on-going action of pulling the block simply down, and the player has to respond with the rotating game mechanics. These consequences presumably produce recognizable bodily and/or expressive effects (phase 4: physiological changes).

The falling procedure of the block is another event that the player makes an appraisal about, and she has to adapt her planning to the time pressure that the inevitable falling induces. The success/failure of rotating and guiding the block, and the game states in between presumably each present event to be made appraisals about, as they relate to the goal the player is constantly monitoring. Thus, Tetris seems to present potential for continuous appraisals which relate directly to relevant goals – and this could be one of the reasons it is generally considered a captivating game.

The example also illustrates one of the key premises of my theory: The phasic nature of emotions and the appraisal process is analogous to the phasic nature of game play, and this opens up possibilities to analyse and understand game play in terms of emotions.

Appraisals in relation to goals

Lazarus (1991; Oatley & Jenkins 1996, 100–1) writes about divisions between primary and secondary appraisals. The division is based on the appraisals' relevance to a goal. According to him, primary appraisal has three features:

1) Goal relevance: Only if emotion is of concern or relevance will an emotion occur.
2) Goal congruence: Moving towards goal causes positive emotions, moving away causes negative ones.
3) Ego involvement: This accounts for the event's value for the person, e.g. if the event involves self-esteem then emotions such as pride and anger will be possibilities.

Regarding the same phenomena, Ortony et. al (1990, 34–5) define an 'appraisal structure' in order to be able to study variables that affect the intensity of emotions. In their theory, appraisals are considered as valenced reactions to events, agents, and objects, i.e. an appraisal always produces an evaluation on the scale of positive versus negative in relation to a goal. This duality can also be perceived as the pleasure or pain one experiences in relation to some event, agent, or object (cf. Elster 1999, 27).

In any case, the appraisal structure is a virtual goal structure which an individual mentally stores in order to deal with appraisals. The structure is more complex than a hierarchical tree structure, as it incorporates both abstract, high order goals, and immediate, low order goals. It is also dynamic, as goals change: old goals are realized or abandoned and new ones introduced, which means that there is a constantly active monitoring process of goals at work, and it receives information via appraisals. (Ortony et al 1990, 34–5.)

The Tetris example above demonstrates that it is a game that basically only elicits primary appraisals, because each goal produced by a new block appearing is equally relevant, and the features of congruence and involvement are based on the individual's dispositions to the game and the instance of playing it. Lazarus argues that further differentiation among emotions occurs in secondary appraisals (ibid.), and it is presumably here that individual variations between the intensities of emotion among players of Tetris takes place. Nevertheless, the goal structures of a person playing Tetris dynamically transform according to the respective transformations in the game system behaviour – i.e. how his or her game is proceeding. This process presents an example of how an appraisal structure works in a game play context.

Eliciting conditions as triggers of emotions

Another important concept concerning the phasic emotion process as a whole, especially in relation to game systems with their behaviour and goals, is the so-called *eliciting condition* of an emotion (see, e.g., Oatley 1992, 19). It is an event, agent or object that potentially triggers the emotion process described above.

The phasic nature of emotions gives birth to the structures and varieties of emotional experiences (see Frijda 1986, 249–56). Oatley and Jenkins (1996, 27) state that '[i]f we know what appraisals (or evaluations) are made we can predict the emotion; and if we know what the emotion is we can describe the appraisals.'

Consequences for game analysis

This brings us to my main argument about the consequences of the theories discussed here for analyses of game designs. It is two-fold and runs in conjunction to the above statement:

First, if we are able to analyse the points of appraisal within a given gaming encounter, identified through game-specific eliciting conditions, we can predict – to some extent – the emotional reactions of idealised, implied players, or 'designs' of players modelled with the help of theory.

Second, if we can produce typologies of emotions generally elicited by games and attributed to them, we can analyse the points of appraisal and eliciting conditions in a systematic way. Combining these two viewpoints in an actual game analysis task should provide a holistic theoretical view to player experiences, which could also serve as a hypothesis to be validated and reformulated through findings in actual player studies. These are indeed the goals of the analysis methods introduced in later chapters.

Emotions and Fiction

Games produce sensations, possibly with fictional constructs, in similar fashion than arts, such as painting, sculpture, literature, theatre, and film. Games often represent and simulate events, agents, and objects of fictional origin. Therefore we need to discuss emotions not only in the context of everyday life, but also in the context of fiction.

Fiction is generally defined as an imagined world. In this respect, games are not fiction, as they are, from the perspective of cognition, indeed very real. Yet there are fictional aspects to games, especially due to the rule set and theme elements. Jesper Juul has written about this particular phenomenon in relation to video games. He calls it the 'half-real' aspect of video games. Juul defines half-real as the 'duality in video games of a real set of rules governing how the game is played and a fictional world that the player imagines.' [2]

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[2] "Half-Real." From *Half-Real: A Dictionary of Video Game Theory*. http://www.half-real.net/dictionary/#half-real. (Accessed December 9th, 2007.)

In the work at hand, this concept relates to the games as worlds that players cognitively inhabit during the gaming encounters, i.e. how the rules of games make them 'world-building activities' (Goffman 1961, 27); a world of meaning is built during the game (Oatley 1992, 356). Roger Caillois (1961, 8) has echoed this by stating that rules create fictions. I do not see how the half-realness is, then, limited to video games. It might get emphasized with video games due to their virtual and ephemeral nature, which lends itself to the construction of elaborate simulations of (fictional) worlds. Still, there is evidence of similar phenomenon in play behaviour in general, and I will return to this in chapter 7 when discussing pretending in gaming encounters.

The emotional consequences of the half-real nature of games have been already discussed, even though not with that exact term. In emotion theory, approaches to analyse emotions in relation to stories, i.e. accounts of fictional events, have been developed. Keith Oatley's *Best Laid Schemes* is a book-length study on the subject. Oatley writes:

> Stories involve an inner mental simulation of plans – games are a kind of external simulation. In a game we take on goals offered by its structure. Similar effects apply to those of stories, such as the bracketing off of experience. Hence we are able to enjoy the anxiety that we may lose, as we try nevertheless to win. (Oatley 1992, 109.)

Oatley goes on to state that understanding stories 'involves being able to simulate other minds, or perhaps to have a theory of other minds.' (Oatley 1992, 109.) This can be translated to games with the following logic: Understanding how to succeed in a game involves being able to simulate the opponent's minds, or treat the game system as an agent, i.e. have a theory of its behaviour based on an understanding rules and their operation through game system behaviour. Here we return to the schemas and scripts which players employ to anticipate what will happen next, what emotions, hopes, and reward it will bring with it, and how the gaming encounter should generally proceed. Moreover, it can be argued that the 'other minds' are filtered to the player's mind as a set of 'desires and beliefs-of-others' through pretending (see chapter 7 for more).

Another aspect of experiencing emotions in relation to fiction is how the fictionality modifies the intensity of our emotions and possibly also our strategies to cope with changing situations, such as ones presented by changing game states. Coping strategies are the means with which people are able to shift from one goal or preoccupancy to another in order to deal with a situation. Torben Grodal (2000, 201) argues that 'In order to elicit phasic emotions in relation to fiction we need a focusing character, because without such character we cannot specify any coping strategies.' The argument presupposes that people need a point of identification to reflect on the character's fictional goals in relation to their own real-world experiences. Whereas Grodal writes about film, 'character' can be understood more broadly in light of games, i.e. as something that provides focus of attention, source of identification, and ownership: In terms of the theory of game elements, it equals primarily the component element(s) with its possible attributes.

Grodal goes on to write:

> Video games therefore simulate emotions in a form that is closer to typical real-life experiences than film: Emotions are motivators for actions and are labelled according to the player's active coping potentials. (Ibid.)

This applies generally to games, not just video games, although the latter in particular warrant the comparison to film in Grodal's argument. However, if we substitute film with stories in the above quote, then we can expand the argument to apply to games in general: Games elicit emotions in a form that is closer to typical real-life experiences than emotions elicited by stories. The eliciting conditions remain similar in essence, while they are communicated to the player as game states via different semiotic modes (and their combinations) than stories – with the rhetoric of game system behaviour rather than with the rhetoric of narrative. In gaming encounters which presuppose physical engagement, such as sports games, it can be argued that the fictional aspect is lacking in its entirety – simply because sports games are real-life experiences without a theme element. This also means that their relation to pretense behaviour is different, i.e. the pretense is construed differently. I will return to this in chapter 7.

Functions of Emotions: Managing and Communicating Motives and Goals

Generally emotions help individuals to adapt to the physical and social world and deal with the challenges it presents. In addition to this evolutionary importance, emotions have functions regarding our individual development in interacting with other people and coordinating our emotional responses to theirs. (Oatley & Jenkins 1996, 252.) Moreover, in the context of games, this interaction expands to the game system, whether we perceive it as an agent or an object, and the events that it facilitates and governs.

What makes emotions especially relevant in connection with games is the fact that they function to manage multiple motives and to switch attention from one concern to another (Oatley & Jenkins 1996, 253). Evolution has provided us with 'a set of emotional states that organize ready repertoires of action' (ibid., 258). Emotions function, then, in how individuals manage their actions: happiness keeps us engaged in what we are doing, but sadness resulting from losing a goal disrupts our actions and substitutes them with new or modified ones (ibid. 259). Functions of emotions thus have to do with 'principles of planned actions' (Oatley 1992, 24), and this links them intricately with the discussion of goals, plans, schemas, and scripts in the following chapter.

Even though the theories about emotion processes acknowledge the context of appraisal, they do it in rather restricted sense. The surrounding culture at large has significance in the sense that there is a dual relation between emotions and social norms. Social norms are directed at the expression of emotions, and it can be argued that as communities share conceptual repertoires, they therefore also share a certain cognitive basis, which would account for the various cultural differences in, e.g., the acceptability of certain emotions. (On culture and emotion, see, e.g., Elster 1999, 106–114.) Here it is useful to return to Erwin Goffman's notion of gaming encounters as focused gatherings, and how their nature is to bridge the everyday world and the gaming encounter into one. Thus the contexts of a gaming encounter always function as its eliciting conditions to some extent.

From the number of theories on emotions it can be concluded that the central functions of emotions are indeed to guide reason, bridge across the unexpected and the unknown, and give priorities among multiple goals. Antonio Damasio's studies among patients with neural damage in the brain's emotional regions point to the fact that actually humans may not be able to make decisions of any kind without the guiding function of emotions. Damasio argues for a considerable reinterpretation of the relation between 'rational' and 'emotional' thinking – according to his findings, there is no such thing as 'purely' rational thinking without the action readiness -inducing nature of emotions. (Damasio 1996, Damasio 2004.) There is also evidence that emotionally salient material is generally remembered better than neutral material (Oatley & Jenkins 1996, 274).

This all speaks for emotions' important role in gaming encounters as memorable and engaging experiences, and also for the fact that emotionally salient game experiences are bound to lead to repeated play, i.e. replayability. In chapters 9 to 11, I will return to the literature on emotions in order to understand a number of psychological phenomena that are highly relevant in the context of game play: e.g., how emotions are used in managing disappointment, how they are predicted, and how they affect decision-making and strategies in the pursuit of goals.

Definitions of Emotions

The fact that there are a number of competing theories of emotion has obviously produced competing definitions. There are those that emphasize the consequences of the emotions, i.e. the action tendencies, as in Frijda's definition:

> Emotions, then, can be defined as modes of relational action readiness, either in the form of tendencies to establish, maintain, or disrupt a relationship with the environment or in the form of mode of relational readiness as such. (Frijda 1986, 71.)

On the other hand, there are definitions that emphasize the circumstance and context where an emotion is triggered:

> Our working characterization views emotions as valenced reactions to events, agents, or objects, with their particular nature being determined by the way in which the eliciting situation is construed. (Ortony et al 1990, 13.)

When trying to synthesize these theories into practical tasks of game analysis and design, one needs to acknowledge both aspects. Therefore, I argue that it is necessary to analyse and construct hypotheses both about

- the appraisals and eliciting conditions, including everything the setup of the gaming encounter includes, and
- the action tendencies that particular goals and their attainment or non-attainment induce.

In later chapters, I will discuss how eliciting conditions can be embodied into game elements, and how resolutions of goals of various order produce action tendencies. To arrive at this, it is necessary to look closer at goals in terms of psychology, and how individuals go about in planning for attaining them.

CHAPTER 6: Schemas, Goals and Plans

The latter half of this chapter will be spent discussing goals and how individuals plan for attaining them. Before that, we will take a look at two concepts – schema and script – that relate to goals in the context of their interpretation and planning for attaining them.

Schema is a concept from social psychology that explains the 'structures that organize our spatial and/or temporal knowledge about objects, events, and places'. (Mandler 1984, 4). Schemas are helpful in understanding how game systems communicate goals to players, and generally how people make sense of games, and therefore we will take a brief look at schema theory. Jean Matter Mandler's book *Stories, Scripts, and Scenes* presents a schema theory that I will apply for my purposes in the following pages.

Whereas Lakoff & Johnson's theory of metaphor (see chapter 2) seeks to explain similar matters from a linguistic standpoint, schema theory is based on social psychology, i.e. it conceptualises the behaviour of people in social situations and surroundings. I see schema as a complementary concept to metaphor when analysing game systems.

Schemas are often described as sets of expectations. They present a particular type of mental structure for organising knowledge. This means that they can be used to set up expectations, and my argument is that in games we encounter specific schemas as sets of expectations about how to play.

Schemas are nested in hierarchies that consist of part-whole relations, and this likens them to the organisation of game systems. Schematic hierarchies are structured into parts that make up wholes: sitting down at a table is not an example of eating dinner but rather part of eating dinner, and thus part of a dinner schema. With this logic, using a game mechanic is not an example of playing a game but it is part of playing the same game, e.g. performing a manipulation mechanic to rotate a block does not qualify as an example of Tetris but it is part of the player experience of Tetris; it is an element in the game system known as Tetris and it also characterises, at least in part, what it is like to interact with that particular game system. Then again, many games employ players' knowledge of familiar schemas, such as travel, work, technology, myths, etc. in making their rule sets easier to understand.

Mandler writes that 'as a result of the part-whole nature of a schematic structure there are connections among the items in a given unit' (ibid. 14). This goes hand in hand with the definition of a game system as 'a dynamic whole with parts that interact', if we understand the 'unit' as a game system with its elements, and the ‘connections’ as the compound game elements and their interaction between other elements.

Event, Scene, and Story Schemas

Mandler defines three kinds of schemas: 1) Event schemas, 2) Scene schemas, and 3) Story schemas. We will briefly discuss each, starting from event schemas:

> An event schema is a hierarchically organized set of units describing generalized knowledge about an event sequence. It includes knowledge about what will happen in a given situation and often the order in which the individual events will take place. (Mandler 984, 14.)

According to Mandler, in case of event schemas, connections between the whole and its part are temporal: It is possible that there are 1) causal relations with obligatory connections, 2) enabling relations with strong connections, and 3) arbitrary temporal connections within an event schema when a set of events take place in sequence but in optional order. (Ibid.) In light of game systems, event schemas can be likened to rule set procedures and how they specify particular behaviours of the game system.

Scene schemas present organizations of our knowledge about scenes and places. The relations are spatial instead of temporal. There are two important factors with scene schemas: Inventory information, i.e. what objects typically appear in a scene, and spatial-relation information, i.e. the typical spatial layout of a scene. (Ibid. 15–16.) For example, a computer game like **Diner Dash** (Gamelab, 2004) takes advantage of a restaurant scene schema, i.e. a typical layout of a restaurant with tables, counter, etc. It also employs an event schema about restaurant: what typically happens when one goes out to eat.

Story schemas are organizations of knowledge about simple stories, such as folktales (ibid. 17). Mandler distinguishes story grammar, i.e. a formal structure of a story, from the informal, lived nature of story schema: ‘A story schema […] is a mental structure consisting of sets of expectations about the way in which stories proceed.’ (ibid. 18.) With games, story schemas have to do, not only with possible background stories, but with goal hierarchies: how lower and higher order goals causally relate to each other, and what kinds of unexpected turns goals might take.

Schemas in games

For studying games, schema is a useful concept in a number of ways: First, it is a concept with which to acknowledge the contexts of game systems; it enables to bridge formal and informal aspects of ludological theory. This is because schemas are means for players to make sense and distinguish one gaming encounter from another by enabling players to get a basic idea of what particular games are about: ‘Ah, you are going to play Poker. Ok.’ Thus schemas enable to highlight the worldly, lived aspects of game cultures. This also demonstrates the function of schemas as methods to organize goal hierarchies which afford fluid linking between low and high order goals, as they relate to our experiences of causal relationships in our daily lives. Presumably this kind of schematic matching to life – or fiction – outside the game helps in understanding relations between game goals.

Second, event and/or story schemas help players to predict the behaviour of game systems and fellow players, i.e. what will happen in the game and in what succession, and thus construct plans for reaching the goals that the game system imposes on them.

Third, game designers employ schemas in designing game systems, especially event schemas (see Mandler 1984, 77–86) that relate directly to goal hierarchies. In games where the rule set is communicated to the players via a rule manual that documents the game elements and their relations (as in most card and board games), event schemas can largely be deducted from the rules. In games with storytelling aspects or simulated environments (e.g. digital games), the schemas we rely on are story and scene schemas, respectively, or combinations of the three schema types. The more information about the game schema the player has, the more unambiguous will be the course of actions, i.e. a plan, s/he employs.

Still, the fact is that most human action, also in games, takes place with imperfect knowledge (cf. Oatley 1992, 35). As has been noted earlier, this uncertainty is what by definition makes games compelling. In light of schema theory, playing certain kinds of games is about finding out schemas that the game designer has designed into the game system. Puzzles, whether as individual games or parts of, e.g., a mystery adventure video game, are primary examples of games about solving schemas by taking advantage of thought processes, such as conceptual blending. Moreover, in multiplayer games, the players are essentially trying to solve and predict the schemas – i.e. plans and strategies – of other players.

Scripts and Game Schemas

The other noteworthy concept from social psychology is script. Scripts are used to handle ‘stylized everyday situations’, and they are defined, by Schank & Abelson (1977, 41), as ‘stereotyped sequence of actions that defines a well-known situation’. Script, then, is a concept that ‘characterizes our knowledge of familiar event sequences’ (Mandler 1984, 75).

A script is always tied to a specific content, such as a visit to a restaurant: it is encapsulated knowledge about what generally happens when one visits any given restaurant, instead of a memory about a specific visit (ibid.). Script has a format of having a title and being divided into scenes. A script of hosting a board game evening among friends would thus have a number of scenes: Friends arriving, games being chosen, the games being played, friends leaving. Each of the scenes have a number of action variables, e.g. 'the games being played' scene would consist of all that goes on in the game itself (cf. Mandler 1984, 76). Thus the script of a game's events, its particular system behaviour, is nested within the script concerning the gaming encounter.

Schemas, scripts, and applied ludology

My interest in schemas and scripts is two-fold: First, how schemas and scripts, as associative knowledge structures, provide tools for individuals to make sense out of games in similar fashion as with metaphorical concepts, and thus posit this particular recreational activity within the life-worlds of players. Second, I am interested in how scripts in particular provide information for players when they are planning and creating strategies during playing a game. If scripts in general stylize everyday situations, then game-related scripts stylize (the often already stylized) situations found in games.

Players employ scripts to explain to themselves what would it mean – what would the experience roughly be like – if they would take one choice instead of another and how the game state would change as a consequence, or, if they accepted an offer to try out a new, unfamiliar game. Once people get familiar with a game, they employ scripts in organising their knowledge about how the game is being played, what kind of rules are embodied into which game elements, what the experience will actually be like, what strategies the game potentially affords, and what emotions and moods it potentially elicits. When we discuss different goal categories in the coming pages, we will come across specific examples of employing scripts to switch goals and strategy, or on a more general level, changing from a habit of playing one game to playing another.

On the other hand, from the perspective of the game system and its designer, scripts are akin to rules, i.e. game designers define the behaviour of a game system via scripts that are revealed to the players as rules stated in rule manuals, or as rule set procedures instantiated when playing the game. Scripts are means to communicate to the players how a particular rule is embodied into a particular game element.

For studying games, scripts provide a socio-psychological context for analysing rules and players strategies. We could also define 'game schemas', i.e. schemas found across the universe of games, and use them as, e.g., categorising principles for game genres. In essence, this has already been done (but for a different purpose) with the game design patterns theory (see Björk & Holopainen 2005). Game schemas could also be based on goal hierarchies, which is what we will study next.

The Meaning of Goals

As we have seen, emotions have to do with planning and goals. So does game play. Games are systems which facilitate 'safe' planning towards goals, and thus they also produce various eliciting conditions for emotions. After the brief introduction to goals and goal categories in chapter 4, we will now study their role in games in more detail.

Goal here refers to an aim or an objective (cf. Oatley & Jenkins 1996, 378). Thus goal in itself always posits a challenge and actions towards completing it. Depending on the nature of the goal, its completion necessitates routine chores according to a script, or conversely, it necessitates struggle, such as developing a set of cognitive abilities or gathering resources. Whereas in life struggling towards such goals can be stressful, games produce condensed and ephemeral goal hierarchies which aim towards being challenging yet enjoyable.

In effect, when we talk about the challenges in a given game, we are talking about its goals. The goal might be embodied into a specific game element, such as a component – 'defeat the King' in Chess – and/or information, as, e.g., 'find out who did it' in the board game **Clue** (aka Cluedo, Hasbro, 1946). Whatever kind the relationship between goals and game elements is, the fact remains: When we are talking about player emotions, we are talking about players' appraisals and actions in relation to goals. The status of a goal, i.e. the progress towards its attainment, might be affected by objects, agents and/or events in the world, which take the form of various game elements.

Universality of goals for human psyche has been widely accepted, and therefore their role and function has been promoted into high status among emotion theorists. Thus we will frequently return in this part of the thesis to the role of goals and plans, and their relation to emotions.

Emotion theorist Keith Oatley has argued for the importance of goals on two counts: First, he argues that there is a biological basis for evaluating events in relation to goals. Second, he writes that

> evaluations related to goals and plans are more likely to be universal than concepts such as justice, the value of introspection, freedom of action in relationships, or the importance of the individual. (Oatley 1992, 113–115.)

Oatley (ibid., 24) also states that 'A goal (when the right preconditions exist) prompts a series of actions that in turn produce effects in the world.' Whereas psychology stresses that in everyday life individuals may have unconscious goals, gaming encounters emphasize conscious and explicit goals, and stylize them with the metaphors that the game system employs. A rule stating the goal (or subgoal) of the game proposes a set of actions to the player, and the actions, when completed successfully through performing game mechanics, produce effects in the game system. This emphasis presumably is one of the circumscribed pleasures that games offer and to which players submit themselves to. The preconditions of the goal (that Oatley mentions above) include the means – i.e. the game mechanics, component resources, and environment to act in – that the system affords the player. If there are multiple ways to reach the goal within these affordances and their combinations, players supposedly perceive the game as less confined in nature (e.g. the 'freedom' attributed to such digital games as Grand Theft Auto III [Rockstar Games, 2001] and **Deus Ex** [Ion Storm, 2000]. Note that it is also evident in tabletop and live action role playing games). From the perspective of schemas and scripts, this means that there are more scripts available as 'prototypes' (i.e. ready-made routines) for the players' plans to reach a goal.

If goals have been accepted as a prominent guiding principle of human psyche, it is even more relevant to acknowledge their prominence in relation to games. As we will see, games in fact distill the abstract life goals that we struggle with on a daily basis into highly concrete, temporally and spatially circumscribed events, often spiced with fictional aspects that lift them above everyday struggles and into the realm of fantasy, adventure, and daydreaming. Oatley has echoed this view in stating that

> games seem as if they may be defined as activities that offer players top-level goals. Players adopt these goals and then see what it is like to interact with others on the basis of a given system of rules and operations. (Oatley 1992, 203.)

Goals relate to individuals' current concerns. They take form through a person identifying a goal, or goals are seen in light of 'personal projects' which constitute an identified sequence of actions intended to achieve a goal. (McIntosh 1996, 54—5, cf. scripts.) Goals come in different proportions and endurances. Outside playing games individuals have personal strivings which are abstract and life enduring (such as 'living ethically'). However, in games goals are quite unambiguous: They become to embody players' current concerns within the membrane of the gaming encounter. Perceived means to attain the goals become temporally and spatially circumscribed personal projects in gaming encounters.

Of course, there can be more enduring goals related to games as well, such as becoming a world champion in Chess or Poker or any sport, or in a multiplayer computer game, such as the Quake series. These kinds of goals originate from the players and the contexts of the game system – the behavioural elements (see chapters 3 & 4) – rather than from within the formal configuration of the system and its individual instances as such. One can only become a world champion in a game if there is an institution in its contexts that organizes world championships.

We will return to this distinction later in the context of goal categories. In any case, as Ortony et al (1990, 42) have stated, 'One can think of goals as having lives; they are born when they are set up or established, and they die when they are realized or abandoned.' Game systems are thus animators of goals, which live and die through a gaming encounter, only to be reanimated at the start of the next one. Replayability is widely considered a virtue for a game, and in terms of goals, it is about how interesting the game's goal hierarchy – and the activity towards the goals – remains for multiple gaming encounters. Furthermore, the lives and deaths of goals is something that game designers have to pay attention to in order to keep the game interesting: lives of goals have to be filled with hopes, fears, and uncertainty, in order to elicit emotions.

Goal Hierarchies

This brings us to another aspect of goals, namely that goals are structured hierarchically. There are lower order goals and higher order goals. Generally people pursue lower order goals because they are instrumental in attaining higher goals (McIntosh 1996). For example, winning a single Chess or a Quake match is a low-order goal attained in search of attaining the high-order goal of becoming a champion.

Hierarchy of goals is a common pattern of games (see Björk & Holopainen 2005, 321–4). Goal hierarchies are often stated in a very specific way for the players: The players need not identify the goals and their correlations by themselves, as people often have to do with the more abstract and sprawling life goals. As the earlier example 'to live ethically' demonstrates, higher level goals tend to be abstract, which means that their attainment might be difficult to determine (McIntosh 1996, 56). However, studies have shown that the central issue in goal-striving is 'subjective appraisal of the status of the goal' (Ibid. 57) rather than whether or not the goal has been reached.

In his discussion of how individual experience goals and their relations, psychology scholar W.D. McIntosh writes:

> [A]t the center of people's pursuits of goals is the recognition of some discrepancy. People become aware that they are in one state or situation and that they want to be in another. As they go about trying to reduce the perceived discrepancy, they stop intermittently and self-focus to assess their progress. Based on this assessment, they make adjustments in behavior that are aimed at more efficiently reducing the discrepancy between the current state and the desired state, and they continue their pursuit. (Ibid.)

In light of the above passage, one might define games as systems for pleasurable reducing of artificial discrepancies (or 'half-real' discrepancies, according to Juul 2005). The discrepancy relates also to the discrepancy between, first, the schemas built into game systems, and two, the schemas of the player, and the scripts (how, where, when to perform game mechanics) available to the player. In any case, the passage highlights players' need to get feedback about their progress towards the fulfilment of a goal, and it is important that there are recognizable states in the road towards a goal. Game states (see chapter 3) function as such points of appraisal for goal monitoring.

In conclusion, players need to be provided with information about goal statuses. Thus they also come in contact with points of appraisal about their success – which leads to emotional episodes. This is in line with the general observation about goal-striving: A negative feedback cycle develops between the goal pursuer and the goal, and it ends only when the goal is reached. The road to attaining goals is indeed beset with emotions, as I wrote in the introduction to this part.

Plans to Attain Goals-of-self

As systems that provide fundamentally goal-orientated activities, it is the nature of games also to provide room for plans. Keith Oatley (1992, 25) writes:

> A goal-directed system works to achieve correspondence between the world and the goal by changing the world through an ordered series of actions, a plan.

System here refers to the cognitive system people employ to make sense of the world and their actions. The cognitive structure of plans can be represented as a tree hierarchy, and on it's 'roots' reside goals of different order. Thus plans are mental images of goal hierarchies; a cognitive means to organize knowledge about goal hierarchies. (Oatley 1992, 26.)

As was established earlier, in games plans are formed according to knowledge about event schemas of the game, and more specifically, the scripts relevant to the schemas. Actions to enact plans are channelled through game mechanics into the game system. As tools to attain goals, game mechanics and components as player resources embody possibilities to enact plans as scripts.

From the perspective of cognitive representations, actions occur in ordered sequences and achieve purposes, and these sequences are known as plans. In games, these principles take the form of rules, and rules about goals, to be precise: What the player is allowed and supposed to do in order to complete a goal – according to the game designer's schema. Oatley's statement about the unforeseen nature of actions relates directly to a trait that is considered a virtue of a game, i.e. that the outcome should not be known, and the order of sequences that the game system enacts should not be known beforehand, at least in their entirety. If the outcome or behaviour of the system is perfectly known from the outset, there is too much information available for it to make an interesting game, as uncertainty and the element of suspense is lost.

Uncertainty breeds the need to plan

If everything is known and everything can be anticipated in a game, there is not much room for arousal and emotions. This is due to the communicative nature of emotions: emotions send signals about events to which we have no ready response or perfect knowledge of (cf. Oatley & Jenkins 1996, 257–8). For instance, players should be able to predict the behaviour of the system when, e.g., performing a game mechanic, so that its rules appear consistent. However, concerning the high order goals there should be enough elements and their relations so that the plans of an individual player are always under threat. Should they be ruined, the event is bound to evoke emotions as progress towards goals suffers a setback. Roughly these emotions oscillate between hope and fear, which, when combined with uncertainty, elicit the feeling of suspense (Ortony et al. 1990.)

This also explains why games that require high level of logical thinking, e.g. Chess or Sudoku, are not considered very rich in eliciting emotions: a skilled Chess player tends to have ready responses, or at least scripts from which to choose once it is her turn once again. Playing Sudoku is essentially about completing logical scripts with numbers 1 to 9 as resources. Along these lines, we can also present a hypothesis according to which games with no conflicting goals or subgoals fail to elicit intense emotions, as the player is able to focus on one aim only. A simple example of emotion-eliciting conditions via multiple goals of parallel value can be found in the video game **Missile Command** (Atari, 1981), where the player defends six cities from incoming missiles, and has to make conflicting decisions of which cities to protect and which to leave destined for destruction, as the frequency of the missiles increases. The feeling of playing the game is often described as being characterized by panic, as one has to make quick decisions in relation to which component-of-self (a city) to prioritize in protecting, i.e. which parallel goal to abandon and which one to keep on pursuing.

On the other hand, non-conflicting goals may suit paratelic motivations (see the discussion on reversal theory in the previous chapter) that lessen the competitive nature of the game. Games like **Ticket to Ride** (Days of Wonder, 2004), a board game about building railroads, presents 'asymmetric' goals (Björk & Holopainen 2005) which only potentially conflict with other players' goals. This has consequences for player experiences: one can primarily focus on monitoring one's own goals – goals-of-self – and performing within the set of abilities the game necessitates, while the conflicting higher order goals – goals-of-others and goals-of-system – remain on the background until the end game, where points are calculated and the winner determined. It can also be argued that with these design solutions, Ticket to Ride supports paratelic motivations for play.

As a general principle, it can be stated that game systems, on purpose, constrain and focus human plans, and the goals they relate to, into computational & measurable ones (cf. Oatley 1992, 31–2). In case the players diverge from the goals the game presents, or they try to reach them in ways that the rule set does not allow, they usually run out of means to play the game or are punished by the game system. In practice, they do not find game mechanics with which to pursue the goals they've set themselves, unless it is a feature of the game that it allows 'player defined goals' (Björk & Holopainen 2005, 317–9) instead of ones imposed automatically by the game system. Goals relating to contexts of the gaming encounter, or originated from contexts, present examples where players might take advantage of extrinsic motivations for play.

Plans as antecedents of players engagement

Quite usually, then, players negotiate with game systems about their intentional plans in relation to the implied plans suggested by the system, a procedure also known as trial and error. Psychology scholar Robert Wilensky has introduced a theory of planning, according to which individuals exercise two kinds of planning. First, there is 'forward application' i.e. an ability to arrange pieces of stored plan using so-called metaplanning principles. This is meant to generate action and ready one for the need to replan as new opportunities and goals emerge. Second, we exercise 'backward application' in planning, when we refer to general understanding of human action by making inferences about goals and by trying to see how conflicts between goals may be resolved. (Wilensky 1983.) Game systems seem to entertain planning, both in its forward and backward applications. Based on this, a hypothesis about 'action' games privileging backward planning, i.e. general understanding of the schemas in order to solve rapidly changing subgoals, and 'strategy' games privileging forward application, i.e. making plans to see higher order goals solved further on in the game, seems viable.

As was already discussed above, it is widely accepted that 'good' games do not imply a 'dominant strategy', i.e. a way to play them according to a script that always wins or turns the game into the player's favour. In terms of plans this means that the game system should not imply an ideal plan with which to reach the goals it imposes, or at least the plans should arrive at conflict between a number of players. The 100 meter sprint in athletics indeed implies an ideal plan – 'run faster to the finishing line than anyone else' – but what makes the game exciting is that all participants enact exactly the same plan and script to run as fast as they can. What is important here that the rule set prevents alternative plans (such as preventing other runners from reaching the finishing line).

In conclusion, plans regarding game goals are, to varying degrees, rule-constrained scripts enacted via game mechanics in relation to the event schemas the game system introduces. Plans and goals are also important to understand, because they relate to models of self: 'Engagement is an identification of the self with goal of the plan.' (Oatley 1992, 34.) Multiple goals tend to divide attention in a way that increases engagement in the midst of conflicting interests, when one has to engage with some goals and plans and abandon others. In any case, analysing distinctions and shifts between goals-of-self, their symmetrical/asymmetrical relation to goals-of-others, and how goals-of-system are distributed, embodied, and structured into hierarchies is a step towards modelling implied players and their engagement with a game system. We will return to these kinds of analysis methods in the case studies of the thesis.

Linking between Goals

Psychology scholar W.D. McIntosh discusses behaviour he calls linking. It is about the extent to which people link lower order goals to higher ones. He argues that

> people are linking to some extent whenever they pursue some lower order goal with the belief that it will lead to the fulfilment of a goal higher up in the goal hierarchy [...]. (McIntosh 1996, 62.)

According to McIntosh, there are few lower order goals that are pursued purely in and of themselves, i.e. no one loses weight just to lose weight but rather to remain healthy, gain self-confidence, etc. (Ibid.) In games this relates to the fact that people seldom throw dice just for the sake of throwing dice, but in order to progress somehow in the game in relation to its higher order goals. Usually the goal is communicated through a script which documents a relationship of game elements, such as throwing dice (game mechanic), i.e. a component with six different values, the result of which is then transformed into movement on a board (environment element) or addition/subtraction on a score counter (information element).

Yet in games where the goal hierarchy is ‘flat’, i.e. there are only few goals and the linkages between lower and higher order goals are very direct, actions toward the low and high order goals might become practically unified and ‘throwing dice’ as the simple, core mechanic becomes fun in itself (cf. discussion of paratelic vs. telic metamotivational modes in chapter 5). Tetris, once again, provides an example of a game with this kind of a goal hierarchy.

McIntosh suggests that individuals who link between low and high order goals, experience more negative affect when not attaining a goal. However, the negativity is individually different due to differences of subjective goal hierarchies between individuals. (Ibid. 58.) The reason behind negative affect is that the linking leads people to believe that they have much to gain upon attainment of lower goals (i.e. that they eventually would attain the higher order goal). The higher up the goal hierarchy a person links a lower order goal with, the more that person is linking. If losing weight (i.e. a low order goal) is of immense importance to an individual’s self-image (i.e. high order goal), there presumably is considerable linking between the two.

Ruminating lost goals-of-self

Another behaviour resulting from goal-oriented activity is what McIntosh calls ruminating, i.e. mulling over lost goals. People ruminate more about unattained higher order goals than about unattained lower order goals (ibid. 58—9). A game-related example would be found, for example, in a game of basketball and its goal hierarchy. Imagine that team A is losing, and team B has possession of the ball, and there are only few seconds left. Thus, for team A and its players, being unable to attain the goal of stealing the ball (lower order goal) from team B during the final seconds means that team A will not have the opportunity to win the game either. As winning the game is the highest order goal, this scenario presents an example where the lower order goal is very strongly and concretely linked to the highest order goal of the game, and thus failing to gain possession is bound to produce a particularly negative affect. If we keep with the sport examples, an example of long-term goal hierarchy would be one where losing the final game in a season means losing the championship, and thus the loss is not experienced as any other loss, as its proximity and link to the higher order goal is both temporally and causally direct.

According to McIntosh, rumination is central in considering the affective consequences of goal attainment (Ibid. 59). From ludological perspective, a straightforward interpretation would be that inducing rumination in players equals more emotionally charged player experiences. However, generally rumination is seen as aversive pattern of thought: ‘to ruminate is to think repetitively about something a person wants but does not have’ (ibid.). Rumination is also about trying to make sense of loss. Therefore in games, ruminating might transform into having another go in reaching the goal. Translated into the discourse of psychology, the ‘one more go’ behaviour, which is considered a virtue of a good game, is about tendency to remove negative affect associated with desiring some state of affairs by trying, perhaps compulsively, to attain the desired state of affairs.

The easiest way to cope with this feeling is by engaging into another attempt at beating the game. Games with consequences outside the gaming encounter (e.g., gambling games) are likely to cause more rumination because the lower goals they present, such as ‘find or get three of the same symbols’ link to higher personal goals of their players, such as becoming wealthy by winning the money prizes. Moreover, these kinds of life goals are quite concrete – one’s wealth can be unambiguously translated into a monetary value, if so desired.

Normally people disengage from the goal if they judge that it is unlikely for them to attain it. In practice this means that players desert plans or goals, and possibly seek new ones. This is done also in order to avoid ‘ruminative self-focus’ which is experienced as unpleasant, because it reminds one of the goal or goals not attained. Ruminating not only increases the intensity of the negative affect related to goal non-attainment, but also its duration. One way to deal is to distract oneself from thoughts of the goal with pleasant activities. (Ibid. 61–62.) So we see that the role of rumination as a part of player experiences is quite complex and it can work both in favour and against the hedonic tone of the experience.

A conclusion to be made from linking and rumination is that games with player defined goals, or a set of alternative goals of the same order, are less likely to produce rumination that makes the player abandon the game. Then again, if there are no clear, shared goals, there is no linking and subsequently no game. In any case, same-order yet different goals can be implemented through player roles – for instance, by introducing ‘hidden agendas’ i.e. goals known only to individual players themselves (like in the board game Ticket to Ride, for example).

Goal Satisfaction and Dissatisfaction

It is widely accepted in psychological literature that emotions produce transitions between goals. These transitions have to do both with satisfaction concerning a goal completed, and dissatisfaction in relation to a goal failed. Oatley & Johnson-Laird have constructed a table of 'five basic emotions with the junctures at which they occur and the transitions they accomplish' (Oatley 1992, 55, 114). The table is reproduced here and complemented with two additional columns which state game-related hypothetical examples of the junctures and transitions:

Emotion (mode)	Juncture of current plan	State and goals to which transition occurs	Game-related junctures	Game-related transitions
Happiness	Subgoals being achieved	Continue with plan, modifying if necessary	1. In football, team A scores a goal that takes them into the lead 2. In Monopoly, player B buys an estate	1. Team A possibly adopts a more defensive tactic to preserve the lead. 2. Player B continues with plan, trying to buy the remaining estates of the same set
Sadness	Failure of major plan or loss of active goal	Do nothing/search for new plan	1. Team B concedes a goal and trails by one goal 2. player A loses an estate that she was planning to get	1. Team B adopts an offensive tactic 2. Player A sets another set of estates as her goal

Fear	Self-preservation goal threatened or goal conflict	Stop current plan, attend vigilantly to environment, freeze and/or escape	1. Team A is awarded a free kick from a very promising position. Team B fears of free-kick goal. 2. Player B approaches another player's expensive estate and fears that on the next throw of a die she will end up in the estate	1. Team B players form a wall in order to block the shot. 2. None; the player has no choice but to wait for her turn
Anger	Active plan frustrated	Try harder, and/or aggress	1. Team A makes a near miss on scoring the equalising goal 2. Player A is handed a chance card that takes her to prison	1. Team A is uplifted by the near miss and begins to try even harder 2. Player A cannot play for the next round, and feels like giving up
Disgust	Gustatory goal violated	Reject substance and/or withdraw	In Fear Factory the TV show, a contestant is presented with a task of eating worms	The player can not complete the task, withdraws and is eliminated form the game

Table 3. *Five basic emotions with the junctures at which they occur, the transitions they accomplish, and game-related examples.*

Even the rudimentary analysis in the above table illustrates how emotions related to goals can vary between so-called basic emotions such as happiness, sadness, anger, and fear. To deepen this kind of understanding we need to look more closely at what kinds of goals there are, and proceed to more intricate categorisations of emotions based on them. (The latter will follow in chapters 9 to 11.)

Goal Categories

In their study of human knowledge structures, Roger Schank & Robert Abelson introduced a taxonomy of goals that I will review in the following (the taxonomy was briefly introduced in chapter 4). The taxonomy proceeded from a question concerning what goals can a person presumably have, when no explicit statement of goals is made?

Schank & Abelson base their taxonomy on a general observation according to which 'there is a smallish set of goals which appears over and over again' in human activities, and this functioned as the justification for the taxonomy. (Schank & Abelson 1977, 112.) This kind of inquiry into general goal categories is relevant in light of applied ludology. The question would be formulated as follows: What goals can we assume games to set for their players when there is no particular game in question? I believe we can proceed on the same assumption that even though game goals come in different guises and themes, there is indeed 'a smallish set' of game goals that appear, over and over again, as well. This is in line with the theory of game elements, which tries to account for the set of recurring features in games across media and technologies.

Schank & Abelson identify seven standard goal forms which command different inferences and different preference rules: There are three forms that involve striving for desired states, two forms that involve avoidance of undesired states, and another two that involve intermediate subgoals for any of the other five forms (ibid.) I have condensed Schank & Abelson's goal forms (ibid. 112–119) with their characteristics, examples, verbs they are associated with, the emotion they commonly elicit, etc., into the following table:

Goal form	Descpription of content	Examples	Associated verb	Characteristics	Frustration elicits	Satisfaction elicits	Rules of precedence
Satisfaction goal	[R]ecurring strong biological need, which, when satisfied, becomes extinguished for a time.'	Hunger, sex, sleep	Get	Very basic life goals, standard frequency of recurrence.	Negative emotional and physical states.		Over A-goals.
Enjoyment goal	'An activity which is optionally pursued for enjoyment or relaxation.'	Travel, Entertainment, Exercise, Competition	Go		Mild or moderate expressions of disappointment or boredom.		Allocated to time periods when C-goals are not present and S & A-goals are not of great importance.
Achievement goal	The realization, often over a long term, of some valued acquisition or social position.'	Possessions, power position, good job, social relationships, skill	Have, To Be	Plans tend to be complex due to A-goals long-range character. A-goals have fixed periods of activation.	Pattern of wounded withdrawal, accompanied by high-level goal switch which compensates.	Tends to guarantee future satisfactions of S- and E-goals.	
Preservation goal	'Preserving or improving health, safety, or good condition of people, position, or property' .	Nurturing one's newborn child	To keep up, to hold onto, to fix up, to check up on	Plans turn to anticipating threats (plans of others, discrete acts of nature, accumulating erosions of time,), i.e. anti-plans.	Reaction of being upset with probable establishment of a restorative goal.		Allocated to time periods when C-goals are not present and S & A-goals are not of great importance.
Crisis goal	A special class of Preservation Goals which 'are set up to handle serious and imminent threats to valued persons and objects.'	Health, fire, storm	To cope with, to do something about, with cues to rush, to hurry	C-goals tend to be realised with scripts (e.g. 'ambulance' or 'fire extinguisher'). Because of imminent and often highly specific threat, goal substitution does not probably take place.	Shock (in case of failure).	Relief	Over S-goals.
Instrumental goal	'Any goal which, when achieved, realizes a precondition in the pursuit of another goal, but does not in and of itself produce satisfaction.'	Various		Nested into other goal forms. I-goals have to be attained in order to get to the pursuit of final goal or a goal conjunction to occur.	Agitation or anger.		Over rules of goals they serve.

Goal form	Descpription of content	Examples	Associated verb	Characteristics	Frustration elicits	Satisfaction elicits	Rules of precedence
Delta goal	Similar to Instrumental goals but they are pursued through general planning operations rather than scripts						

Table 4. *Schank & Abelson's goal forms reproduced.*

Let us consider these categories in light of games. As was noted in chapter 4, general motivations of playing games in the midst of other life activities fall into Schank & Abelson's Enjoyment goals. People pursue Enjoyment goals when they seek particular competitive, rule-based entertainment we know as games. However, when engaging with a particular game system in a gaming encounter, players are usually presented with a hierarchy of goals which includes Achievement and/or Preservation goals, and most likely intertwined with Crisis goals and Instrumental goals. Playing golf or any other sport, might actually be an Instrumental goal in attaining the Achievement goal of becoming the next Tiger Woods, i.e. professional golf champion, which might, then again, be another instrumental goal in the path to goals of fame and fortune. This kind of hierarchy was discussed earlier with general terms: the links between lower and higher order goals. Games that facilitate general rather than strictly procedural, goal-driven planning, might also present Delta goals. [3]

So is game play about attaining Satisfaction goals? The answer is no, simply because playing games would not be possible without satisfying biological needs, such as hunger, which take precedence over the type of enjoyment and relaxation pursuits that games represent, by and large. Thus, I see the quartet of Achievement, Preservation, Crisis, and Instrumental goals as relevant when discussing gaming encounters in action. The goals and motivations that drive players in the first place to huddle around a table, gather onto a field, switch on a

[3] Ortony et al. (1990, 41-2) have produced a reinterpretation of Schank & Abelson's taxonomy for their own purposes: They define 'Active-pursuit goals', i.e. things one wants to get done, 'Interest Goals' i.e. things one wants to happen, and 'Replenishment goals' i.e. achievable goals that are not abandoned when achieved. Active-pursuit goals include Schank & Abelson's Achievement, Enjoyment, Instrumental, and Crisis goals. Schank & Abelson's Preservation goals area special case of Interest goals, which Ortony et al. see as goals that the pursuer cannot exert a great deal of influence over but is able to further the interests in question. Replenishment goals as a category stress the cyclical characteristics of certain achievement type of goals, i.e. goals that reoccur and become current despite their satisfaction some time ago (such as getting one's monthly paycheck). In any case, the distinction of goals related to entertainment, which Ortony et al abandon, I find useful to retain when discussing the activity of playing games. There is certainly satisfaction to be gained from playing games, and it is arguably what motivates players, even on a recurring basis.

game console or into any kind of gaming encounter in the first place, are of higher order.

Goal Categories and Games

Let us proceed to goal categories within game systems. According to Björk & Holopainen (2003), goals can either be explicitly stated as being part of the game ('endogenous'), or not being formally inscribed (or enforceable) within the game ('exogenous'). As both of these types are able to 'live' through the course of a gaming encounter, both have to be taken into account.

Once players step within the magic circle, the given game system imposes a certain set and hierarchy of the above goal types. It usually consists of lower order Instrumental goals which serve higher order Preservation and Achievement goals, yet these may at times be interfered with the introduction of Crisis goals.

Preservation goals are important in the sense that in games, it is highly usual that the game system as an agent introduces threats to players' possessions so as not keep them too comfortable. Or, the game system limits available resources in ways that they are scarce and thus desirable, i.e. embodiments of goals themselves. If there would be 22 balls in play in a game of soccer, or 10 basketballs on the court, the significance of the ball component would be strongly reduced. As a result there would not be a need to posit the instrumental goal of achieving the ball, and then keeping it in possession, i.e. as component-of-self (self being expanded to the team collective) instead of a component-of-other. In fact, losing the possession of the primary game component in games like soccer, basketball, ice hockey, and the like, automatically posits a Crisis goal in relation to the Instrumental goal of having possession for the team out of possession.

Thus goals from the perspectives of two opposing teams could be described as follows:

<table>
<tr><th></th><th>low order goal sequence</th><th></th><th></th><th></th><th></th><th>high order goal</th></tr>
<tr><td>Team A:</td><td>Instrumental goal (gain possession)</td><td>success</td><td>Preservation goal (keep possession)</td><td>Crisis goal (keep possession under threat)</td><td>failure</td><td rowspan="2">Achievement goal (score, necessitates possession)</td></tr>
<tr><td>Team B:</td><td>Preservation goal (keep possession)</td><td>failure</td><td>Crisis goal (regain possession)</td><td>Instrumental goal (gain possession)</td><td>success</td></tr>
</table>

Table 5. *The oscillating behaviour of preservation and crisis goals between two opposing teams in sports such as soccer or basketball.*

These examples (similar to the ones in connection with Oatley & Jenkins' emotion categories few pages earlier) serve to show how the reciprocity of self and other gets overlaid goal structures and hierarchies. Once one (self) attains a goal, the opponent (other) often has to substitute the goal into an inversed one: Preservation goal attained by self implicates Achievement goal for other. However, this is not the case in all games, as there are other types of goal structures. The one described above is a set of symmetric goals. In case of asymmetric goals, the goal-of-self is different than goal-of-other. In this case, one team would only try to score points/goals, and the other would only try to prevent this without any means (i.e. game mechanics) to score themselves. The game of **Tag** presents a typical example of asymmetric goals between one player and others, and board games, such as **Scotland Yard** (Ravensburger, 2000) present other examples. (Cf. Holopainen & Björk 2005, 333–5.)

On goal substitutions

In connection with Preservation and Crisis goals, Schank & Abelson suggest that they are handled with the use of scripts, whereas frustration in relation to Achievement goals probably results in goal substitution.

In case of the goal categories where scripts are used, they function as insurance in face of threat or its realization as an accident or other undesired event. While playing games and having to face a Crisis goal, players rely on scripts, i.e. ready-made sequences to act, executing available game mechanics or sets of them. These scripts function as if insurances. For example, Chess players protect their King in case of a crisis in the form of a check, usually by keeping another piece at a movement mechanics' length or trying to guarantee open grids in the King's vicinity, and once the crisis occurs, one of the available 'insurance' choices are carried through. As was suggested earlier with schemas and scripts, scripts essentially equal chains of performing game mechanics in contexts of specific game states, because they produce causally motivated effects to the environment – as specified in the rules – and thus they relate to strategic use of mechanics in a given situation and the goal related to it.

In case of frustration concerning an Achievement goal, e.g. having purchased one out of three same-district real estates in Monopoly, and another player buys one of the same set, the player might withdraw and follow with a goal substitution. There might be direct game mechanic reserved for it. In the case of the Monopoly examples, this could mean making an offer to sell the property to the player who just purchased a property on the same district. Then the player could focus his or her efforts on another district, i.e. not actually switch goal type but rather its embodiment in/as a particular game element that is instrumental in completing the goal – the instance of embodiment being a location on the game environment, in this case. The goal substitution occurs, then, on the level of game system configuration rather than its goal hierarchy.

Examples are also found in games with combat, e.g. digital 'real-time strategy games' such as **Starcraft** (Blizzard Entertainment, 1998), where losing a battle to an opponent results in a withdrawal and gathering of new forces. This presents a goal substitution, and it is followed with possibly another substitution, i.e. another target (component/environment) or activity (game mechanics).

In case of Preservation goals, failure or frustration in them leads to restorative efforts. If one loses one's position as the King of the Hill, there is no choice but try to regain ownership to the privileged spot on the game environment if one chooses to continue the game. Same is true for the instrumental, lower order goals of regaining possession in basketball, soccer, etc. In a number of card games the loss of a trump card, or in board games the loss of a marker or a specific role, is followed by efforts to regain it. These examples of failed Preservation goals and subsequent restorative efforts speak for their prevalence in a host of games. They also testify for the prevalence of the self/other/system triangularity.

Goal patterns in light of goal categories

As we see, there are game goals with different characteristics, both concerning their monitoring and pursuit. Moreover, they are structured into different relations, both among themselves and in relation to players.

Indeed, Björk & Holopainen (2005, 277–338) have identified a number of game design patterns for both goals and goal structures. They define 20 patterns for goal structures. They divide them into three groups: Goal characteristics, relations between goals, and relations between goals and players. In addition, there are 26 goal patterns which include Capture, Conceal, Delivery, Gain Ownership, Overcome, Traverse, etc. Basically all of these goals may present any of the three goal categories for goal structures. It all depends how they are organised into a relational structure, such as hierarchy, in a given game.

Thus it is more appropriate to analyse the patterns for goal structures in light of the four general goal categories by Schank & Abelson. The table below lists goal types and their definitions according to Björk & Holopainen, and places them to Schank & Abelson's respective goal types:

Goal type (Björk & Holopainen 2005)	**Definition**	**Goal type (Schank & Abelson 1977)**
Alignment	This goal consists of forming a linear alignment of game elements.	*Achievement*
Capture	Capture is the goal pattern where the end result is the elimination or change of ownership of an actively resisting goal object.	*Achievement*
Collection	The completion of several goals that together form a coherent unit.	*Achievement*
Conceal	Conceal is the goal of trying to hinder other players ability to gain information.	*Preservation*

Goal type (Björk & Holopainen 2005)	Definition	Goal type (Schank & Abelson 1977)
Configuration	Configuration is the goal of forming a spatial, temporal, or logical arrangement of game elements.	*Achievement*
Connection	Linking or spatially positioning game elements to each other so that they have a physical relation.	*Achievement*
Contact	The goal of having two or more elements have physical contact with each other.	*Achievement*
Delivery	Delivery consists of moving a certain game element to another specified game element or place within the game space.	*Achievement*
Eliminate	Eliminate is the goal to remove a game element from its location in the game space.	*Achievement*
Enclosure	Enclosure is the surrounding of game elements by a continuous line or wall.	*Achievement*
Evade	This is the goal to avoid being captured or hit.	*Preservation*
Exploration	The goal of learning the layout of the Game World, or locating specific parts or objects in it.	*Achievement*
Gain Competence	Gaining the ability to perform a certain action within the game.	*Achievement*
Gain Information	The goal of performing actions in the game in order to be able to receive information or make deductions.	*Achievement*
Gain Ownership	This is simply the goal to gain the ownership of a game element.	*Achievement*
Guard	Guard is the goal to hinder other players or game elements from accessing a particular area in the game or a particular game element.	*Preservation*
Herd	Moving a game element to a location in the game without directly interacting with it.	*Achievement*
King of the Hill	Reaching and keeping a sought for game state that other players are trying to reach and keep.	*Preservation*
Last Man Standing	The goal of being the last survivor.	*Achievement*
Overcome	This is the goal of the player to defeat an opposing force in a test, or a series of tests, involving attributes or performance of low-level actions.	*Achievement*

Goal type (Björk & Holopainen 2005)	Definition	Goal type (Schank & Abelson 1977)
Race	The competition between players to be the first to reach a certain goal, often being the first to a certain location following an approved route.	*Achievement*
Reconnaissance	Patrolling a known area in the game world to detect changes.	*Achievement*
Rescue	Rescue is the goal of freeing someone or something that is guarded.	*Achievement*
Stealth	Stealth is the goal to move through a certain area and perform an action without being detected.	*Achievement*
Survive	The goal of trying to avoid being killed by actions of other players and events in the game.	*Preservation*
Traverse	The goal to try and move a game element from one position in the game to another.	*Achievement*

Table 6. *Ludological goal categories by Björk & Holopainen(2005) interpreted in light of Schank & Abelson's (1977) goal typology.*

This kind of cross-examination of goal types illustrates the prevalence of achievement and preservation goals in games, yet their formal nature might differ from their instances in the behaviour of a game system, i.e. usually instrumental goals and crisis goals will occur due to the behaviour of game elements. This phenomenon that relates to uncertainty and unpredictability is important also for the sake of players' emotional engagement into the game. Introducing goal substitutions can thus be seen as a tool for game design, and the above discussion hopes to give conceptual tools to examine games in light of goal substitutions. As we have gathered earlier, goal substitutions are bound to elicit emotions in players.

However, as a result of my studies in game mechanics (see chapter 12) and the goals they relate to, there emerged a need to add a number of goal categories to the typology by Björk and Holopainen, as it's goal types did not cover such goals as outplaying cards out of one's hand or accumulating points in, e.g., card games. The additions, as introduced and defined below, mostly derive from card games, but there is also one specific to digital games that simulate an ecosystem or a living being, e.g. games like **Nintendogs** (Nintendo, 2005):

Goal type	Definition	Goal type (Schank & Abelson 1977)
Accomplish	Perform core mechanics according to a pre-defined plan in order to solve set of challenges, problems or puzzles.	*Achievement*
Accumulate	Accumulating or multiplying points or another game currency in order to have the highest possible amount when the game ends.	*Achievement*
Discard	Getting rid of one's game elements before other players or the game system.	*Achievement*
Match	Achieving a matching game element, or matching combination of them, with the game system or another player.	*Achievement*
Nurture	Nurturing a game element by developing, preserving, or adding to it.	*Preservation*
Outplay	Staying in the game as long as possible by avoiding end conditions.	*Preservation*

Table 7. *Additional goal types identified through analysis of a sample of games.*

These categories, 30 of them in total, will be employed in the analysis methods documented later in parts IV and V.

Conclusions for Ludological Inquiry

We have learned that it is the nature of goals to give birth to plans. Game systems purposefully restrict & focus human plans into computational and measurable ones, possibly stylized with fictional themes. This is partly why playing games is considered relaxing as it downplays real-life concerns, plans, and goals.

Games are systems that entertain planning, but games also provide pleasurable strikes at the root of plans, and this is where and when they give birth to emotions. Oatley (1992, 25) has indeed stated that 'emotions emerge at significant junctures in plans', and by their shocks and surprises, games provide thematized or purely rule set dictated junctures to our plans to complete a goal of saving the world, scoring most points, finding a treasure, or whatever it is that the game systems leads us to believe is worth striving for in a gaming encounter and the world it builds. In light of goals, most games are condensed goal hierarchies made up out of goals not directly associated with life goals. The completion of game goals is rule-motivated, or possibly thematically motivated, yet it can also be motivated in connection to life goals (as with educational games, gambling, and sports games, especially).

Adapting theories about goal hierarchies and goal-directed behaviour gives terms such as ‘tactics’ and ‘strategy’ new, better defined meanings. Now we see that tactic equals means, scripts, to deal with low-order, instrumental goals, whereas strategy deals with the attainment of high-order achievement goals. Goal frustration and substitution enables to understand the non-trivial motivations of players when they switch their attention between different objectives and their embodiments in game elements.

I believe with the concepts of linking and goal hierarchy we are also now able to come up with explanations for certain genre categorizations, whether referring to popular or academic ones. With their help, the almost uselessly broad term ’strategy games’ gains clarity: Strategy games are ones with a specific goal hierarchy where Achievement goals are high order goals that require complex planning, and thus they seem to privilege telic motivations. More importantly, the higher order goals are publicly known and logically deductible – whereas in games with storytelling elements, or games of chance, there is an element of surprise that relates to the resolution of the story and its closure, and thus perception of higher order goals. Björk and Holopainen (2005, 322) point to this direction when they state that

> gradual revealing of the goal hierarchies is often used in adventure and roleplaying games where the player is given new tasks or quests after the completion of the previous one, revealing the total goal hierarchy one goal at a time.

We find evidence in emotion theorist Keith Oatley’s (1992, 24) words as well: ’Emotions function in the management of action when all the consequences of such action cannot be fully foreseen.’ Thus it can be deduced that games where higher order goals are subject to chance, or dramatic turns, provide more potential circumstances for certain type of emotional reactions, such as surprise, suspense, and empathy.

On a very basic level, emotions are widely discussed as either positive or negative in tone. The tone is attributed to the emotion’s relation to the individual’s current concerns, i.e. goals being pursued. According to this logic Oatley (1992, 49) states that ‘[w]e can call emotions positive if the probability of attaining a goal is increased and negative if such a probability decreases.’ These valenced reactions to outcomes, and circumstances, i.e. ‘eliciting conditions’ for experiencing emotions will be dealt with in the remaining chapters of Part III of the thesis. Before that, we will study cognitive phenomena, such as pretending and other cognitive abilities, and their relevance to emotions.

CHAPTER 7: Player Abilities, Emotions, and Pretence in Gaming Encounters

We will continue the theory of player experience by looking closely at three concepts: emotion, cognition, and pretence. After establishing a number of basic consequences of emotion theory for the study of games in chapter 5, we will have to discuss emotions in relation to human cognitions, and proceed to emotions' role in decision-making and aesthetic appreciation. Another cognitive aspect that has consequences for the theory of player experience is the notion of pretence, i.e. how players engage in acts of pretending in gaming encounters. This relates to the fictional aspect of worlds that game systems give birth to, and cognitive theories of pretence give us conceptual tools and vocabulary to discuss the particular nature of game worlds.

These discussions will lead the way to the most important section of the chapter, which introduces theories on human cognitive, psychomotor, and physical abilities. I will analyse models concerning them, and try to identify those human abilities central to gaming encounters, and more specifically the abilities' relation to goals and game mechanics that players engage with while playing games. They afford and require combinations of abilities, ranging from cognitive to physical. Abilities are the antecedents of skills, i.e. skills develop by performing and perfecting abilities in relation to specific goals. I will conceptualise combinations of abilities concerning gaming encounters under the notion of 'player ability sets'. As the term implies, the presumption is that most games require a number of abilities from players.

Cognition, Emotions, and Game Systems

'Cognition' is generally defined as psychological result of perception and learning, i.e. mental operations by which one becomes aware of objects of thought or perception. Cognition includes all aspects of perceiving, thinking, and remembering, and thus it is the process of knowing in the broadest sense including perception, memory and judgment. Cognition gives us knowledge, opinions, or beliefs about events, agents, and objects – i.e. knowledge about the world in general. (Oatley & Jenkins 1996, 376.)

Emotions have a cognitive basis. Oatley and Jenkins (1996, 252) distinguish two main cognitive properties of emotions:

> [T]he management of action and the structuring of cognitive system into distinct modes of organization. The effects of this structuring are to modify perception, to direct attention, and to bias thinking.

Modifying perception, directing attention, and biasing thinking are all means that game designers want to induce in players: to engage players cognitively and emotionally. Indeed, games tend to have a strong cognitive dimension: The player has to interpret the perceived representations and gain information of game states, which turn into knowledge about the game in general. (Cf. Definition of 'cognition' in Oatley & Jenkins 1996, 376.) Differences in cognitive bias, i.e. tendencies towards particular styles of mental processing (ibid.), explain differences in player strategies (the scripts and plans they adopt) and also individual variations in intensities of emotions that games elicit. Strategies and styles of play are results of applying slightly varying cognitive schemas, i.e. structures stored in memory that enable the person to take appropriate action (cf. 'schema' in Oatley & Jenkins 1996, 380; see also chapter 6).

In the context of games, schematic structures take the form of representations of agents (players, the game system), events (goals, game states), and objects (components and other game elements) taking part in the game, and the causal and associative relationships between them. This perceptual-phenomenological mental construction constitutes a kind of 'gestalt' of the game system as a whole with interacting parts (cf. definition of system in chapter 3). Cognition and emotion, then, help to set priorities among goals, and they also direct players into engaging with subsequent actions.

Another concept relating to individual differences in playing is 'cognitive style' (see Carroll 1993, 554–560), which refers to an individual's consistent manners in perceiving, remembering, thinking, and problem solving. Cognitive styles include such dimensions as reflectiveness versus impulsivity, and tolerance for incongruous or unrealistic experiences. These both oppositions could arguably be used to explain individual styles in play strategy or game taste. Intolerance for unrealistic experiences, i.e. unwillingness to accept perceptions and cognitions that differ from conventional experience, could, e.g. mean that persons displaying this particular cognitive style are not disposed to explicitly pretend – the type of behaviour we will study next.

The pretend nature of gaming encounters

In dictionary terms, 'pretence' has been understood as an attempt to make something appear true even if that is actually not the case, or, as a practice of inventing imaginary situations in play, which is a relevant perspective for the discussion at hand. As we see, pretence and the act of pretending have also been labelled with a degree of falseness: For example, engaging in a game or fantasy that would involve supposing something that is not the case to be so. Alternatively, displaying, e.g., emotions or intentions with pretence would mean that they are somehow false or ill-willed. It is these kinds of conceptions of pretence that we have to address in the following, in light of what goes on in gaming encounters.

Psychological studies on pretence have been mainly concentrating on the play behaviour of children. However, Nichols and Stich (2000) and Steen and Owens (2001) have produced theories of pretence that are applicable for more general ludological purposes. I will review their basic premises and conclusions in light of player experiences in the following.

Cognitive theory of Pretence: Possible World Box

According to Nichols and Stich, episodes of pretence generally start with an initial premise or set of premises. These premises equal 'basic assumptions about what is to be pretended'. Nichols and Stich claim that their theory of pretence aims to explain how 'pretenders determine what behavior to engage in during an episode of pretense'. It is interesting how rules, and their embodiments into game elements, function as determinants and constraints of pretence during gaming encounters. As with episodes of pretence, gaming encounters start with a set of premises about the game, its duration, player performances, and so on.

The cognitive theory of pretence according to Nichols and Stich proceeds from two assumptions: First, an assumption concerning the basic architecture of human mind, i.e. that it contains two different kinds of representational states: beliefs and desires. The second assumption equals what is known as representational account of cognition, i.e. that beliefs, desires, and other propositional attitudes are relational states which are stored as representation tokens in a functionally appropriate way in the mind. (Nichols & Stich 2000, 115–121.)

These premises and assumptions lead Nichols and Stich to define three 'mental workspaces' in the human mind: Possible World Box, The UpDater, and Script Elaborator (ibid., 122). The theorists argue that 'pretense representations are contained in a separate mental workspace, a Possible World Box which is part of the basic architecture of human mind' (ibid. 115). In line with this notion, there also exists a Belief Box, and a Desire Box. The 'PWB' would then contain representation tokens, i.e. beliefs and desires from the other two mental workspaces, but the content of the PWB would present a transformation regarding the tokens:

> However, the functional role of these tokens, their pattern of interaction with other components of the mind, is quite different from the functional role of either beliefs or desires. Their job is not to represent the world as it is or as we'd like it to be, but rather represent what the world would be like given some set of assumptions that we may neither believe to be true nor want to be true. The

> PWB is a work space in which our cognitive system builds and temporarily stores representations of one or another possible world. (Ibid. 122.)

By now it is clear that game worlds would present a specific type of tokens, or most likely a set of them, stored and cognitively processed in the PWB. In order to explain how ‘our cognitive systems distinguish those beliefs that need to be modified in the light of newly acquired belief from those that do not’ (ibid. 124), Nichols & Stich come up with the notion of ‘UpDater’. It serves as a filter on what is allowed into the PWB: ‘Everything in the pretender’s store of beliefs gets thrown into the possible world box except if it has been filtered out (i.e. altered or eliminated) by the UpDater.’ (Ibid.,124–5.)

In the context of gaming encounters, the UpDater would present the works-pace for the cognitive process where the world outside the gaming encounter is filtered out, to the extent that the rule set so demands, in order to build a world for the game. It is worth noting that Nichols and Stich also refer to the role of scripts (see chapter 6) in the cognitive process of pretending. They argue:

> We assume that the contents of a pretender’s Belief Box include not only representations whose contents are individual propositions, like the belief that bananas are yellow, but also clusters or packets of representations whose contents constitute “scripts” or “paradigms” detailing the way in which certain situations typically unfold […](Ibid. 126.)

For instance, if there was a script about a cocktail party located in the Belief Box, it would be filtered by the UpDater for, e.g., a role playing game with a cocktail party scenario.

The third cognitive tool accessed in the cognitive process of pretending, ‘Script Elaborator’, has a task to fill in details of pretence that can not be inferred directly from its premise. The elaboration process also concerns the pretender’s general beliefs and knowledge inferred from what has already happened during the pretence. (Ibid.127.) The particularities with which a game’s rule set modifies existing scripts for the game system’s purposes – e.g. by setting a specific goal for the cocktail party scenario – are processed in the Script Elaborator. Yet many games, with their elaborate rule sets, actually try to make the Script Elaborator redundant, i.e. they define every detail of the system’s behaviour so that no inference would be necessary. Nichols and Stich conclude that

> [p]retenders behave the way they do because they want to behave in a way that is similar to the way some character or object behaves in the possible world whose description is contained in the Possible World Box. (Ibid. 128.)

This can be interpreted in terms of the theory of game elements as behaviour where the rule set and/or the theme of the game are willingly accepted. Identifying with a game character and its goals and beliefs is a particular example of such behaviour.

Nichols and Stich (2000, 115) claim 'that the behavior that is seen in pretend play is motivated […] from a real desire to act in a way that fits the description being constructed in the Possible World Box.' In light of a player cognitively processing a game system, this would mean the configuration of game system gives birth to the representation, known as the game world, in the Possible World Box. Moreover, this translates into behaviour within the schemas and scripts the game system affords. Yet all this presupposes that the players are motivated to pretend according to the PWB, i.e. player motivation through game rhetoric, such as communicating goals, creating empathy with character(s)-of-self, and achieving a sense of presence via techniques for transportation are crucial to uphold the will to play within the rules, and to pretend. On the other hand, the more real-world consequences there exist, the less pretending there tends to be. For instance, lottery games with their prizes in real money do not seem to elicit any pretending. This goes hand in hand with the fact that in such games there is no player role, other than participant in a draw, to speak of.

Pretend Play as Entertainment

Another duo of researchers, Steen and Owens, has sought for a theoretical explanation of enjoyment from entertainment by discussing the cognitive nature of pretence. 'Is there a cognitive yield from imaginative immersion in fictive scenarios?' is a question that defines their starting point, and they go on to study cognitive processes engaged in becoming 'emotionally and imaginatively involved in fictional representations'. (Steen & Owens 2001, 290.) In other words, we are once again in the realm of cognition and emotion.

What makes Steen and Owens' theory especially interesting is their focus on the development and instances of pretend play in forms of entertainment, and role play associated with it. Steen and Owens posit that popular entertainment, such as theatre and film, 'appear to involve culturally elaborate forms of pretend play' (ibid. 294). With the pursuit of enjoyment from entertainment as a backdrop, they track the accumulation of physiological and cognitive structures originally meant to enable survival and propagation but which have been adapted from their lone original function to be simulated in contexts of enjoying entertainment, and whilst engaging cognitively with it. In line with their adaptionist perspective, Steen and Owens call instances of this development as 'adaptations for self-construction' (ibid. 296). This premise is essentially a premise to think about the benefits of playing games for self-efficacy, learning, and creativity.

While Nichols and Stich construct their architecture of human mind with the PWB and other components, Steen and Owens try to explain pretence behaviour from an evolutionary perspective. The distinction to 'organizational domain' vs. 'executive domain' is an important cornerstone of their theory. Organizational domain 'consists of affordances in the environment that facilitate various aspects of self-construction, including learning', while executive domain contains mechanisms that have biological function, i.e. such cognitions and behaviours that keep the organism alive and functioning. (Ibid. 296–7.) They offer the following elaboration:

> In the executive mode, the exercise of a particular mechanism is undertaken to accomplish its biological function. In the organizational mode, the general ability to perform the function is enhanced, but the function itself is not performed. (Ibid. 302.)

As a consequence of this division, Steen and Owens argue that the notion of organizational domain enables us to address a central paradox in research of play, i.e. that play is characterized as at once purposeless and functional. They offer a solution to this paradox by situating the function of play into the organizational domain (as opposed to the executive domain). (Ibid. 298.)

The essential conclusion of Steen and Owens' theory for our purposes is that they see pretend play as a cognitive facilitator for 'rare, expensive, and dangerous events', and as a 'low-cost opportunity' for locating effective strategies and perfecting skills in safe environments where everyday eliciting conditions are not present (Ibid. 299–303.) As a summary, they write:

> Pretense, we suggest, bears the telltale mark of an adaptive design for exploiting readily available resources in a safe environment to train expensive and dangerous future behavior. (Ibid. 301.)

My interpretation from these postulations is that games present a type of stimulus arrangement (see chapter 5 on selective exposure and mood management) that entertains these adaptive designs. Game industries are industries which have commercialised and systematized the production of pretence, and whenever a fantastic theme is employed in a game, it presents a deliberate divorcing of what is being pretended from direct referents in the mundane reality of the everyday. What remains are certain scripts which enable players to cognitively process the acts of pretending, but the scripts might be derived from popular fiction, and the Possible World Boxes it creates, rather than personal, lived experiences.

Steen and Owens go on to elaborate that the adaptive designs must be able to simulate events convincingly enough, so that they manage to

> activate the cognitive and physiological subsystems sufficiently to provide meaningful practice; at the same time, a distinction must be maintained between pretense and reality. (Ibid. 304.)

They also note that interpreting situations in the executive mode makes them feel real, which adds to the effectiveness of the adaptation (ibid.). This all is, of course, a way to describe the 'magic circle', and what makes play meaningful, from the perspective of cognition. These aspects of the theory also tie it in with the concept of transportation discussed in later chapters, and especially the fact that fidelity is a factor that seems to make the worlds that game systems create more vivid in the cognitive sense.

Role Play as pretending through blends and metaphors

The issue of referent is raised when Steen and Owens discuss chase play, e.g. when an adult is pretending to be a predator chasing a child who is pretending to be the prey. With the help of this example, they define pretence behaviour to be evident

> when there is suspension of basic semantic relations of existence, reference, and truth. Existence is suspended in games with imaginary chasers, which occur when a child cannot recruit a peer or adult to be the chaser. Reference is suspended in narrative chase play, where the players use mental imagery to guide their play. In all chase play, truth is suspended in relation to the chaser's intentions and the fleer's response. (Ibid. 307.)

Steen and Owens adapt Fauconnier & Turner's (2002) idea of conceptual blending to elaborate on how this process is construed, i.e. how there occurs a blend in the mind between the friendly playmate and the predator schema. This is equal to metaphorical mapping (as discussed by Lakoff & Johnson, see chapters 3 & 13) between a source concept and a target concept. In this case the friendly playmate functions as the source, and the predator schema functions as the target: 'the chaser's mouth and eyes are mapped onto the mouth and eye definitions in the predator schema' (Ibid. 308). The cognitive effect of a blend like this depends on its power to evoke inferences of the predator schema, yet it should not be so powerful that it overwhelms the cognitive capability of the participant, i.e. begins to feel quite real. This degree of power can be seen to relate to the pleasurable middle path between anxiety and boredom, i.e. flow experiences. The genre conventions and schemas of popular fiction, and thus also many games with a corresponding theme, take advantage of conceptual blending as well.

The discussion of pretend play goes hand in hand with role play. Steen & Owens refer to the fact that the play of children develops from a solitary activity to being enriched with collaborative use of mental imagery. The source of the imagery may be personal experiences and/or media (ibid. 309–10). They posit that in terms of cognition, 'role play relies on the construction of a virtual agent', which

> acts in a narrative pretend space, exploring vast possibility spaces of attitudes, emotions, actions, and social relations that the child could not otherwise access. (Ibid. 311.)

Thus, pretending to engage in seemingly foul acts in the organizational mode can be fun and enjoyable, and this also relates to the biological purpose of play as structural learning, i.e. 'the exploration of possibility spaces to develop potentially viable strategies of action.' (Ibid 312–4.) The conclusion in the context of entertainment and the enjoyment it breeds is that the contemporary multiplicity of cultural technologies of entertainment 'are deliberately designed to evoke the organizational mode', and socio-cultural forms of pretend play, distributed via forms of entertainment, tap into this 'ancient system, targeting a motivational system that is calibrated for an environment long since gone' (ibid. 316). These arguments relate directly to the notion of game industry as a practice of commercialising pretence I presented earlier – but a player community facilitating this kind of pretence, e.g., through live-action role-playing, can be seen as another instance of the same phenomenon.

Steen and Owen round up their theory by presenting a model for understanding entertainment that, they argue, accounts for relevant basic facts about entertainment:

> [T]hat entertainment is fun, that we get imaginatively and emotionally involved, and that it has a tacit pedagogical effect. The reason entertainment is enjoyable is that it taps into a cognitive adaptation with a distinct motivational system. The imaginative and emotional involvement is necessary for structural learning; it is made possible by the construction of a virtual agent within a mental pretend space. Entertainment has a tacit pedagogical effect because this is the biological function of pretend play. (Ibid. 315.)

However, Steen and Owen see a challenge in applying a theory of pretend play to entertainment. Mostly this is due to the fact that they fail to address games' particularity as a form of entertainment, and thus 'the transition from an enacted to an imaginatively projected participation' (ibid. 315) seems, for them, hard to overcome when engaging with entertainment. In the context of gaming encounters where the entertainment audience takes the role of players, i.e. become agents, it is indeed enacted participation that is primarily taking place. Imaginatively projected participation remains to account for planning to attain game goals and the construction of virtual agent as a character-of-self, as well as following the possible narrative procedures embedded into game system behaviour.

Summary on Pretence: Consequences for the theory of player experience

The consequences of the theories discussed above for the theory of player experience can be summarised into the following: The representation of the rule set is a set of tokens placed in the PWB, and rules and their embodiments as game elements feed the UpDater and the Script Elaborator. As a whole, the process also includes inferences from the game world in general, and the scripts and schemas it upholds via the configuration of the game system and its behaviour. These scripts and schemas can be motivated through the theme element which possibly borrows from popular fiction, or historical or contemporary actual events.

However, the significance of pretence varies among types of games. Is there pretending in sports games, for instance? I suggest that the more competitive a type of game and the gaming encounter that frames it is, or the more consequences outside the gaming encounter it has, the less pretending there goes on. ('Competetive' is here understood as a particular, explicit and hierarchic goal structure.) If we visualise the broad spectrum of games as a circular field, then pretence certainly occupies a large portion of it, but not the whole field.

Furthermore, if we draw a vector from the centre of the field that illustrates the prominence of competitive aspect, it seems that games where pretending is crucial and competition not necessarily very strong (e.g. role playing games), are located in the heart of the field. Conversely, sports games reside in the outer rim of the circle, where the competition vector is at its strongest. According to this logic, there is next to no pretending in professional sports, i.e. play takes place in the executive mode.

Overview of human cognitive, physical, and psychomotor abilities

Even though players would engage in acts of pretending in their performances as players, their performances are quite real, and players perform according to their abilities – abilities that the goals and game mechanics require them to. We will now close the chapter with an overview of human abilities, and produce an application for the purposes of applied ludology.

As Carroll (1993, 30–72) and Spearritt (1996) have surveyed, a number of different models of cognitive abilities have been promoted by scholars of psychology and cognition. For the purposes of *Games without Frontiers*, it is necessary to produce a concise review of human abilities that are of specific relevance when studying and designing gaming encounters. This kind of analysis also gives us an opportunity to learn what skills are, from a ludological perspective.

John B. Carroll provides a useful, integrated overview for such task. He has produced an extensive survey of different factor-analytic studies, where individual differences in cognitive abilities have been studied. (Carroll 1993.) I will take advantage of Carroll's three-stratum model of cognitive abilities, and analyse how it could be applied for ludological purposes.

My premise will be one that is quite obvious: In general, both physical as well as mental abilities are required in gaming encounters. These two areas of human abilities have generally been divided into psychomotor, physical, and cognitive abilities, respectively. Many games necessitate the use of all three categories in order for the player to engage with the game system and the goals it imposes. However, it is also evident that certain types of games privilege psychomotor abilities, whereas others privilege cognitive ones – and, e.g., sports games privilege physical abilities. Whatever the case may be in an individual game, the distinction between psychomotor, physical, and cognitive abilities, and their consequences, will become more familiar once we establish how the key concepts have been defined.

Ability: a definition in terms of ludology

I will rely on Carroll's definitions. He establishes that 'ability' is 'defined in terms of some kind of performance, or potential for performance.' (ibid., 4.) This is relevant in the context of games, as the players engage into performances which focus on the execution of the game mechanics that a given game affords to its players. Their execution necessitates certain ability or a set of them, i.e. the potential for performing the mechanic must be actualised through the use of cognitive and/or psychomotor abilities. When performed successfully, a game mechanic helps the player in attaining a goal in the game. For instance, solving a puzzle requires cognitive abilities in the domain of reasoning.

Indeed, Carroll goes on to state that ability describes an attribute of individuals, which also means that there will be individual variations in the ability. The term 'factor' widely employed in the studies of cognitive abilities accounts for individual differences in ability characteristics or potentials. It has been adapted into the use of various methods to test human cognitive abilities, e.g. intelligence tests, health inspections, study of child development, and capability tests for job positions (ibid., 22). Essentially, these kinds of tests aim to identify traits, i.e. abilities that exhibit a degree of stability or permanence over periods of time (ibid., 7).

As the examples of tests indicate, abilities are applied into various tasks. Carroll goes on to state that if conditions are favourable, individuals perform successfully on a 'defined class of tasks' (ibid., 8). Regarding games, this class of tasks equals the goals, and the means to attain them, imposed by the game system. The favourable conditions have to do with the game state: Whether the player has suitable information, tools, or other resources to perform a game mechanic, or whether she is in correct place to perform it, and so on – it is the rules and their embodiments into game elements that give birth to the conditions, favourable or unfavourable. The game system is also the instance which governs whether the tasks are performed successfully. As Carroll points out, tasks vary in difficulty, i.e. in the probabilities that individuals are able to perform them (ibid., 9). This is fundamental to goal hierarchies of game systems and the competitive atmosphere they tend to impose.

Carroll wants to limit the range of cognitive tasks to those that involve processing of mental information. In other words, he privileges mental rather than physical tasks, and the corresponding cognitive abilities rather than psychomotor and physical abilities. (Carroll does include a number of psychomotor and physical abilities into his survey, which is helpful for our purposes. See Carroll 1993, 532–541.) On these grounds, Carroll defines, first, cognitive task as 'any task in which correct or appropriate processing of mental information is critical to successful performance', and thus, cognitive ability as 'any ability that concerns some class of cognitive tasks, so defined.' (Ibid., 10.) Translated into terms of ludology, cognitive tasks become goals, and cognitive abilities become player actions performed through game mechanics.

In terms of applied ludology, the key point is that the ability and using it for performing the game mechanics becomes an *uncertainty factor* concerning the goal that is being pursued. Player abilities are, then, of crucial importance for player experiences. Furthermore, they are crucial for the entertainment factor of the performance, if there is an audience to the gaming encounter: I argue that enjoyment from watching sports is largely due to appreciating the virtuosity of the players.

Aptitudes & Skills

Another relevant concept that Carroll touches upon is aptitude. He states that if cognitive abilities are relatively stable and relatively resistant to changing them through education and training, they are regarded as aptitudes. An aptitude is also predictive of future success regarding performances which necessitate the abilities that the aptitude grows out of. (Ibid. 16.) Players, then, are bound to display aptitudes to certain abilities which are necessitated by goals designed in a certain way – e.g., an individual with an aptitude for singing predictably has better chances of succeeding in a game of **Singstar** (Sony 2004), a Karaoke video game, than another who lacks the aptitude.

This brings us to the distinction between ability, aptitude, and skill. A skill is something that is developed in specific stages, by learning the use of abilities that the skill consists of. Skill might be developed through training or experience. Aptitude for certain abilities gives more favourable starting point for developing the skill. For example, video games such as the **Dance Dance Revolution** series (Konami, 1999–) favour psychomotor and physical abilities such as speed of limb movement, multi-limb coordination, and reaction time, and cognitive abilities such as maintaining and judging rhythm and perceptual speed. If an individual has aptitude for these abilities, and is able to perform in line with the aptitude, i.e. better than average within the factors of the abilities, s/he presumably has potential for developing skills for the game.

Identification of player abilities as uncertainty factors

Carroll identifies and documents a vast number of human abilities in his voluminous study. For the sake of accessibility, I have included the full analysis of Carroll's work (Carroll (1993, 145–628) into appendix E. In the chapter at hand, I will summarise my findings regarding which cognitive, psychomotor, and physical abilities are most prominent in games in general, and thus most useful to be conceptualised as player abilities in the context of gaming encounters.

Carroll has divided the subcategories into a number of domains. These include ones that appear more complex to conceptualise, such as the domain of language, and ones that include only few abilities, such as the domain of reasoning. Overall, the domains are: language, reasoning, memory, visual perception, auditory reception, idea production, miscellaneous, physical, and psychomotor.

All the human abilities collected by Carroll, even though a set of them might not be evident in present games, could be embodied into goals of future games by stylizing and thematizing them. I believe that if we have a better grasp of which human abilities game systems tend to privilege and afford, we have a springboard for a vocabulary of analysing and designing player experiences. This means that we are studying human abilities in the domain of play: play abilities that are qualities of players, and for theirs to develop, i.e. *player abilities*.

Player abilities as uncertainty factors in 100+ games

I have analysed the sample of over a hundred games by conducting an interpretation, based on playing the games, about the abilities they privilege. In many cases, it is quite difficult to unambiguously state which ability would be a primary ability, and which are secondary or tertiary, as one set of subgoals might require another set of abilities when compared with another.

Furthermore, many games necessitate such high level abilities having to do with categories known as General Memory and Learning or Broad Visual Perception in Carroll's overview of the structure of cognitive abilities (Carroll 1993, 626). However, they are not necessarily crucial for the performance of game mechanics itself – i.e. they do not constitute an uncertainty factor in relation to whether a player attains a goal or not. For example, the cognitive abilities of 'reading decoding' and 'quantitative reasoning' might be crucial for engaging with a game in the first place: for understanding its rules and, e.g., calculation of points or currency as the feedback from performing game mechanics. Yet, for the performance of the game mechanic itself, these abilities might be trivial, as the game mechanic might require quite different abilities, such as spatial reasoning and choice reaction time, as with the digital game **Bejeweled** (PopCap Games, 2003), for instance.

Any game that allows use of skill in attaining goals (instead of, e.g., pure chance) must offer opportunities for the skills to develop. However, it has been shown that after early development of abilities in practicing sports, the use of the abilities soon becomes routinised, as they require less cognitive processing (Bandura 1997, 370—5). The same can be assumed of any game, and therefore charting all the possible human abilities that are required in performing a particular game mechanic yields mostly trivial results – e.g., that abilities of visual perception are required in order to understand what goes on in the game.

In my interpretation, it is relevant to identify the abilities that make a successful performance of the mechanics uncertain, i.e. which player abilities contribute to the margin of error. This choice in focus enables us to identify which abilities are not high level prerequisite abilities (e.g., visual and auditory perception) and/or not rapidly routinised to the degree of triviality.

Therefore I suggest that analysis of player abilities in terms of applied ludology focuses on abilities evaluated as *non-trivial* for attaining the goals that the core mechanics, i.e. sets of game mechanics that are performed in the game repeatedly, require.

My analysis has proceeded from this premise, and it is documented in its entirety in Appendix E. It yields the following conclusions, i.e. a limited number of human abilities that seem to be systematically found across various types of games. The table below gives a compact summary of the analysis, with examples of games or game genres in connection with the abilities:

Play ability	**Games where prominent**
Language domain	
Ideational Fluency	Games with game mechanics based on creative output: e.g., **Pictionary.**
Lexical knowledge	Word games, e.g., **Scrabble**.
Visual perception	
Spatial Reasoning	Games privileging the environment element, e.g., digital games ranging from **Halo** to **Tetris**.
Visualization	Games with grid-like environments, e.g. **Go**, **Bejeweled**, **Connect-4**, etc.
Reasoning domain	
Induction	Various games, often paired with reasoning abilities.
Quantitative Reasoning	Various strategy games, ranging from **Sudoku** to **Monopoly** and **Black Jack**.
Sequential Reasoning	Various, ranging from Fantasy leagues to **Magic the Gathering** and **Mastermind**.
Physical and psychomotor domain	
Finger Dexterity	Digital games with their interfaces.
Reaction Time / Choice Reaction Time	Digital 'twitch games', e.g. **Asteroids**, **Space Invaders**, **Pong**.
Wrist-finger Speed	Many of the same games as with Reaction Time.
Manual Dexterity	Various games ranging from **Billiards** and **Darts** to digital games such as **SSX: Snowboarding**.
Multilimb coordination	Sports, parlour, and outdoor games, e.g. **Twister**, **Hopscotch**, **Ice skating**, **Dance Dance Revolution**.
Speed of Limb Movement	Sports and outdoor games, ranging from **Boxing** to **Tag**.

Gross body Equilibrium	Team sports, e.g. Basketball, Ice Hockey.
Static strength	Games with physical contest, e.g. **Boxing**, **Tug of War**.

Table 8. *Human abilities widely found in games that are considered non-trivial.*

The results in the above table present an approximation, yet still I propose that they point out the space of player abilities found in a variety of existing games.

It should be noted that any ability domain and individual factor may, at least in theory, be harnessed into a game design. The analysis presented below should therefore be understood as an overview of the predominant abilities and ability sets that have figured in games throughout history. Therefore they point out, at least in a general way, what has been conceived as enjoyable action in games; what kind of human abilities have persisted in game contexts.

From individual abilities to ability sets

It is also an obvious result of this exercise that ability factors seldom figure in play alone, but rather as sets. I propose that if we are able to identify the most prominent sets of player abilities, we can point to what is generally 'fun' in games, at least from this particular perspective. Many abilities do lend themselves to be designed as players' means to achieve goals, but this does not automatically mean that they will be experienced as fun or enjoyable.

To summarise: Any concrete set of abilities in a given game is dependent on goal rules, i.e. the tasks that they define, and how their attainment is embodiment in game mechanics, and the information required for performing them in successful fashion.

Ultimately, the aim to group player abilities into sets takes us towards categorizing the world of games from a cognitive perspective, and to the genre problematic: Set A could be defined as the 'dance game' ability set, Set B for crossword puzzles and Sudokus as the 'brain flexing' set, and so on. This kind of categorization is useful once we link it to player motivations, mood management, and contexts of play. We will return to this problematic later in chapters 8 and 9, when we discuss games as entertainment, and different categorizations of pleasure and emotions.

Consequences for applied ludology: Player Ability Sets

It is time to consider the take-away from the above discussion for applied ludology. The following points can be concluded: There is a set of human abilities particularly relevant for gaming encounters. To give an example, John

Sherry, in his discussion of flow in player experiences with video games, lists a number of cognitive abilities particular to game systems configured with the help of computer technology: 3D rotation, Color memory, Disembedding, Field induced spatial perception, Object location memory, Targeting, Verbal fluency, and Verbal memory (Sherry 2004, 340–44). This set, or any other from other types of games, includes both cognitive abilities and psychomotor abilities, and different games privilege abilities in these two categories in different ways. Moreover, this example serves to show how video games have overlooked the domain of physical abilities for most of their existence.

Sherry also discusses the gender differences between factors regarding the abilities, which points to the direction that, e.g., games requiring Targeting and/or 3D rotation favours males, whereas females seem to be better in games where abilities such as Object location memory and Verbal fluency are taken advantage of. (Sherry 2004, 340–44.) Thus, gender has relevance for the tasks, goals, and abilities embodied through design into game systems.

How to identify and measure abilities central to gaming encounters?

If we start pondering how to apply the abilities listed above for game design, the sky is the limit – for example, sensory abilities in olfactory and gustatory domains could be tested in a wine tasting game. More interesting to ask here is whether there are certain phenomena in play behaviour that the listed abilities do not account for, or how do the above abilities explain such phenomena.

For instance, we discussed pretending earlier in this chapter. Is it a cognitive ability, or a combination of certain abilities? What would those abilities be? What about bluffing? Nurturing? My tentative conclusion would be that pretending can be likened to the so-called 'ability to attend' human ability, i.e. pretending, in similar fashion as attention, is very difficult to separate from all cognitive tasks that go on while attending to something, e.g. attending to pretending. Planning has to do with abilities such as sequential reasoning, but it also benefits from a cognitive style that privileges reflectiveness rather than impulsivity. Finally, successful bluffing displays a strategic use of pretence when playing, e.g., Poker with a bad hand.

The core question of applying any of the various human abilities discussed in the chapter for purposes of game studies and design, comes down to the following: How are game systems able to measure, i.e. valorise in light of a performance via game mechanics, a given cognitive ability? If the system is able to measure it, and monitor the attaining of a goal based on this measurement, the ability is suitable for applying into a game. However, the methods of measurement have tended to take certain quantifiable aspects of the performance as the criteria for success: e.g., speed, order, volume, and so on. Once the measuring has had to focus on quantitative aspects, e.g. as in singing or dancing contests, or figure skating, the system has had to employ human proxies to conduct the evaluation. Let us have another example: If, for instance, there would be a game about writing fiction, which would require abilities not easily quantifiable, the evaluation would possibly be delegated to a host of judges or to other players (as with ideas for games in the The GameGame).

We could make general assumptions about which of the above-listed abilities are more frequently evident in gaming encounters, but rather than doing that, I will integrate the aspects of cognitive abilities and psychomotor abilities into practical analysis and design method with the goal categories (see chapter 6) and library of game mechanics (chapter 13). This kind of method, presented in part IV, gives a tool that enables at least two practical applications, which complement each other if so desired:

1) Analysing what kind of ability sets existing games emphasize, and possibly distinguish how broad or narrow the spectrum of abilities in existing games is.
2) Deliberately designing games for ability sets of certain constitution, e.g. one with pretending, verbal fluency, and visual memory, with goals and game mechanics that cater for these abilities, and thus knowingly privilege players with aptitude for these abilities. This approach would produce a multitude of applications in games that strive to be educational.

Towards enjoyment through cognitive and psychomotor mastery

We will close the perspective of cognition by bringing up some postulations from Bernard Weiner, whose attributional theory of motivation and emotion can be used to elaborate on certain aspects of motivation and games.

According to Weiner (1986, 2–3), in human behaviour there are two generators of causal exploration – i.e. finding out why something has occurred: 1) desire for mastery and 2) functional search. Weiner discusses these two in relation to the idea of homeostasis, i.e. the notion of a system that always tries to reach equilibrium (cf. discussions in chapter 5).

However, Weiner suggests that human behaviour by and large cannot be explained with the concept of homeostasis, because: ‘Humans often strive to induce states of disequilibrium: We ride roller coasters, read scary mystery stores [sic], seek new and exciting forms of entertainment [...]’ (Weiner 1986, 4.) This is something we have already touched upon and will continue to study in detail in the contexts of enjoyment and entertainment.

The consequence of Weiner’s theory for ludological purposes is the notion of cognitive mastery, i.e desire to understand the environment and oneself. According to Weiner, it is one of the most important ‘motive forces’ in human behaviour (Ibid., 6). Thus, cognitive mastery of a game system equals, on a high stratum, the desire to understand the game system and its elements’ relevance for attaining goals-of-self. In many cases, this includes engaging into pretend behaviour, as was discussed in the first half of the chapter. If we study the finer details of cognitive mastery over a game system, we will come across the cognitive, physical, and psychomotor abilities the game affords. Abilities relate to challenges, and thus they function as the low-level antecedents for ‘ludic’ enjoyment. Players’ efforts in mastery become embodied in their performances, which are made up of cognitive, physical, and/or psychomotor tasks. Designing player ability sets in relation to goals and game mechanics, then, is a way to design player effort – and, as a result, part of designing player experiences.

Another crucial premise that I will adopt from Weiner is his postulation that motivation cannot be understood without a detailed analysis of emotion (ibid. 9). Thus, we will proceed to detailed analysis of emotions in gaming encounters, and the observations will ultimately explain player motivations – for example: in hope of gaining what kinds of moods do players engage with game systems in gaming encounters? Before that, we will have to understand games in the broader contexts of entertainment and enjoyment.

CHAPTER 8: Entertainment, Enjoyment, and Pleasure in Player Experiences

Besides emotions, there are two related concepts with a capital E that should be considered when studying gaming encounters. They are enjoyment and entertainment. The next three chapters will draw a path through definitions and conceptualisations of both, as games arguably are a specific form of entertainment. Game systems exist in the form of products or events – or rule sets documented into folk tradition, but, whatever the means to engage with them, games nevertheless are supposed to afford enjoyment for those who engage with them.

In this chapter, I will discuss theories of entertainment, and how they define entertainment as a source of enjoyment. Pleasure is a concept related to enjoyment, emotions, and moods, and therefore we will discuss it as well. After reviewing existing theories, I will shift the focus to the process of enjoying entertaining media products and events. The premise will be that there are certain prerequisites for both the products and their users, in this case gaming encounters and players – and if the prerequisites are met, the experience of enjoyment will occur.

In chapters 8 and 9, the discussion will move to the particularities of gaming encounters as facilitators and sites of enjoyment. Player motives will be explored as well. This will necessitate a closer look into how enjoyment is construed during the experience through emotions and moods, i.e. the outcomes and consequences of a gaming encounter.

Entertainment as a source of enjoyment: Theories reviewed

What is entertainment, what is enjoyment, and how have they been conceptualized in research literature? According to Nabi and Krcmar's (2004) introduction to the subject, there have been a number of theoretical models about media enjoyment. These theories have mostly related to concepts such as disposition, parasocial interaction, involvement, and affect. However, Nabi and Krcmar argue that the concept of enjoyment itself has received less attention. According to them, 'media enjoyment likely reflects the intersection of a variety of factors, including cognitive, affective, social, and physiological elements'. (Nabi and Krcmar 2004, 285–6.)

Translated into the specific domain of games, the variety of factors referred to above certainly does not seem to decrease, as we have to look at sources of enjoyment from both mediated sources (from pen and paper to high technology, e.g., digital games) and non-mediated sources (e.g., sports games). Thus, it is not sufficient to discuss clearly distinguishable product units – e.g., individual works such as a piece of literature or film – when we discuss games. Gaming encounters are not always easily definable as centring on a tangible product on a shelf, but rather, the behaviour of a game system might get actualized through an event, e.g. as the case is with sports games, role-playing games or online games.

In layman's terms, entertainment is supposed to provide enjoyment. Enjoyment has been described, e.g., as a 'reception phenomenon'. According to communication scholars Bosshart and Macconi (1998, 3–4) this means that entertainment offers psychological relaxation, diversion, stimulation, fun, atmosphere, and joy. The etymology of the word entertainment goes back to Latin, where the word 'tenere' refers to keeping somebody busy or amused. From these origins, it is clear that there is a particular rhetoric of entertainment, consisting of narrative, performative, and other design techniques, which are all aimed at fulfilling the purpose of amusing and/or captivating.

As we have already gathered, entertainment serves improving or reversing one's mood. Thus, as a form of cultural production, entertainment can be seen as a cluster of stimulus arrangements that affords its consumers to regulate their states of excitation (cf. ibid.). The following passages on flow and transportation introduce two specific theories on this phenomenon in relation to entertainment experiences.

Enjoyment from Flow Experiences

The concept of flow was discussed briefly in chapter 5, but it warrants another perspective in relation to enjoyment. John L. Sherry has studied the relationship of enjoyment and flow, and more specifically how a flow state is achieved as a result of media use. He argues that 'enjoyment of media results from a flow experience realized when media message content balances with individual ability to interpret that message.' (Sherry 2004, 328.) In the context of games this argument would have to be complemented with taking into account a player's individual ability to *perform* with the particular demands of the game system, as a game system is always a particular medium in itself with its means of communication and interaction. This observation also highlights the nature of flow experiences as subject to individual variations. It means that it is difficult to find general guidelines for creating optimal flow experiences – individual variations in aptitudes, abilities, and skills always matter.

As was established in the previous chapter, games in general necessitate a certain skill and/or luck regarding the interaction, i.e. in performing of necessary mechanics for attaining goals. However, this does not contradict Sherry's statement according to which there are two factors that determine achieving flow: message difficulty and usage skills (Ibid. 333.) These two, when occurring in the appropriate relation during the use of a media product, or an activity, conform to the pleasurable 'flow sector' between anxiety and boredom that is usually referred to in discussions of flow (see, e.g., Salen & Zimmerman 2005, 351; Sweetser & Wyeth 2005).

Sherry bases his general argument on several notions that are useful to bring up here: First, he sees enjoyment as relief from overstimulation or understimulation. Second, according to him, entertainment 'is a multifaceted construct that emphasizes emotional pleasure, with media providing an escape to a fantasy world where emotions can be experienced'. Third, he sees entertainment as offering the types of gratifications that are both arousing and relaxing. Entertainment can also be used to 'filter out the cares and concerns of everyday life'. (Sherry 2004, 330.)

The apparent contradiction of relaxation, on one hand, and arousal, on the other hand, taking place simultaneously, seems to be the very paradox that makes entertainment enjoyable, and as we saw, conceptualising pretence opens up another perspective to this paradox. As Sherry's arguments suggest, the ability of media to function as facilitators of escapism is an important factor, and Bernard Weiner's views referenced in the end of the previous chapter support this argument. In the context of games, the escapism is anchored to the substitution of life-goals with game-goals, and there often is also an associated transformation of self into a player role for the duration of the gaming encounter. These both frame the gaming encounter with fantastic nature and give room for emotional experiences out of the ordinary, or, for emotions of amplified intensity. The fact that playing a game is always, more or less, a goal-orientated activity means that games tend to provide a relief from understimulation rather than overstimulation. Games that offer relaxation in the very act of playing, i.e. games that offer very few stimuli and thus necessitate the use of any abilities, are rare.

Transportation theory as theory of entertainment

The 'as-if' quality of entertainment and fiction has been referred to already a number of times. To complement our understanding of this phenomenon and its apparent ability to induce enjoyment, we will look at a theory that attempts to explain 'as-ifness' in terms of communication theory. Communication scholars Green, Brock and Kaufman have developed the theoretical concept of *transportation* to describe 'an experience of cognitive, emotional, and imagery involvement in a narrative' and to provide better understanding of 'why and how enjoyment occurs in response to media'. (Green et al. 2004, 311–2.)

The theory starts from the premise that transportation is a desirable state sought by individuals, and that a failure of transportation is seen as flawed media experience (Green & al, 314). It would thus seem that transportation necessitates achieving a certain degree of flow state. Transportation theorists argue it likely that the ability to become transported into other worlds is as fundamental as narrative is as a mode of thought, i.e. as a form of structuring information that appeals seemingly to everyone from childhood onwards (ibid. 316.) Green and her colleagues indeed see fictional narrative as a particularly effective means to induce transportation.

I believe it is worth to study transportation theory and its benefits for understanding player experiences, especially as the theory suggests that 'the psychological ingredients of the transportation experience are assumed to take place regardless of modality of communication' (ibid. 312). This means that transportation as a concept enables the application of a broadly ludological perspective across media and technology: Transportation may be induced with modalities ranging from speech to writing, and from sound to three-dimensional computer graphics. This does not rule out the possibility that a particular medium or a technology, with the subsequent modalities it enables in configuring a game system, is better in effecting one type of transportation than another (cf. ibid). Or, it might mean that a different set of modalities – e.g. speech vs. computer graphics – produces a different experience of transportation as it frames and configures the gaming encounter in a particular way.

Besides the suitably generic nature of transportation for applied ludology, the notion of persuasion is important for transportation theory. It provides another intersection for the theories formulated here (on game elements and player experience). Green and her colleagues write:

> Transportation itself is a tripartite formulation (attention, imagery, feelings) of persuasive communication that entails constructs well-known to communication theorists, including absorption and identification […] (Ibid. 312)

This is also important in distinguishing transportation from enjoyment: Green et al. write that whereas both transportation and enjoyment denote emotional investment and desired states, the two constructs differ in significant fashion in that 'transportation is thought to leave the experiencer's beliefs and perceptions changed in some measurable way, whereas enjoyment does not imply measurable change' (Ibid., 313). In practice this means that transportation is not necessarily always enjoyable, but rather, it may elicit emotions of fear and danger, and also start a process of questioning of one's beliefs. Hence, transportation seems to be a strong contributor to enjoyment, but not identical to it (ibid., 314). The conclusion would be that so-called 'serious games' with an educational and/or persuasive agenda tend to privilege transportation rather than enjoyment.

Transportation theory helps to specify mechanisms underlying enjoyment with three aspects (ibid. 312):

- the phenomenological experience of enjoyment through immersion in a narrative world,

- enjoyment through beneficial consequences of media exposure, and
- the circumstances under which enjoyment is enhanced or reduced.

These three aspects are addressed in *Games without Frontiers*, respectively,

1) through the theory of player experience as the phenomenological experience of enjoyment through interacting with a game system,
2) the consequences of being exposed to a gaming encounter where interaction is motivated and governed with particular game rhetoric, and
3) the behaviour of system and the gaming encounter as its frame as circumstances that either enhance or reduce enjoyment.

It is noteworthy that Green et al. fail to discuss games as effective transporters – they even argue that non-narratives do not create alternative worlds (ibid., 313–4). In light of previous chapters and the theory formulated in *Games without Frontiers*, I do not find this a valid argument – games are, indeed, world-building activities through their systemic and metaphoric nature. They do not necessarily take advantage of narrative techniques in particular, but rather, of techniques of communication, such as rhetoric, metaphor, and information visualisation. Therefore the task is to understand – and possibly modify – transportation theory in terms of ludology and the theories of game elements and player experience. I will return to this in the next chapter.

Entertainment as the Experience of Pleasure

Before embarking on studying the process of enjoying entertainment, we will look at the concept of pleasure from a psychological perspective. According to emotion theorists, pleasure has been largely neglected in psychological research, even though it has been discussed under different names, such as satisfaction, positive emotion, and hedonic tone. Moreover, it has appeared in psychological literature ever since Freud's pleasure principle. Still, few if any definitions exist. (Russell 2003.)

Thus, we have to work on synthesizing different perspectives on the subject. In their discussion of the definition of entertainment, Bosshart and Macconi (1998, 5) summarise that entertainment equals pleasure, i.e. entertainment is the experience of pleasure by witnessing or being exposed to something that has been deliberately crafted or arranged for the very purpose of entertaining. They cite four general subcategories of pleasure that can be found in entertainment as well: 1) pleasure of the senses, 2) pleasure of emotions having to do with self, 3) pleasure from personal wit and knowledge, and 4) pleasure from social emotions such as identification or empathy. Bosshart and Macconi conclude that the four pleasures can be broken down into three subsystems of human beings:

- physical system referring to materiality and existence, i.e. *being there*
- psychological system referring to emotions and cognition, i.e. *being thus*
- social system referring to sociality and coexistence with others. i.e. *being with*. (Ibid.)

Entertainment, then, is the experience of pleasant stimulation of these subsystems, and Bosshart and Macconi also discuss its relation to dreams, hopes, and play. As a result, they state that entertainment is experienced through an 'as-if-world' that is different than the actual world but linked to it. This discussion corroborates the notions of magic circle, pretence and metaphor in gaming encounters.

Next, we will take a look at other conceptions of pleasure. A pair of researchers, Laurette Dubé and Jordan L. Le Bel (2003), has conducted a number of empirical studies where they tried to find out what are layperson's conceptions of pleasure. They address two positions from which pleasure has been conceptualised: pleasure as a unitary vs. pleasure as a differentiated phenomenon. The differentiated position is based on valence and hedonic tone, two concepts related to emotions and feelings, and it is akin to a summary judgement an individual makes on how good it feels to interact with an object. In the unitary view, pleasure is a dimension that underlies all human emotional experience. (Ibid. 265.)

The differentiated position contends the unitary view in proposing that there are a number of different types of pleasures. As it is quite evident that there are different types of games, and consequently at least different nuances of pleasure in engaging with games, the differentiated position seems the viable option for our purposes. This premise seems valid also because different kinds of games require different kinds of prerequisites from players – e.g., abilities that develop into skills – in order to be enjoyable. Dubé and Le Bel address a number of modern typologies of pleasure, e.g. a four-fold typology by Lionel Tiger that Patrick W. Jordan has adapted to his theory on pleasure-centred product design methods. This typology consists of physio-pleasures, psycho-pleasures, socio-pleasures, and ideo-pleasures (Jordan 2000, 12–14).

Studies of Pleasure

As the above and other typologies lack empirical validation, Dubé and Le Bel embarked on empirical studies to test their validity. They set out to prove that 'pleasure is a hierarchical concept in which differentiated pleasure types are subsumed under a higher level unitary form of pleasure' (Dubé and Le Bel 2003, 267). In the context of *Games without Frontiers*, this would mean that games as particular systems have common unified forms of pleasure, e.g., such as the pleasures of challenges and competition, but also differentiated types according to game genre and technology, for instance.

What is important to note here that it can not be taken for granted that a categorical arrangement of pleasures corresponds to people's experiences of them in everyday life, or in games, for that matter. Dubé and Le Bel propose a solution:

> Building on prior work on the categorisation of emotions, we propose that pleasure may be represented in the layperson's mind in one of two ways: either as taxonomy composed of various subtypes of pleasure, or as an emotional response category grouping diverse pleasure antecedents. (Dubé & Le Bel 2003, 268.)

In the light of this, we can say that players would recognize a game, via an experience of its system behaviour, either belonging to a pleasure subtype, or a combination of them, or treat a game as belonging to an emotional response category, due to the antecedents it contains. This leads to either a 'games as pleasure X' or a 'games with certain pleasure antecedents as emotional response categories' approach. Some of the existing typologies on game-related pleasures, e.g., by Marc LeBlanc, present the first approach, while others, e.g. by Nicole Lazzarro, present the latter. We will review these and other typologies in the next chapter, and proceed to define pleasure antecedents based on eliciting conditions with structural similarities.

Dubé and Le Bel propose a pleasure category with a hierarchical structure, where unitary representation of pleasure resides at the highest level, and the representation differentiates itself into 'subgroups of pleasure instances, either explicitly labelled as subtypes of pleasures or implicitly grouping antecedents sharing some experiental affective qualities.' This solution hopes to provide understanding of the power of pleasure in human behaviour without reducing the complexity of the world into binary oppositions, i.e. that there are stimuli that we avoid or approach based on whether they make us feel good versus bad. Dubé and Le Bel state that the emotional qualities that are common to unitary pleasure, as well as the differentiated types, are likely to reflect clear approach tendencies, i.e. predispositions regarding the recognized pleasures and their antecedents. Moreover, common qualities will not involve complex appraisals, whereas emotional qualities associated uniquely with differentiated pleasures may entail more diversified tendencies and appraisals. (Dubé & Le Bel 2003, 269–71.) Thus we might suppose that challenge and competition, for example, are common qualities and more or less taken for granted in a gaming encounter, but in order to be understood, the more intricate nuances of various pleasures that they govern have to be studied with detailed method of how players experience sequences of emotions within a gaming encounter.

In Dubé and Le Bel's five case studies, games – computer games especially – were frequently mentioned as antecedents of pleasure, and associated with pleasure, but not nearly to the extent that the more abstract antecedents, such as success, knowledge, sex, and money, were mentioned. However, this can be due to the low cultural status of games. As we know, games can (and often do) also support the more abstract antecedents mentioned, such as success or knowledge (as gained from attaining goals).

Four Categories of Pleasure

The studies yielded a hierarchical cluster analysis where Dubé and Le Bel grouped 60 pleasure antecedents gathered from informants into four types of pleasure (Ibid. 277–84). They are listed below with their important qualities:

- *Intellectual pleasure*: This type presented the largest number of different emotional qualities when compared to general unitary pleasure. It was associated more with sadness, and less with altruism, caring, and warmth.
- *Emotional pleasure*: Marked with more relief, more sadness, more greed, and more guilt than general unitary pleasure.
- *Social pleasure*: Associated more with energetic feelings, but with less love and less peaceful emotions than the emotions associated with general unitary pleasure.
- *Physical pleasure*: Characterised by more energetic feelings and less accomplishment, less pride, and less happiness, than general unitary pleasure.

Physical and Intellectual pleasures were the most clearly differentiated, i.e. they seemed to have a set of unique affective qualities. Intellectual and Emotional pleasure displayed more sadness, self-esteem, and self-confidence than Physical pleasure, which was distinguished by heart-pounding and horny emotions. Social pleasure was associated with less love and peacefulness and accomplishment than emotional pleasure, but with more altruism, caring, joy and happiness than intellectual pleasure. A significant finding was that it is to be expected that people's approach trajectory towards antecedents of intellectual and emotional pleasures may be more complex and less straightforward than for antecedents of physical pleasure (ibid. 291). In the light of games, this raises the question of whether games having to do with sports and exercise are inherently more 'casual', i.e. easier to approach, than games that are associated with intellect (e.g., Chess) and/or emotions (e.g., certain types of role-playing games).

Another, unsolved question is how do pleasures combine, i.e. can one simultaneously experience intellectual and physical pleasures? According to Dubé and Le Bel empirical answer to such questions, this would require better understanding of 'when and how distinctive experiential qualities of differrentiated types of pleasure combine into a single, unitary summary that eventually guides judgement and behaviour'. As of yet, how human brain handles combinations of pleasure is not known. (Ibid. 292.)

The four pleasures in gaming encounters

In the light of this discussion of entertainment, I see the task of *Games without Frontiers*, and game studies in general, to analyse the prerequisites and consequences of enjoying activities in the physical, psychological, and social subsystems (as discussed by Bosshart & Macconi) and their intersections, as facilitated by game systems.

As a hypothesis, I would suggest that different game genres emphasize the subsystems in different ways: Game systems which privilege character-of-self as the component-of-self, e.g. role-playing games, tend to privilege the psychological subsystem of 'being thus' and subsequently tend to privilege emotional pleasures. Sports games privilege the physical system ('being there') and physical pleasures associated with performing psychical abilities, yet especially in team games the social system ('being with'), and the associated pleasure type, is inevitably present. The point is that seldom does any of the subsystems remain completely absent, which means that game-related pleasures are usually multi-faceted and complex in nature. In addition, the set of cognitive, physical, and/or psychomotor abilities that a game requires is in significant role as far as antecedents go. Dubé and Le Bel echo this complexity, when they state their main conlusion: 'pleasure is at the same time of one and of many kinds' (Dubé & Le Bel 2003, 293).

Overall, it would seem that pleasure is a rather abstract phenomenon, which means that our focus should shift to its antecedents, i.e. the detailed nature of the process where seeds of pleasure are sown. This necessitates moving on to conceptualising various takes on the process of how entertainment breeds enjoyment to those who engage with it. We will, however, return to the concept of pleasure and its variations, e.g. between pleasures of the mind and the body, as suggested by Michael Kubovy (1999), in the following chapters.

The Process of Enjoyment in Entertainment Experiences

Next, we will discuss the process of enjoying entertainment: its prerequisites and consequences (e.g. pleasures and moods). In their research for the heart of media enjoyment, Vorderer et al. (2004) start from a following premise that is validated by the above discussions: most entertainment experiences are complex, dynamic, and multifaceted in nature.

Vorderer and his colleagues' premises are evident in their interpretation of Zillman's mood management theory (see discussion in chapter 5). They understand mood management theory as explaining only the need for experiences of positive hedonic tone, and thus, according to Vorderer et al., the theory neglects the complexity of entertainment experiences. In my interpretation (as evident in the said chapter), mood management theory does acknowledge the pursuit for better mood through negative emotions, such as tragedy. However, Vorderer et al's pursuit for a more thorough understanding of entertainment experiences is certainly called for, and thus I will draw from their theory as I have drawn from Zillman's earlier in chapter 5.

Model of Complex Entertainment Experiences

The theory by Vorderer et al is crystallized into a 'model of complex entertainment experiences'. The model can be summarized as follows: When user prerequisites, motives, and media prerequisities combine, they lead to enjoyment that manifests in various emotions, pleasures, and moods. These lead onwards to certain effects, such as so-called excitation transfer and learning. (Vorderer et al 2004, 393–403.)

Vorderer and his colleagues (ibid. 394) answer to the need for a more complex model with the theory of 'metamoods' (see Mayer & Gaschke 1988). Metamood accounts for a mental process where individuals experience unpleasant emotions on the object level, but also positive emotions and enjoyment on a meta-emotional level. This is done to achieve other goals and purposes, such as being entertained, and it relates to the paradox of simultaneous arousal and relaxation discussed in the beginning of this chapter. In the context of game systems, this kind of meta-emotional level can be found, for example in relation to a player's standing in a game: a player is losing a game yet still finds the gaming encounter generally pleasing. This may be due, e.g., to the enjoyable social interaction that manifests in the gaming encounter, or interest in the theme of the game, which makes success secondary to more general, over-arching antecedents of enjoyment in the gaming encounter.

I will follow Vorderer and his colleagues' model of entertainment experiences, i.e. that there always exists user prerequisites, such as skills and abilities, and motives to engage into an entertainment experience, whether it is facilitated by a product (e.g. a film, a book, or a video game), or an event (e.g., a theatrical performance, or a sports game). The product or event has certain formal qualities in itself which shape the entertainment experience. These formal qualities can be, for example, a configuration of game elements according to a rule set. As a result, they make up a game system with behaviour of particular quality, leading to particular nature of player experiences; particular emotions, pleasures and moods experienced.

The user prerequisites and media prerequisites go on to interact in order to potentially produce enjoyment. Enjoyment manifests as emotions and pleasures that may lead to emotional states of longer duration, i.e. to moods, and so-called excitation transfer where the emotional state is carried into other activities, or it circulates back to the game for 'another go' – nevertheless, the emotional state subsequently affects also activities that follow. In this way, the basic need for mood management is achieved. In the same process, there is a chance for learning. This reminds us about the aspects of transportation discussed earlier, and its uses for pedagogic rather than entertaining purposes.

Motives and prerequisites to be entertained

In order for the user prerequisites to ever interact with media prerequisites, and manifest as emotions and pleasures, there needs to be the motive to engage with the entertainment product or event itself. In the terms of the thesis, the gaming encounter has to take place as a facilitator of interaction.

The motives of users to be entertained equal the needs that s/he hopes to be satisfied by the gaming encounter. Vorderer et al. (2004, 399) discuss motives as 'states that individuals aim to realize', and list escapism, mood management, achievement, and competition as general motives to be entertained. They write:

> the enjoyment that lies at the heart of the entertainment experience is a product of numerous interactions between motives to be entertained and conditions of this experience on both the media user's and the media's side. (Ibid., 401.)

They also question the applicability of mood management to interactive media: They suggest that selective exposure to interactive entertainment products, such as computer games, is initiated by motives related to achievement rather than relaxation or idleness (ibid. 400). This argument illustrates that Vorderer et al. interpret mood management to function on the same level of choice as motives: According to this logic, 'being in the mood for competition' (i.e. something implicit to such entertainment as games) equals 'making choices that deliberately hinder other player's chances of succeeding', i.e. a motive that manifests into a particular strategy within the game.

I think this logic needs to be challenged: I believe that mood management is valid to explain why certain game (or generally entertainment) genres are, via an acquired taste, chosen over others – to facilitate competition (as an antecedent of pleasure) in general, rather than that desire for competition would be mutually exclusive with mood management. Vorderer et al. actually voice this kind of view when they discuss the role of pretence in breeding enjoyment:

> [P]eople's constant wish for entertainment does not compete with but rather *frames* the above mentioned notions and theories about the selection of specific entertainment products. (Ibid. 402, italics by AJ.)

With games, it is the gaming encounter and what the players bring with them to it that completes the framing.

Vorderer et al (ibid., 396–7) observe the following user prerequisites for entertainment in general: Willingness and ability to suspend disbelief, affinity and empathy with characters, capacity and desire to relate to characters and personae, presence (i.e. sense of being in another place), and interest in a specific topic, problem, or knowledge domain.

These are all valid in the context of the specific entertainment known as games. We will return to their specific relation to gaming encounters and player experiences in the next two chapters.

Manifestations and outcomes of enjoyment

Transportation theorists Green et al. (2004) pay attention to the importance of what they call 'situational influences on transportation-based enjoyment', i.e. there may be circumstances that prevent readers from being fully immersed in a narrative world, and thus media enjoyment is reduced (ibid. 321). These can just as well be circumstances derived from game system contexts, such as ill will between players, but also circumstances elicited by the design of the game systems, such as rule complexity or rule omissions, uninspiring goal rhetoric, or programming errors in computer and video games. Needless to say the felt consequences of such circumstances may vary considerably between individuals, and individual gaming encounters.

If prerequisites are met, enjoyment is more likely to manifest through the aesthetic experience of engaging with entertainment. But what are the manifestations? According to Vorderer et al's theory of entertainment experiences, general manifestations of enjoyment during an entertainment experience include serenity, exhilaration, suspense, thrill, fear, relief, sensory delight, sense of achievement, control, and self-efficacy. These present enjoyment that varies according to the type of entertainment on offer, i.e. exhilaration is evoked by comedy, whereas suspense is the result of enjoying drama and, e.g., computer games can provide enjoyment from sense of achievement and control. (Vorderer et al 2004, 394–5.)

In connection with transportation theory, Green et al. discuss the aspect of manifestations under the 'benefits of transportation' that individuals interpret as enjoyment. They list three specific forms: First, there is enjoyment through escaping the self, second, there is enjoyment through transformation, and finally, there is enjoyment through connection with characters. (Green & al 2004, 317–8.) In their article on the definition of media entertainment, Bosshart & Macconi (1998, 4) present similar findings as the above theorists. According to Vorderer et al. other outcomes of enjoying entertainment include comprehension and learning, as useful effects of being entertained, and Green et al. echo this by their notion of transportation being persuasive. I will return to the similarities and specific transformations of these manifestations in the context of gaming encounters later.

Manifestations are seen as immediate outcomes during the entertainment experience, but there are more lasting consequences as well. Vorderer et al discuss these with the help of Zillman's excitation-transfer theory. It basically states that physiological arousal accumulated during exposure to entertainment does not drop immediately, but sinks rather slowly towards the end of the experience (Zillman 1995; Vorderer et al. 2004, 402). This transfer of excitation is seen as a process that underlies the experience of relief or even salvation as an outcome of engaging with entertainment, and it contributes to the mood that ultimately results from the experience. The immediate consequences of excitation transfer in the context of games are for so-called re-playability, i.e. whether the player or players are willing to 'have another go'. It would seem that excitation transfer is achievable, e.g., through 'near misses', curiosity induced by a narrative arch or exploring a virtual world, and pleasurable degree of anxiety introduced to disrupt flow by, e.g., incremental rise in the difficulty level of the game (complexity of challenges, more skilful opponents, etc.).

Techniques of creating transportation and enjoyment

In addition to user prerequisites, Vorderer et al (397–9) discuss prerequisites on the media's side, i.e. the craftsmanship, content, and design that interact with user prerequisites. Similar aspects of aesthetic objects have been discussed also by Cupchick (2001), Green et al. (2004), and Sherry (2004). In the realm of games, these issues correspond with the fundamental question of what makes a 'good game', and how to design one.

Media psychologist Gerald Cupchick has discussed aesthetics and emotion in relation to entertainment media. He asserts that artistic acts of creation are about transforming or modulating of relational formal qualities (such as hue, tone, and texture in a painting, or script, editing, and direction in a film) of a work of art, and thus embodying a feeling into the work (Cupchick 2001, 71–2). He writes: 'It is the plasticity of relational qualities and the feelings attached to them that provide a basis for the expression of emotion in a works of art', and

> [b]y monitoring modulations of feeling produced by changes in relational properties of the artwork, the artist can fine-tune the expressive quality of visual effects that he or she wishes to produce. (Ibid., 71 & 76.)

This opens up the question of how to design the embodiments of rules into game elements, and how to design their interaction so as to create a game system. The goal of *Games without Frontiers* is, on one hand, to understand how psychological principles can be extracted from a game by means of analysis, and on the other hand, how to take advantage of understanding the fundamentals of player experience – such as emotions and their eliciting conditions – in game design. Consequently, the general question adapted from Cupchick's premises is: How to embody feeling into game systems (a question of design); How is feeling embodied into a game system (a question of analysis)?

Detail and form as factors in transportation

Transportation theory echoes Cupchick's views in acknowledging that transportation requires certain skills from the producers of media content. This 'craftsmanship in creating enjoyment' may involve the use of stylistic techniques, ability to maintain diegetic coherence, and other widely accepted virtues of an enjoyable narrative. According to the studies by Green and her colleagues, 'The presence of rich detail leads to greater transportation and enjoyment', i.e. detail presumably allows for more vivid mental imagery and/or feeling of being closer to or more knowledgeable about characters (Green & al 2004, 320). This might translate directly to games with characters, especially in video games, but detail can also be understood as game system complexity, e.g., game environments with rich detail. Or, detail can be understood as the game system's intricateness in simulating and representing something as a dynamic whole, i.e. as something that entails complex and detailed game system behaviour. Presumably this can have consequences, such as heightened stimulation concerning planning for attaining goals, for instance. Whatever the case, transportation might be heightened if the players' treat the system both as an agent and an object (rather than solely as an object).

John L. Sherry discusses the role of media content itself as a differentiating factor between audience segments. Media content that departs from conventions, e.g. by departing from formal characteristics of the medium or a genre, is more difficult to comprehend, and thus attracts specialised audiences rather than large masses. This departure from form can take place either by 'purposeful violation of conventions to push the medium' or 'lack of competence in the use of the medium language' or using 'formal characteristics that have fallen out of use' (Sherry 2004, 333–4).

This leads to the well known 'hit formula' where familiarity and freshness are in a balance, yet some challenge or struggle in media use tends to remain a prerequisite, as formulas that are trite lose their ability to challenge users; users seek familiar form but novel content (Ibid. 334–6.) that is related to pleasurable levels of arousal, as, e.g., reversal theory argues (Apter 1989, see also Kubovy 1999).

To conlude with, discussing the 'media prerequisites' and techniques of creating them essentially brings up questions of design. In the light of the goals of *Games without Frontiers*, this moves the focus towards design research. The path to that direction entails studies in game-specific enjoyment and player behaviour – two topics that we will tackle next.

CHAPTER 9: Motives and Pleasures in Game Play

How does enjoyment manifest in gaming encounters in particular? In layman's terms, we play games because they are supposed to be 'fun'. What does that mean? Is losing fun, really? Can we discuss games and their pleasures with more nuanced terms? What kind of moods do people seek when starting a game?

In this chapter I will look at what establishes games as entertainment that breeds 'ludic' enjoyment with traits and means that are particular to games – even though games might yield benefits and pleasures from similar antecedents as other entertainment products and events. The overall premise, in relation to the previous chapter, is that player experiences are a subset of entertainment experiences – however, with the reservation that an entertainment experience is not necessarily always unambiguously pleasant but rather, the enjoyment experienced might function at the level of metamoods as discussed in the previous chapter. Hence, underneath the agony of losing, being scared, or shouting in anger, the player might enjoy the gaming encounter.

Reinterpreting enjoyment in gaming encounters

What has been discussed above as enjoyment has been conceptualised within the discourse of game design (especially computer and video game design) as forms of 'fun' or various kinds of pleasures. Next, I will review these categorizations and consider them in relation to the academic theories introduced earlier.

Game designer Marc LeBlanc has defined eight forms of pleasure that games give birth to (Leblanc 2003, Hunicke et al 2004, see also Costikyan 2002). This is the aesthetic part of the 'MDA' framework (Mechanics, Dynamics, Aesthetics). The different aesthetics are explained as follows: 'Aesthetics describes the desirable emotional responses evoked in the player, when she interacts with the game system.' (Hunicke et al. 2004.) The eight different aesthetics are listed below:

- *Sensation*: Game as sense-pleasure
- *Fantasy*: Game as make-believe
- *Narrative*: Game as drama
- *Challenge*: Game as obstacle course
- *Fellowship*: Game as social framework

- *Discovery*: Game as uncharted territory
- *Expression*: Game as self-discovery
- *Submission*: Game as pastime.

These are rather intuitive and self-explanatory, so I will not analyse them in detail, as my purpose is to present a synthesis of various categorizations. Others include Pierre-Alexandre Garneau's 'Fourteen forms of Fun' and 'Four Keys to More Emotion in Player Experiences' as introduced by Nicole Lazzaro. Garneau's (2001) categories are: Beauty, Immersion, Intellectual Problem Solving, Competition, Social Interaction, Comedy, Thrill of Danger, Physical Activity, Love, Creation, Power, Discovery, Advancement and Completion, and Application of an Ability. (See also Rouse 2001, 2–8.)

John L. Sherry (2004, 338), whose work on flow experiences was discussed earlier, distinguishes a set of video game uses and gratifications. I have summarized them with quotations below:

- *Competition*: 'to prove to other people who has the best skills and can react or think the fastest'
- *Challenge*: 'to solve the puzzles to achieve goals such as getting to the next level or beating the game'
- *Social interaction*: 'to use video games to interact with friends and learn about the personalities of others'
- *Diversion*: 'the use of games to avoid stress or responsibilities and to fill time, relax, escape from stress, and/or because there is nothing else to do'
- *Fantasy*: 'to do things that they normally would not be able to do, such as drive race cars, play professional football, or fly'
- *Arousal*: 'the stimulation of emotions as a result of fast action and high quality graphics'.

To make sense of these competing results, I have chosen to relate them to the four general categories of pleasure by Dubé and Le Bel (2003) as introduced in the previous chapter. This division between intellectual, emotional, social, and physical pleasures is presented in the table below:

	Four categories of pleasure (Dubé & Le Bel 2003)			
Reference	Intellectual	Emotional	Social	Physical
LeBlanc	*Challenge* *Discovery*	*Fantasy* *Narrative* *Expression* *Submission*	*Fellowship* *Expression* *Submission*	*Challenge* *Sensation* *Expression*

	Four categories of pleasure (Dubé & Le Bel 2003)			
Lazzaro	*Fiero* *Mystery*	*Fear* *Surprise* *Fiero* *Wonder* *Awe* *Excitement* *Relief* *Anger & Frustration* *Boredom* *Amusement*	*Naches* *Schadenfreude*	*Fear* *Disgust* *Performance* *Spectacle*
Garneau	*Intellectual Problem Solving* *Advancement and Completion* *Discovery* *Application of an Ability*	*Beauty* *Immersion* *Comedy* *Thrill of Danger* *Creation* *Power*	*Competition* *Social Interaction* *Love*	*Physical Activity*
Sherry	*Competition* *Challenge*	*Diversion* *Fantasy* *Arousal*	*Social interaction*	*Competition* *Challenge*

Table 9. *Game-related pleasures in the context of Dubé and Le Bel's four categories.*

As the above indicates, there are a number of models trying to capture and conceptualise the pleasurable aspects of player experiences. If we evaluate these models in light of each other, I find Garneau's typology less useful than LeBlanc's, as the former can be criticized with exactly the same logic as game genre definitions: how does 'discovery' differ from 'advancement and completion', for instance? What about 'Physical activity' vs. Application of an Ability'? LeBlanc's typology is more valid, but still I think it overlooks certain pleasures to be gained from the wide world of games.

The benefit of Lazzaro's model over, for instance, LeBlanc's categories is that, first, it has empirical validation, and second, it manages to articulate especially the context-related antecedents of enjoyment when playing games in a more nuanced and complete fashion. Its weakness is perhaps, in academic sense, quite ambiguous descriptions of emotions. Still, the benefits for game design practice are obvious, and the study does validate some general observations of what makes games attractive. For example, Lazzaro describes the attractiveness of condensed goal hierarchies by stating that '[g]ames offer an effiency and order in playing that they may lack in life' (ibid.). Thus Lazzaro's model warrants closer inspection.

Design-driven keys to game enjoyment

Lazzaro defines four aspects of games that players supposedly respond differently to:

> There are four aspects of games that people respond to and each creates a different component of the player experience. Reactions to these aspects combine to produce different emotions such as Amusement in Mario Kart and Fear in Halo. All other Keys to player emotions use these product attributes to change how a player feels. (Lazzaro 2004.)

The four aspects, with typical antecedents, are listed below (ibid.):

- Visceral: Automatic reactions to appearance, sound and other perceptions.
- Behavioral: Reactions from interacting with the product.
- Cognitive: Reactions from ideas, memories, and association with the product.
- Social: Interaction with other players feeds back to all layers creating more fun.

Lazzaro's empirical study of players leads to a design-driven theory of four 'keys to more emotion in player experiences'. I have summarised the main aspects of the keys below:

- The Internal Experience Key: This key focuses on how aspects external to game, i.e. the gaming encounter, evoke emotions in players. Lazzaro uses a number of descriptions for the key, ranging from emotions evoked by cognitive experiences such as ideas, memories, and learning to emotion from social experiences, such as trash talking, competition, and cooperation.
- Hard fun: The Challenge and Strategy Key. This key is used to evoke 'emotions from meaningful challenges, strategies, and puzzles' and the struggle towards goals and monitoring them. This key also relates to LeBlanc's notions of pleasure from masochism, i.e. 'enjoyment of negative emotions: enjoying things that inspire objectionable, disgusting, or shocking emotions'.
- Easy fun: The Immersion Key. This key centres on 'sheer enjoyment of experiencing the game', i.e. privileging engagement into the gaming encounter rather than keeping constant check on victory conditions and goal progress, as 'game emotions of easy fun are less about the goal and more about the pleasure of experiencing, operating, and thinking about its significance'. With the emphasis on immersion, this key relates also to the gratifications from transportation and presence, and overlaps with the social experience

key (see below) with 'engagement in interaction between people, such as talking, jostling, dancing, and eating with others'.

- Other players: The Social Experience Key. As the title suggests, 'players using this key see games as mechanism for social interaction' which inspires competition, performances, and teamwork. Lazzaro claims that 'playing games in social contexts intensifies player emotions and adds content'. According to Lazzaro's study, players in same room demonstrate more emotional displays, more energetic responses, and more types of interaction. Thus, emotions from performance and spectacle will occur, as well as 'emotions from modifications, group meta games, rituals, house rules, and secrets'.

Overall, the purpose of reviewing these slightly varying categorisations is not to arrive at a synthesis with definitive categories. I believe it is not even possible. Rather, the similarities among the theories – which there are many – illustrate that there are invariant sets of different forms of enjoyment and pleasure to be gained from gaming encounters, and these sets can be organised into clusters, e.g., according to Dubé & Le Bel's pleasure categories (as in the table above). The key is to proceeed on to more detailed understanding of how exactly do game elements and their configurations into game system behaviour elicit pleasures.

Let us reflect on forms of enjoyment that are supposedly specific to gaming encounters when considered in the context of entertainment experiences in general. In Vorderer et al's theory of entertainment experiences, general manifestations of enjoyment, and the nature of their sources include (Vorderer et al 2004, 394–5):

- Serenity, exhilaration – through comedy.
- Suspense, i.e. thrill, fear, and relief – through drama.
- Sensory delight or pleasure of the senses – through aesthetically appealing media offerings.
- Sense of achievement, control, and self-efficacy – through (computer) games.

Even though all of these can be found to manifest in gaming encounters, it is the last category that seems the most particular to games. Thus we will discuss pleasure antecedents such as challenge, competition, effectance, transportation, cognitive mastery, in more detail in what follows.

Challenge and competition

John L. Sherry's studies on flow experiences are interesting to us especially in light of his ludological exercise, where he proceeds from the flow theory to a particular form of entertainment that gives birth to enjoyment: video games. He posits the source of enjoyment in video games to the goals they present: ‘Clearly, the appeal of video games results predominantly from the challenge of solving the puzzle presented in the game.’ (Sherry 2004, 338.) To back his theory, Sherry also cites Grodal’s (2000) views, according to which fascination of video games can be attributed to the ability of players to control the game in terms of outcomes, the speed at which the game progresses, and mastery of the game or mastery over other players.

According to this line of thought, video games are tools for emotional control, i.e. desired arousal levels can be maintained through playing (Sherry 2004, 338–9). These views are in line with Vorderer et al (2004, 400), who argue that, in the context of interactive entertainment such as games

> the wish to be challenged […] to compete with others […] or even with one’s own previous achievements (i.e., score) is probably the single most important motive for interactively entertaining oneself.

Effectance

Within competition, and struggling with the challenges it presents (as defined by goals in the rule set and embodied into game elements), there seems to exist a source of enjoyment in itself. Enjoyment might also result from an act of perceiving that one’s actions have effect on the surroundings, and this might even be trivially simple, e.g. drawing in sand with a wooden stick, or bouncing a ball, or being able to move a character in a video game.

Effectance is a concept from social theories of cognition that can be used to explain this phenomenon. It has attracted few applications for the study of games, and the concept has its problems (see Bandura 1997, 13–15). However, in his study of the enjoyment of digital games, Christopher Klimmt (2003) borrows the concept and discusses it as the experience of having attained impact on the surrounding environment. As suitably descriptive as the concept might be, the argumentation suffers from the fact that Klimmt does not directly mention goals, i.e. how playing games is a goal-directed activity, and thus any kind of effectance there emerges, it is both motivated by goals and evaluated in terms of goals, as we have gathered in chapters 5 and 6. Moreover, the monitoring process related to goals is essentially a process where the individual monitors whether there is effectance or not. In particular the question is whether there is impact on the game world that takes the player towards attaining goals.

Klimmt does refer to events such as resolutions, and the experiences of suspense and relief associated with them, but still, the unequivocal concept of a goal does not enter the argument. (Klimmt 2003, 250–1.) Even though Klimmt makes many relevant observations about the motivating factors present in digital games, the problem in my interpretation is that without considering them in light of goals they might just as well be expanded to describe pleasurable activities in the use of any kind of interactive media products (chat rooms and channels, software toys such as virtual pets, etc.). Thus the arguments would not be particular to games, even though Klimmt studies them as such. In other words, his discussion of effectance can be seen as one focusing on digital media entertainment in general – something that the other theorists discussed also touch upon.

In any case, Klimmt distinguishes the experience of effectance, cyclic feelings of suspense and relief, and the fascination of a temporary escape to alternative reality as key dimensions which explain the enjoyment of digital games. These do not contradict those that have already been observed here.

Klimmt also proposes a three-level structure of the playing process, where general playing activity is divided into episodes with input/output loops. Within the episodes there exists 1) possibilities to act, 2) necessity to act, and 3) action enacted and 4) its result, which circuits back to another episode. (Klimmt 2003, 251–2.) Even though I accept the basic principles of the model, it is too abstract for the purposes of detailed study of games, and thus I will propose an alternate model in the coming chapters.

Presence

We have touched upon the concept of presence earlier, but let us now briefly analyse how it has been conceptualised: Lee Kim Min (2004) has reviewed previous conceptualisations of presence. Based on them, Min arrives at a tentative definition according to which presence is defined as psychological state in which the virtuality of experience is unnoticed (ibid., 32).

However, Min goes on to explicate that there are two ways of an experience becoming virtual (ibid. 34–5), and he proceeds to redefine presence. The definition (ibid. 37) is: a psychological state in which virtual (para-authentic or artificial) objects are experienced as actual objects in either sensory or non-sensory ways. Min goes on to construct a typology of human experience for the study of presence. It is based on a three-fold distinction: Real experience/Virtual experience/Hallucination (ibid., 38).

Now we can roughly say that digital games support the sense of presence induced by virtual experiences, and games taking place in other circumstances relate to real experiences. Still, the latter also afford a sense of presence, through pretending and the cognitive processes facilitating it (e.g., Possible World Box, see chapter 7), if nothing else. Therefore categories of presence relevant for applied ludology could be based on the player abilities that support the sense of presence. This kind of model would help to conceptualise the presence that non-virtual games afford.

Overall, in my review the concept of transportation articulates these kinds of phenomena in a more nuanced way – in a way that is more applicable for the purposes of *Games without Frontiers*. Therefore, I will proceed to discussing the particularity of game-related transportation, i.e. ‘ludic’ transportation.

Ludic transportation

Considering the cognitive phenomena outlined earlier, e.g., pretence and presence, there should be no doubt that, in gaming encounters, enjoyment is experienced through transportation.

Escaping the self

Green and her colleagues discuss the benefits of transportation that individuals interpret as enjoyment. Let us interpret these for the contexts of games. First, Green et al. observe enjoyment through escaping the self: 'Entering a narrative world may be a release from the stress of personal concerns, problems, and contexts that elicit social anxiety.' (Green et al 2004, 317.) They elaborate this aspect with the notion that the mentioned release functions in diverting attention from self and its concerns, so that a longing for ideal self does not overwhelm an individual's thoughts, i.e. 'enjoyment may simply be the reduction of a negative state of self-focus' (ibid., 320).

There is no need to doubt that enjoyment through escaping the self manifests in gaming encounters. However, with games, self-focused attention can be seen to remain, especially through failure, misfortune and the like. Killing time, in search of other attention than self-focus, might function as a situational motivator to begin a game, but failure in the game itself may lead to rumination (see chapter 6 on rumination in relation to goals). Thus, self-focus might actually increase, i.e. the mental activity that playing was supposed to decrease results in opposite development – and this might lead to a 'replay', i.e. another try, where the player will once again divert self-focus and rumination through so-called behavioural undoing.

Transformation

The second benefit of transportation, according to Green et al (ibid. 317–8), is enjoyment through transformation: This transformation is such that it creates openness in the individual for new information. With games, this would entail openness to learning rules, i.e. openness to cross the boundary of the magic circle in the first place and participate in the gaming encounter.

Transformation also concerns the character-of-self, or generally the readiness to assume a fictional role in the game: 'Transportation can open the doors to exploring and experimenting with other possible selves.'(ibid. 318.) They elaborate:

> A media viewer doesn't have to take the risk of changing jobs, spouses, or locales to experience such alternative life choices through the lives of the characters who inhabit the worlds to which he or she is transported. Self-

expansion is typically associated with positive affect, and in the media context, this positive affect may translate to enjoyment. (Ibid.)

Experiencing alternative life choices through their embodiments into game elements, taking choices in player role – these both account for typical phenomena and behaviour within gaming encounters, but there is also the aspect of enjoyment through learning, which Green et al. discuss as a specific instance of transformation: 'transformation of the individual's knowledge base that can help create resources for the future' (ibid.).

It is important to understand that the fundamental, pretence-inducing transformation takes place through transportation to goal hierarchies, i.e. through ludic transportation abstract and ephemeral life-goals are temporally substituted with game-goals of more concrete nature. If game-goals become life-goals, the player is either professional, or S/he is suffering from pathological behaviour (addiction), or losing sense of reality, i.e. failing to perceive the transportation process (cf. Kim's type of presence due to hallucination).

Connecting with characters

Finally, there is enjoyment through connection with characters: 'Transportation into a narrative world may be a prerequisite for identification with fictional characters' (ibid 318). Here we return, once again, to psycho-ludological principles: Transportation into a game system would posit a prerequisite for identification with game goals, which are possibly assigned to a character-of-self (or selves) and thus embodied into its performance in the game. According to Green et al., identifying with a character 'means seeing the character's perspective as one's own, to share his or her existence' (ibid. 319). Other than characters, in game systems, we also need to acknowledge necessary identification with game elements (as goals embodied into them), especially those that are attributed to self (e.g., in one's possession). There is also the necessary willingness to accept the rules of the system and thus its behaviour, and the possible consequences it yields (rewards, punishments, and other valorisations of player actions).

Green et al. go on to conclude that '[e]njoyment also arises from satisfaction of a basic need for connections between self and other' (ibid. 320) – and it is game elements, and their attributes defining possession and control, that fulfil this function between self and other (other being other players and/or game system).

To conclude with the discussion of ludic transportation, let us ponder how the relation of a transportation experience to emotions is considered in the theory:

> [T]he enjoyment of a transportation experience […] does not necessarily lie in the valence of the emotions evoked by a narrative, but in the process of temporarily leaving one's reality behind and emerging from the experience

> somehow different from the person one was before entering the milieu of the narrative. (Green et al 2004, 315.)

In light of games, the most interesting aspect is the exploration of different behaviours and characters, e.g., that 'stories enable recipients to identify with and mingle with risk takers' (ibid. 316). Following this logic, games embody explorations in risk taking – where the consequences regarding the contexts of game systems are always apparent beforehand, or optional.

Yet because transportation to narrative rather than game worlds lacks certain forms of concrete agency, such as physical activity, measuring the absorption induced by the narrative world, and subsequent transportation, presents a challenge to the theory (ibid. 315). The fact that players make choices, and pursue to leave their marks in the behaviour of the game system, means that transportation in games is different – and thus is its measurability as well.

Green et al. also consider 'new media' and enjoyment through the particular kind of interactivity its forms enable (ibid., 322). Not surprisingly, they refer to the concept of presence – the disappearance of awareness of the medium and thus approach of direct experience – which is conceptually similar to transportation. Vorderer et al (2004, 396) refer to the same phenomenon by defining presence as a user prequisite: '[W]ithout the user's capability and willingness to be present somewhere else, the occurrence of enjoyment or entertainment, or both, is highly unlikely, if not impossible'.

In the context of the theories of game elements and player experience, this leads us back to the issue of agency and its importance in characterising player experiences, i.e. how a privileged game mechanic and performing it might become to characterise the experience in a fundamental manner. Based on the theories discussed above, it seems that it is transportation through agency in games that matters, but in order for the agency to become enjoyable, it has to produce enjoyment: the transportation has to be such that it takes place with the sense of concrete agency, i.e. effectance where the players are able to experience enjoyment from seeing causal effects of their actions influence the behaviour of the game system and other players.

Thus we arrive at a ludological definition of transportation, based on the premise of transportation theory which posited transportation as an experience of cognitive, emotional, and imagery involvement in a narrative: *Game-related transportation is an experience of cognitive, emotional, physical, and imagery involvement in the behaviour of a game system, its appraisal structures, and the world they create.*

Pleasures of the Mind, and Body

Michael Kubovy (1999) has dealt with the concept of pleasure in a way that is very helpful for ludological purposes. We need to understand the nuances and variations of pleasures that different gaming encounters as entertainment products and events afford, and for this purpose, the four-fold categorizations of Dubé and Le Bel (2002), or Jordan (2000), do not quite suffice, I argue. Kubovy's theory provides a number of distinctions that will be useful in the next two chapters when we study emotion categories, their eliciting conditions, and methods for analysing them in instances of gaming encounters. In the context of this chapter, Kubovy's thoughts help us in drawing together the different categorizations of pleasures and moods.

Kubovy posits a theory of the pleasures of the mind as collections of emotions distributed over time, i.e. sequences of emotions. Conversely, pleasures of the body provide sequences of hedonic states rather than sequences of emotions, argues Kubovy (ibid., 135–6). According to him, pleasures of the mind differ from the experience of individual emotions in a number of ways: whereas emotions have communicative signals (cf. Oatley & Jenkins' theory), such as a facial expression, pleasures of the mind do not. Other differences especially relevant in light of gaming encounters are the following: Whereas emotions are quick and brief, and they can develop rapidly, pleasures of the mind are not quick and brief, and they are 'relatively extended in time'. Whereas emotions are experienced involuntarily, pleasures of the mind are 'voluntarily sought out', e.g., in the form of stimulus arrangements embodied into entertainment such as games. (Ibid., 137.)

I will summarise Kubovy's distinctions between pleasures of the mind and pleasures of the body into the following two subchapters.

Pleasures of the Body

Kubovy divides these into two kinds:

- *Tonic pleasures*, i.e. invigorating pleasures that are extended in time: aromas and sexual pleasure, for example, provide such positive hedonic states,
- *Relief pleasures*, i.e. relatively brief pleasures following bodily tension or discomfort: sneeze, orgasm, defecation, for example.

Kubovy also notes that seeing and hearing, so-called distance senses, provide pleasures of the body. Furthermore, they function in communication of pleasure as 'important vehicles for the communication of pleasure', and thus they convey and trigger emotions. An interesting observation by Kubovy is that 'the sensory vehicle of a pleasure of the mind does not necessarily tie the pleasure to that sense' (ibid., 136). For example, jokes are not commonly experienced as auditory pleasure, i.e. pleasure of the body based on a distance sense, but as a pleasure of the mind.

This has consequences for game rhetoric (chapter 13), and especially for its function as providing techniques for embodying eliciting conditions for emotions into game elements and game states: For instance, the materiality of Chess pieces, and the tactile pleasure to be gained from them, is not necessarily what characterizes the player experience of Chess – in the same sense that pleasures of the mind do. Then again, the smooth surface and specific size and shape of chips used (as component elements) in Casinos do afford tactile pleasures from flipping, piling, and rubbing them.

Pleasures of the mind

Kubovy sees the so-called basic emotions (anger, fear, sadness, etc., see chapter 5) as constituents of pleasures of the mind. This leads to a conjecture, according to which 'The pleasures of the mind are collections of emotions distributed over time' (ibid., 137). This goes in line with the generally accepted phasic nature of emotions (see chapter 5), and how emotions are valenced reactions towards agents, events, or objects, as Ortony, Clore and Collins (1990) suggest. After establishing the phasic nature of emotions, i.e. their temporal structure, Kubovy states:

> Thus, some episodes in human life provide sequences of emotions that are pleasures of the mind, some that are neutral, and some that may be called displeasures of the mind. (Kubovy 1999, 137.)

Fittingly for our purposes, he cites a description of a football match, and how the audience experiences its twists and turns – i.e. game system behaviour in our terms – emotionally, and how a good game is relived in conversations after the event.

Kubovy argues that pleasures of the mind often involve many senses (ibid, 137). He sees that attractive and pleasant stimuli function as constituents of a context for generating pleasures of the mind, yet they also 'provide pleasures of the distant senses', i.e. pleasures related to seeing and hearing. With similar logic, moods and levels of arousal function as facilitators for sequences of emotions. (Ibid., 138.) Through adapting David Berlyne's theories on arousal (see chapter 5), Kubovy moves on to discuss how emotions are generated in pleasures of the mind. He is interested in the phenomenon of how, e.g., a piece of music is able to repeatedly elicit emotions from its listeners, and how does the pleasure change through repeated listening (ibid, 143–5).

The aspect of repetition is quite relevant in light of gaming encounters as well. Kubovy offers a solution through theories on enjoying music, and here it suffices to present his conclusion: individuals' tendency to 'ascribe agency, sentience and emotionality' to a piece of music increases as the music becomes more familiar, 'thus reinforcing our ability to construe the music as providing objects of emotion' (ibid. 145–6). This is due to so-called tacit expectancies of the piece, which are in essence similar to our schemas of listening music, and the script concerning the particular piece of music, i.e. socio-psychological thought processes as introduced in chapter 6. Kubovy also assigns particular importance to the narrative interpretation of the music, i.e. its story schema.

If we translate this into terms of ludology, players' tendency to experience emotions by playing a game repeatedly is due to them getting familiar with its eliciting conditions, which trigger emotions, and with increased knowledge about game system behaviour. The repeated enjoyment, or expectation of it, is based on players' predictions of emotions, i.e. future emotional episodes, yet the uncertainty of the outcome of the game puts their exact nature into doubt.

Objects of Emotions present in Pleasures of the Mind

Kubovy argues that pleasures of the mind are differentiated from each other by, first, what he calls 'emotional rhythm', which refers to the temporal structure with which arousal is increased or decreased. Second factor that differentiates the pleasures is what Kubovy calls 'objects of emotion'. (Ibid. 147.) They essentially correspond, on a general level, towards what emotions as valenced reactions are focused at, i.e. what Ortony et al (1990) divide into consequences of events, actions of agents, and aspects of objects.

Kubovy (1999, 147) distinguishes five particular categories of objects of emotions that are present to varying degrees in most pleasures of the mind. They are also relevant in the context of games:

- *Curiosity*: pleasures from learning something previously unknown; the unknown as the object of emotions
- *Virtuosity*: pleasures from doing something well; own performance and ability as the object of emotions
- *Nurture*: pleasures from taking care of living things, e.g. child-rearing, gardening, nursing, or teaching
- *Sociality*: pleasures from belonging to a social group
- *Suffering*: negative pleasures of the mind from 'mundane' psychological pains such as shame and guilt, or from 'existential' pains such as fears of death or related concerns. (Ibid. 147–9.)

Adapting categories of pleasure such as the above, instead of the game-related studies presented above, has the benefit that they enable contextualisation of 'ludic' pleasures into the contexts of human experience of pleasure in general. Thus, the theory is not constrained to domains of pleasures deduced from present (computer and video) games, but rather, it tries to explore general domains of pleasure in order to see where games stand, and which pleasures they both do and do not (at least yet) privilege.

Curiosity in gaming encounters

Let us look at these categories individually in the context of games: In games, curiosity as a pleasure for the players equals how the unknown is embodied into game elements, information in particular. It is generally accepted that humans are insatiably curious (ibid.), and that our curiosity can extend to the contents of our own or other's minds. Thus we return to the fundamental distinction to self and other in gaming encounters, and how it is configured to the behaviour and the elements of game systems. Curiosity towards game elements-of-others or game elements-of-system would seem to account for games' special ability to embody stimulus that elicits curiosity. Kubovy does mention 'joy of verification' and 'feeling of surprise' characteristic to puzzle-solving and mysteries, respectively (ibid.).

Virtuosity in gaming encounters

Pleasures of virtuosity, then again, take us back to the discussion of pretence in chapter 7. Basically Kubovy's notion of virtuosity is akin to willingness to pretend, and do it well, in order to derive pleasure from own performance and ability, especially through play. The pleasure of the chase, as framed by the safety of the magic circle of pretence, was referred to by Nichols and Stich (2001) in chapter 7, and Kubovy uses a similar example as an instance of pleasure of the mind. Bernie DeKoven's (2002) thoughts on 'well-played game' is essentially what virtuosity is about, and therefore it is a fundamental player prerequisite to enjoy a gaming encounter.

In the context of entertainment, virtuosity also serves to explain how enjoyment can be elicited by an appreciation of an artist's performance – or, either the performance of a fellow player or a professional player, such as an athlete.

Nurture in gaming encounters

When it comes to nurture, there are specific game genres that afford nurturing, especially among digital games: obviously virtual pets (Tamagotchi toys, Nintendogs etc.) and the social relationships and well-being of characters in a game like The Sims, or **Animal Crossing** (Nintendo, 2003). Yet, also player roles such as football managers and urban planners (e.g., the SimCity series) can be seen to afford the pleasures of nurturing. It would seem to be closely related to collecting, which is what motivates players of collectable card games, e.g. Magic the Gathering or Pokémon.

Sociality and suffering in gaming encounters

Sociality is obviously a fundamental pleasure to be gained from participating in a gaming encounter, or from being a spectator of one. Kubovy's final category, suffering, finds its mundane realizations in the paradoxical nature of player motivations, i.e. the willingness to play even in the face of potentially suffering loss.

Pleasures from violation of expectations

Kubovy also refers to theories of humor elicitation (Wyer & Collins 1992, see chapter 11), and presents the conclusion, based also on the discussion on curiosity, that 'we get pleasure from the violation of expectations followed by a return to a stable state' (Kubovy 1999, 146).

This argument would seem to hold with gaming encounters as well – goals and challenges are introduced for the players, possibly unexpectedly, and uncertainty about their resolution creates hopes, fears, and suspense. Thus, the question that follows is: Into which game elements, or into which kinds of configurations of game states, are such sequences generally embodied? This we can begin to answer by distinguishing which emotion types which game elements privilege. It is a task that I will focus on in chapters 10 and 11. Before that, I will consider the repercussions of the theories introduced above for the categorizations that were discussed in the first part of the chapter.

Moods and Metamoods combine into a Mood Proposal

Following and adapting Kubovy, I propose that the 'forms of fun', or pleasures, equal moods that emerge from sequences of emotions experienced during the gaming encounter, and their residues after the game is over. Thus they can be associated with motivations to play; to take part in a gaming encounter in order to gain a desirable mood. Even then we do not yet have a very specific understanding from which types of emotions do which moods emerge from, i.e. which emotions function as constituents of pleasures and moods. To achieve this, we must first get familiar with typologies of emotions, which we will do in the next chapter. In part V and its case studies we will return to emotions as constituents of pleasures and moods.

Even though we would keep with associating most pleasures and moods to be gained from games with positive enjoyment, i.e. fun, the notion of metamoods explains why intuitively negative moods (such as 'sadism') are included in the model. The notion of metamoods (see Mayer & Gaschke 1988, Vorderer et al 2004, 394) was discussed in the previous chapter. It conceptualises the behavioural phenomenon where an individual experiences unpleasant emotions on an 'object level' but actually positive enjoyment on a meta-emotional level. Vorderer et al write:

> These meta-emotions occur as individuals reflect upon their feelings and evaluations and respond affectively to their initial responses. […] They do so, however, because such a metaresponse may be useful in achieving other goals, appropriate for a particular situation (e.g., sadness at a funeral), or simply functional as they are serving a specific purpose […] (ibid.)

It would seem that the specific purpose in gaming encounters is the magic circle and the pretence it affords. The most significant metamoods in gaming encounters would be moods of anxiety and self-doubt that emerge when the challenges of the game are difficult to such a degree that the game imposes a struggle that, on the object level, would not seem enjoyable. Moreover, it is important to note that seldom does a game afford a single mood only, but rather, games suggest a combination of moods and metamoods, and the outcome and proceedings in the gaming encounter come to define whether a (meta)mood becomes dominant for some or all of the players. This is in line with a concept I have chosen to call a mood proposal, i.e. that most games afford a combination of moods, and this accounts for a particular ‘mood proposal’ of a particular gaming encounter. Mood proposal associates the mood with player motivations, i.e. as the phrase ‘I am in the mood for …’ and mood management theory (see chapter 5) suggests, moods are managed to preferable directions, and gaming encounters present particular stimulus arrangements that potentially afford mood reversals and transitions for their players.

Player prerequisites in Gaming Encounters

To conclude this chapter, let us return to the user prequisites of an entertainment experience, and translate them into prerequisites for gaming encounters. The following table presents a synthesis and interpretation of theories discussed in earlier chapters for the purposes of applied ludology:

General entertainment prerequisites (Vorderer et al 2004)	**Prerequisites for gaming encounters**
Willingness & ability to suspend disbelief.	Willingness to accept the rule set, especially goals, punishments and rewards, and its embodiments into game elements, and the subsequent behaviour of the game system.
Affinity and empathy with characters.	Affinity and empathy with goals-of-self, and components-of-self. Character-of-self functions as a proxy to attain goals-of-self.
Capacity & desire to relate to characters and personae, i.e. parasocial relationships to characters, hosts, etc. and interactions with them that create enjoyment.	Capacity and desire to relate to goals; goals become unified with self; also relates to direct/mediated interaction with other players, i.e. *social* (rather than parasocial) relationships.

General entertainment prerequisites (Vorderer et al 2004)	Prerequisites for gaming encounters
Presence, i.e. sense of being there: 'being transported to the site of action, actually being there along with those who participate in the action' (Vorderer et al 2004, 396).	Exercising choice and perceiving effectance through performing sets of cognitive, physical, and/or psychomotor abilities (vs. viewing/emphatizing fate of characters, cf. game-agent; character-of-self.) Desire to be transported according to transportation theory.
Interest in a specific topic, problem, or knowledge domain.	Interest in the theme element with its metaphorical nature in relation to the game system, and the particular rhetoric employed in constructing the metaphor for the system.
	Virtuosity, i.e. desire to play well and/or willingness to appreciate the virtuosity of others' performances (Kubovy 1999, 13–14, DeKoven 2002).

Table 10. *Prerequisites for enjoyment in gaming encounters in the light of general entertainment prerequisites.*

Besides interpreting the general entertainment prerequisites for ludological purposes, the comparison has produced an entertainment prerequisite that is specific to gaming encounters, virtuosity – success in a player ability that requires skill in relation to goal(s), or appreciation of another player's or performer's virtuous play.

Game state scenarios as a key to predicting and analysing player behaviour

In formulating their theory on media entertainment experiences, Vorderer and his colleagues make a highly relevant statement in light of the theory of player experiences, and especially its consequences for practical analysis and design tasks:

> None of these manifestations are determined solely by the media product. They all occur as deliberate individual response to a specific offering. They are, however, to some extent predictable, as they are common and often habituated responses to various media products. (Vorderer et al. 2004, 394–5.)

It is exactly this kind of premise – and necessary reservation for individual variations – that I have adopted for explaining, understanding, and predicting player behaviour through hypothesis and findings with the help of general psychological principles. These hypotheses and principles will not hardwire players to behave in an exact, faultlessly predictable manner in a given situation. However, I argue that they lend a degree of predictability and systematicity to analysing such situations in gaming encounters, and/or designing such situations through specific configurations and embodiments of game elements through the rule set. They also provide means to analyse specific situations during gaming encounters in the first place.

The baseline for these kinds of hypotheses has to be derived from two sources. First, one has to take advantage of general psychological principles on human behaviour. Second, one has to consider even more specifically the corresponding principles of engaging with entertainment products and events.

General notions that have to do with motivation, such as player prerequisites, can be complemented with the perspective of player abilities in relation to the tasks that game systems impose as embodied into goals and game mechanics. In terms of emotion theory, I propose that the most important psychological principles are those which can be understood as eliciting conditions for emotions. They take part in determining a baseline for emotional intensity of an experience. As players are agents within the game system and the gaming encounter framing it, the eliciting conditions are closer to those of everyday life than those of readers and viewers of entertainment such as literature or film. Readers and viewers differ from players in the sense that they are always, to some extent, divorced from agency by the fiction and the reading or viewing position it suggests. Thus it can be argued that the habituated behaviour regarding game states and goals can be predicted with more accuracy than with media products in general. Game studies pioneer Brian Sutton-Smith (1972, 433—4) has echoed this premise: ‘Because games are coercive, they may be expected to determine behaviour in a relatively predictable fashion.’

In a way, games afford a heightened form of psychological entertainment; a form of entertainment where human psyche is engaged in a way that is potentially – dependent on the type of game – more complex than with any other form within the realm of entertainment.

I propose that the practical application of the hypotheses equals creating what I will call ‘game state scenarios’. Their function is similar to concepts and prototypes, i.e. they allow us to speak of

- an existing situation – a game state – from the perspective of player experience and its emotional constitution, or
- what does not exist as a prototype for player experiences, once we define a scenario and its eliciting conditions for emotions in relation to players.

For example, we can take and extract a characteristic game state from a board game such as **Ricochet Robot** (Rio Grande Games, 1999): players feverishly trying to think about the number of moves on the board that would take their robot to the 'home base'. What actually makes this scenario 'feverish'? The answer is two-fold: the time limit embodied into an hourglass, and the peer pressure resulting from every player having the same goal, and the same means (i.e. game mechanics) to achieve the goal.

A penalty shot in Football, or a free throw in Basketball, a check situation in Chess, a million dollar question in the television game show **Who Wants to be a Millionaire?,** are all illustrative examples of game state scenarios with strong emotional potential for players and audience alike, and we have referred to a number of similar scenarios along the way. Game state scenarios as prototypes for analysis and design are further addressed in the case study section, where game elements are studied as embodiments for eliciting the emotion of suspense through hope, fear, and uncertainty.

CHAPTER 10: Understanding Player Experiences through Emotion Categories

Now that we've discussed the structure of emotions and phenomena associated with them, we will move on to categorizations of emotions. It is another contested turf in the field of emotion theory. Main concern in defining so-called basic emotions, or more elaborate categorizations, is that they have to be named with emotion words. This always presents an approximation of an experienced mental state, as it has to be expressed via a verbal representation. Therefore denotations and connotations of chosen words will always play a part, and as Jon Elster (1999, 21) has stated, 'language cannot tell us whether words such as "surprise" or "frustration" are emotions or not'. Still, it is words that we have to resort in if we are to make sense of verbally elusive phenomena such as mental states. As the theory of Lakoff & Johnson indicated earlier, metaphorical concepts also help us in understanding reactions and actions of both ourselves and those of others.

Among emotion theorists, the notion of a limited set of emotions that are fundamental and universal to human beings is widely (yet not unanimously) accepted. Usually these emotions are discussed under the heading of 'basic' or 'fundamental' emotions'. Oatley and Jenkins (1996, 376) state that the 'hypothesis of basic emotions is that humans are equipped biologically with a small number of such basic emotions, and that other emotions are elaborations of these'. This premise is similar to the one of Schank and Abelson concerning goal categories (see chapter 6). In most cases, basic emotions are taken to include such mental states as happiness, sadness, anger, and fear. (For a summary of different categorisations, see, e.g., Ortony et. al 1990; Oatley 1992.)

Besides defining basic emotions, there have been a number of efforts to construct more elaborate distinctions. They have often proceeded on the basis that discussion of basic emotions is too vague, especially concerning the relationship of basic and non-basic emotions, and whether or not basic emotions mix like colours, for example (Ortony et. al 1990, 26). Ortony et al have solved the dilemma by stating that in their theory

> some emotions are more basic than others because we can give a very specific meaning to it, namely that some emotions have less complex specifications and eliciting conditions than others. (Ibid. 28.)

It is thus the eliciting conditions we encounter in games, both simple and complex, which will be focused on when engaging into actual analyses of emotion potentials in games, and their manifestations in gaming encounters as game state scenarios, as suggested at the end of last chapter. We will proceed from general emotion categories towards a method with which to study game system behaviour as phasic process that is analogous to phasic emotion processes.

If we relate this goal to the previous chapters on entertainment and enjoyment, the central question for the theory is how to translate the sources of enjoyment into the 'syntax' of pleasure and emotion categories.

Categorizations of Emotions

In addition to the different attempts at defining basic emotions, there have been efforts to produce more elaborate distinctions. I will discuss two particular efforts: Jon Elster's categories, and the model proposed by Andrew Ortony, Gerald Clore and Allan Collins (1990). I have found that these theories in particular suit my purposes for applying theories of emotion to analysis and categorisation of game-related emotions. This is because they articulate the reciprocal relation of self and other, and the phasic process of emotions – both central to gaming encounters – in a lucid way. Also, these theories, especially the one by Ortony et al., provide concepts for assessing the qualitative differences (such as intensity and desirability) of different emotion types. This makes them applicable for a theory of player experience and subsequent, applied methods for analysing player experiences and gaming encounters.

Jon Elster's categories are based on his argument that emotions are triggered by beliefs, and that emotions operate in the triangular contrast of neurobiology, culture, and choice (Elster 1999, 2–4). He distinguishes emotions in three major categories (ibid. 21–23). I have reproduced Elster's categories into the table below, where the categories and their representatives are listed with their causes and object (self or other).

Emotion Category	Emotion word	Valence	Triggered or caused by	Object
Social Emotions	**shame**	-	belief about character	self
	contempt and hatred	-	belief about character	other
	guilt	-	belief about action	self
	anger	-	belief about action	other
	pridefulness	+	belief about character	self
	liking	+	belief about character	other
	pride	+	belief about action	self
	admiration	+	belief about action	other
Emotions generated by the thought that someone else deservedly or undeservedly possesses some good or bad	**envy**	-	deserved good	other
	indignation	-	undeserved good	other
	sympathy	+	deserved good	other
	pity	-	undeserved misfortune	other
	malice	+	undeserved misfortune	other
	gloating	+	deserved misfortune	other
Emotions generated by the thought of good or bad things that have happened or will happen to oneself	**joy**	+	thought of good things that have happened or will happen	self
	grief	-	thought of bad things that have happened or will happen	self

Table 11. *Emotion categories according to Jon Elster (1999).*

The immediate, intuitive result of studying the categories is that games potentially give birth to all of these emotions, yet not all of the emotion words are necessarily used to describe play experiences.

Elster notes that all the above emotions are 'induced by beliefs that are held in the mode of certainty' (ibid. 23), i.e. that the person experiencing them has trustworthy information about a state of affairs regarding the character, action, good, misfortune, or thing that causes or triggers his or her emotion. However, Elster does not claim that this list exhausts the human universe of emotions. There are also other emotions, such as hope, fear, love, and jealousy that 'essentially involve beliefs held in the modes of probability or possibility', i.e. which 'seem to require that the event or state fall short of being thought to be certain.' (Ibid.) As we have seen, uncertainty is fundamentally present in gaming encounters, and therefore they are full of experiences of hopes and fears.

In addition, Elster states that there are also emotions 'generated by the counterfactual thoughts about what might have happened or what might have been done'. These include negative emotions such as regret or disappointment (Ibid. 23–4). Another related class of emotions consists of 'wistful or ominous feelings triggered by subjunctive beliefs about events that might conceivably happen, although with not sufficient probability to generate hope or fear.' (Ibid. 24.) Daydreams present an example, yet we see that the concrete agency attributed to players by game systems does not favour this kind of emotional category, as the probabilities concerning uncertain outcomes are sufficient to create hope and fear.

Modes of probability and possibility elicit emotions

The most important take-away from these observations in the context of games is the apparent modulation between the modes of probability or possibility and mode of certainty. The first precedes the resolution of a game state while the latter follows its resolution. This is a fundamental, high level emotion-inducing method of game systems and their behaviour. It is achieved by the function of the game system as an information system, and the modulation is dependent of specific ways with which the system has been designed to distribute information to its players.

David Parlett (2000, xiii) writes about how playing cards have a 'bipartisan nature', as one of their two sides is always visible and the other hidden. This lends them a specific purpose as game elements (components) to support the modes of probability and possibility. Thus eliciting conditions for emotions, focusing on the prospect of information that the components carry as an attribute (the card value), are *embodied* into the design of cards in the form of their two possible states: face-up and face-down; information revealed or concealed.

Thus we can deduce that design of such bipartisan information attributes for components is bound to modulate players' emotions in a specific way, between modes of certainty and uncertainty, as described above. This modulation may happen both in relation to game elements and their attributes (as in the case with cards), but also in relation to how the player valorises her own performance in the game. Whatever the case, a game of perfect information would only be able to induce the mode of certainty. Presumably it would not directly rule out certain emotions, but it would affect their intensities and the seductiveness of the eliciting conditions introduced by the game system – once again we return to the example of a (bad) game whose winner is known beforehand. Its eliciting conditions are such that they elicit feelings of indifference and resignation, qualities which have not been associated with 'good' games.

Game states configure eliciting conditions

Elster's categories provide us, via the card example, with the premise that game elements can embody eliciting conditions for emotions such as expectancy and suspense. However, game elements are the parts of a dynamic system, and therefore game states where they combine are bound to embody eliciting conditions as well. In conclusion, it is the gaming encounter as a whole, in a given moment – i.e. focusing on a particular game state – where the eliciting conditions for emotions emerge for players. This is the premise for the notion of studying and creating game state scenarios where the emotional potential of the game state is in focus, as suggested in the end of the previous chapter.

In the end of chapter 11, we will arrive at a method with which to analyse how this takes place in specific gaming encounters. It requires a more detailed understanding of emotion structures, and the theory of cognitive structures of emotions by cognitive scientists will provide us with the necessary framework.

Cognitive Theory of Emotions: The OCC Model

The model put forward by Ortony, Clore and Collins (1990) is known as the 'OCC model'. Because the model has originated from a pursuit to study the foundations for a computationally tractable model of emotion, I have found it to apply well to the systemic nature of games. It has found other applications in similar fields (see, e.g., Picard 1997). Among theories of emotion categories, Roseman et al. (1996) would present an alternate model for this kind of application, for instance, but in my review, the three-fold distinction to agents, events, and objects in the OCC model makes it more applicable for the purposes of the ludological methods under development here.

Action tendencies

If we conduct a fine-grained analysis of a gaming encounter, it becomes evident that our subjective experience as a player consists of performing actions and reacting to their outcomes, and in the case of multiple players, following their fortunes in doing the same. In terms of emotion theory the reactions are always valenced, i.e. they are evaluated on an axis that runs between positive and negative.

These reactions lead back to actions, and different emotional states make some actions more likely than others. In terms of theory, emotions give birth to action tendencies. The tendencies to take an action, or the courses that the actions follow, are dependent on the intensity of the original emotion. In gaming encounters, action tendencies are channelled into performing game mechanics within the constraints that the game allows, or into strategic planning that aims at coping with the action tendencies that future game states present. If the game states are highly similar to each other, as in Tetris for example, the action tendencies do not presumably change considerably either – especially as the different game mechanics available are limited in number.

Variables affecting emotional intensity

In the OCC model, emotional intensity is affected by various variables: for instance, our disappointment in losing is tied to the likelihood of winning. If we don't see our chances of being very high, we most likely do not feel that disappointed – the result was something that we predicted and feared. So, *likelihood* is one intensity variable.

Degree of effort is another one: If we were close to winning and were hoping to win, and expended a lot of effort into the challenge, our disappointment is bound to be more intense in case of loss. However, the intensity of these emotions is tied to the proximity of the event – the emotions related either winning or losing in a game, in this case, are at their most intense instantly after the game, but as the discussion of excitation theory earlier reminds us, these emotions might carry on to other activities and contribute to building up a mood. In case of a loss, for example, we probably have ’gotten over it’ as the intensity of the emotion has subsided, and we are ready to try our chances once again, but this decision is dependent on the degree of desirability or undesirability of the outcome. However, if the emotional intensity is such that it persists, it may turn into a mood, such as depression.

The passage above illustrated some of the typical events and reactions associated with games, and variables affecting intensity of emotions. Games have variant ’emotion potentials’ and there are variant techniques to design eliciting conditions for emotions into games. Outcomes, characters, thematizations, performing game mechanics, competing with an opponent all count as typical events, objects, or agents in games that set up situations which elicit emotional responses from the players.

Whereas we discussed techniques for transportation and drama earlier, the above examples present a sample of the craftsmanship of creating emotionally vivid and gratifying games. The key point has to do with the notion that eliciting conditions, i.e. ‘conditions under which the emotion can be triggered’ (ibid., 15) are embodied into game elements and game states: for instance, we spend effort into attaining a goal, and its confirmation or disconfirmation, in the form of achieving possession of a crucial game component, such as an ace card in a game of Poker. As long as we have assumed the player prerequisites (see chapter 8) to enjoy a game of Poker, such as of identifying with goals-of-self, this outcome is bound to elicit a valenced reaction – an emotion – in us. Moreover, as was established in chapter 5, the emotion is accompanied by a communication signal, such as a facial expression. However, Poker is an interesting game especially in the sense that players try to hide these emotional signals, as they are considered ‘tells’ that give out crucial information about one’s hand or tactics. This is due to the particular ways in which distribution of information is configured in the game systems we know as variations of Poker.

Emotions with structurally related eliciting conditions

Ortony et al. address the challenge of constructing emotion categories and visualizing them with the idea that ‘distinct emotion types cannot be arranged informatively into any single space of reasonably low dimensionality’ (Ortony et al. 1990, 15). As a result, they base their theory on the study of groups or clusters of emotions with similar eliciting conditions. They arrive at groups of emotions with structurally related eliciting conditions, e.g., the attribution group where actions of agents present the category of related eliciting conditions.

In my view this premise is useful for studying and designing games, because one cannot unambiguously define the set of emotions a game elicits – at least not without a substantial empirical data based on experiments with a design – but one can analyse, extract and design a set of eliciting conditions into a game state scenario, for example. Tools like this can be used by both theorists and designners: for sake of analysis to explain designs, and for sake of design to experiment with designs.

In what follows, I will first introduce the structure of OCC model, and summarize the emotion categories in it, after which I will discuss the model's implications for applied ludology. This takes us towards the next chapter, where I will be adapting the model's principles for an analysis method, the purpose of which is to distinguish how eliciting conditions for emotions are designed into games, and what consequences they have for the resulting action tendencies, which have to do with choices and decision-making.

Local and global variables

In the OCC model, each distinct emotion type represents a family of closely related emotions, sharing same basic eliciting conditions but differing in terms of intensity, and possibly 'in terms of the weights that are assigned to different components or manifestations of the emotions.' Also, each emotion type includes a specification of the principle variables that affect its intensity, and the variables are divided into local vs. global variables. A local variable affects a group while global variables expand their effects across groups. (Ibid. 15–16.) The visual reproduction of the OCC model (see image 12) demonstrates these distinctions.

Thus, eliciting conditions embodied into individual game elements are affected by local variables, whereas combinations of game elements into game states are affected by global variables. Let us return to the card example: The card itself is a component element, which carries information, a value attribute. Thus it embodies a rule in the form of information and in its bi-partisan (face-up/down) form (cf. Parlett 1999). The information can then embody eliciting conditions for emotions due to the value, such as hope ('I wish it was an ace') or fear ('I hope she does not have an ace'), and the design of the card itself brings uncertainty to the equation. These relate to local variables affecting the intensity of emotion, e.g., the degree of desirability or undesirability regarding the value. The game state in the gaming encounter where the card and its value are in question between players is affected by a global variable, e.g., unexpectedness and arousal.

Valenced reactions to events, agents, or objects

The global structure of emotion types that thus emerges (ibid. 19) is based on certain assumptions about the ways in which people perceive the world, and we have already adapted this triangularity of events, agents, and objects into other purposes in earlier chapters. This assumption is based on the generally accepted idea of emotions as valenced reactions to perceived changes in states of affairs. More precisely, Ortony et al. argue that there are 'three major aspects of the world, or changes in the world, upon which one focus, namely events, agents, or objects.' As a result, any particular valenced reaction – i.e. an emotion – is always seen as a reaction to one of the three phenomena. (Ibid. 18.)

This leads to a structural model with three branches and subsequent branches and classes of affective reactions (see reproduction below).

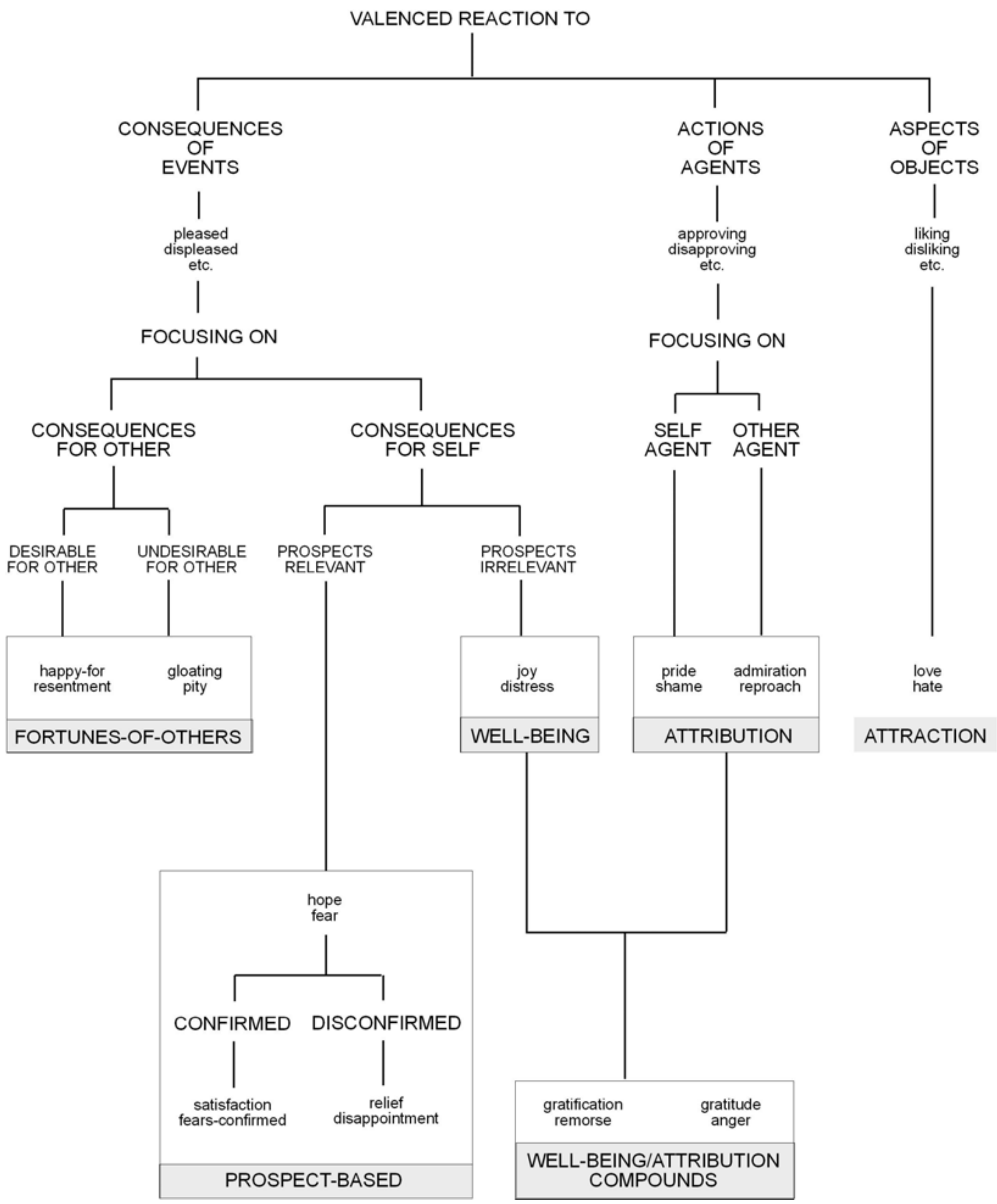

Image 12. *The OCC model reproduced.*

The structure of the model is logical rather than temporal. The three branches present a valenced reaction to consequences of either events, or actions of agents, or aspects of objects. I will summarize each branch below:

- Valenced reactions to consequences of events generally produce emotional reactions which are either pleasing or displeasing. They focus either on consequences for the self or the other. Consequences for self relate either to prospect-based type of emotions, such as satisfaction or disappointment, or well-being type of emotions such as joy or distress. If the consequence of the event has relevant prospects for the self, it takes the track toward confirmation or disconfirmation of the prospect. If the consequence is irrelevant, the well-being path is chosen. Consequences for others relate to the fortunes-of-others type of emotions, which are modulated by the variable of desirability for the other (operating on an axis of desirable—undesirable), and thus emerge either as emotions of happy-for/resentment or gloating/pity.

- Valenced reactions to actions of agents vary on the scale of approving or disapproving. They focus on self as an agent or other as an agent. Thus emerge emotions of the attribution type, such as pride/shame in case of self, and admiration/reproach in case of other. Attribution emotions function as compounds with the well-being emotions, thus resulting in feelings of gratification, remorse, gratitude, or anger.
- Valenced reactions to aspects of objects vary on the scale of liking and disliking. They focus on the objects themselves, and are bound to elicit attraction emotions, characterized by love or hate as opposite end of the axis between positive and negative tone.

Emotion types and variables affecting their intensity

I have tried to condense the core of the book-length OCC theory (Ortony et al 1990, 85–171) into the tables in the following pages. I will try to introduce the relevant aspects of the theory, starting with the variables that affect emotion intensities.

The global variables affect all emotions, and as such, they have consequences for game-related emotions as well. The variables and their descriptions are (ibid. 83–4) listed in the following, with game-related examples:

Global variable affecting intensity of emotion	General description & description in the context of a gaming encounter	Game-related examples from both intense and unintense situations
Sense of reality	How much one believes the emotion-inducing situation is real; to what degree the player gets ‘immersed’ into a game world.	‘Suspense of disbelief’ and sense of presence related to games; intense examples include Live action role-playing games, sports games.

Global variable affecting intensity of emotion	General description & description in the context of a gaming encounter	Game-related examples from both intense and unintense situations
Proximity	How close in psychological space one feels to the situation; how intense is the feeling of success/failure regarding performing a game mechanic.	One jumps and shouts spontaneously once the game is won vs. in case of a loss of game, or a failure in a game, and the subsequent disappointment subsides as time progresses after the game.
Unexpectedness	How surprised one is by the situation; how surprised the player is regarding an outcome.	Unexpected yet conceivable, rule-based event taking place versus completely unexpected, narratively motivated event takinhg place. Or, regarding outcome: One wins a game unexpectedly, perhaps on first try, versus one winning due to unparalleled experience and/or skill.
Arousal	How much one is aroused prior to the situation; how the player perceives her abilities to perform in the gaming encounter.	One is 'pumped up' for the game of the year vs. feeling tired and uninterested; one does not regard the game as being for his/her taste, or fears that s/he is not able to play well.

Table 12. *Table: Global variables that affect the intensity of emotions (Ortony, Clore & Collins 1990) complemented with examples specific to gaming encounters.*

We will move on to the emotion types and their specifics, i.e. variables, in the next table. Starting from the left column, there is the emotion type identified, followed by (in brackets) what the reaction is towards (events/agents/objects). The type is specified in the next column with necessary conditions for the experience of that type of emotion (ibid. 87), which essentially presents a generic type of eliciting condition for the emotion type. In the next column, we find token examples. They are words or phrases that constitute a family of emotions of that type. The final column defines the major local variable that affect the intensity of the particular emotion type (ibid.). Into the category of Prospect-based emotions I have also included a number of combinatory emotions discussed by Ortony et al (Shock, Suspense, etc.), because I see them especially relevant in the context of games.

EMOTION TYPE identification (reaction to)	type specification / eliciting condition	token examples	variables affecting intensity
Well-being (events-agents)			
Joy	pleased about a desirable event	jubilant, pleasantly surprised, happy, euphoric, delighted	degree of desirability
Distress	displeased about a desirable event	depressed, dissatisfied, grief, regret, upset, unhappy	degree of undesirability
Loss	displeased about the undesirable event of a loss	grief, loneliness, regret	degree of unexpectedness
EMOTION TYPE identification (reaction to)	**type specification / eliciting condition**	**token examples**	**variables affecting intensity**
Fortunes-of-others (events)			
Happy-for (good-will)	pleased about an event presumed to be desirable for someone else	delighted-for, happy-for	degree of desirabilty for oneself / other, deservedness, liking of other
Sorry-for (good-will)	displeased about an event presumed to be undesirable for someone else	compassion, pity, sympathy, sorry-for	degree of undesirabilty for oneself / other, undeservedness, liking of other
Resentment (ill-will)	displeased about an event presumed to be desirable for someone else	envy, jealousy, resentment	degree of desirabilty for other/undesirability for oneself, un/deservedness, unliking of other
Gloating (ill-will)	pleased about an event presumed to be undesirable for someone else	gloating, Schadenfreude	degree of undesirabilty for other/desirability for oneself, deservedness, unliking of other

Table 13. *Well-being and Fortunes-of-others types of emotions according to the OCC model.*

EMOTION TYPE identification (reaction to)	type specification / eliciting condition	token examples	variables affecting intensity
Prospect-based (events)			
Hope (prospect)	pleased about the prospect of a desirable event	anticipation, excitement, expectancy, hope	degree of desirability + likelihood
Fear (prospect)	displeased about the prospect of an undesirable event	apprehensive, anxious, scared, worried	degree of undesirability + likelihood
Satisfaction (confirmation)	pleased about the confirmation of the prospect of a desirable event	gratification, hopes-realized, satisfaction	intensity of hope, effort expended in attaining, degree of realization
Fears-confirmed (confirmation)	displeased about the confirmation of the prospect of an undesirable event	fears-confirmed, worst fears realized	intensity of fear, effort expended in preventing, degree of realization
Relief (disconfirmation)	pleased about the disconfirmation of the prospect of an undesirable event	relief	intensity of fear, effort expended in preventing, degree of realization
Disappointment (disconfirmation)	displeased about the disconfirmation of the prospect of a desirable event	dashed-hopes, despair, disappointment, heartbroken	intensity of hope, effort expended in attaining, degree of realization
Shock (unexpected + undesirable)			
Pleasant Surprise (unexpected + desirable)			
Suspense (Hope + Fear + Uncertainty)			
Resignation (undesirability + inevitability)			
Hopelessness (undesirability + irreversibility)			

Table 14. *Prospect-based types of emotions according to the OCC model.*

EMOTION TYPE identification (reaction to)	type specification / eliciting condition	token examples	variables affecting intensity
Attribution (agents)			
Pride (oneself)	approving of one's own praiseworthy action	pride	degree of judged praiseworthiness, strength of cognitive unit, role expectation-deviation
Self-reproach (oneself)	disapproving of one's own blameworthy action	embarrassment, feelign guilty, self-blame, shame, uneasy	degree of judged blameworthiness, strength of cognitive unit, role expectation-deviation
Appreciation (others)	approving of someone else's praiseworthy action	admiration, appreciation, respect	degree of judged praiseworthiness, role deviation (unexpectedness)
Reproach (others)	disapproving of someone else's blameworthy action	appalled, contempt, indignation	degree of judged blameworthiness, role deviation (unexpectedness)
Gratitude (compound emotion)	approving of someone else's praiseworthy action + pleased about desirable event	appreciation, thankful	degree of judged praiseworthiness, role deviation, degree of desirability
Anger (compound emotion)	disapproving of someone else's blameworthy action + displeased about undesirable event	anger, annoyance, irritation	degree of judged blameworthiness, role deviation, degree of undesirability
Gratification (compound emotion)	approving of one's own praiseworthy action + pleased about desirable event	pleased-with-oneself, self-satisfaction	degree of judged praiseworthiness, strength of cognitive unit, role deviation, degree of desirability
Remorse (compound emotion)	disapproving of one's own blameworthy action + displeased about undesirable event	penitent, self-anger	degree of judged blameworthiness, strength of cognitive unit, role deviation, degree of undesirability
EMOTION TYPE identification (reaction to)	**type specification / eliciting condition**	**token examples**	**variables affecting intensity**
Attraction (to objects)			
Liking	liking an appealing object	adore, affection, attracted-to	degree of appealingness & familiarity
Disliking	dislking an unappealing object	aversion, dislike, revulsion	degree of unappealingness & familiarity

Table 15. *Attribution and Attraction types of emotions according to the OCC model.*

In terms of the theory of player experience and applied ludology, the token examples and the local variables regarding their intensity are very important. This is because the variables enable us to link the emotions to game elements, and their designs in particular games. Hope and fear, for instance, are fundamental prospect-based emotions in gaming encounters. They build feelings of anticipation, excitement, and expectancy, as we see from the table (and learned from the card example earlier). These emotions emerge in relation to goals and game mechanics, and how the player sees her abilities and chances in relation to them. Furthermore, combinations like these affect the global variables, such as arousal.

I have argued earlier that rules, such as goal rules, are often embodied into particular game elements. Thus it can be deduced that emotions and game elements are in a fundamental relation to each other; in a feedback loop. In case of Fear, such rules as losing condition which defines when the game is lost, or any other rule that functions as a threat to the goals that the player monitors, is the means to modulate the variables – intensity of hope and effort expended in attaining – that affect the intensity of fear.

Whether the emotion is turning into satisfaction or into fears-confirmed, is dependent, first, on how the player perceives the degree of realization (another variable) and, finally, on the resolution of the goal, game mechanic, and ability that the duality of hope and fear is focused on. The above passage is an example of how the theory of player experience can be, according to my view, transformed into methods of applied ludology: How, and with which game elements, are emotions embodied into the gaming encounter – and how could we systematically study and design such matters?

Five Emotion Types in Terms of Ludology

In the following, I will discuss the distinctions by Ortony, Collins & Clore in the above tables and summarize them in terms of the theory of game elements.

Prospect-based emotions

Typically games have events in the form of causal sequences: actions and outcomes, which range from the outcome of a dice roll to a dramatic turn in a background narrative designed with thematization and game rhetoric. Events have to do with prospects, i.e. with mental considerations and pictures of something to come. The fate of prospects is evaluated in terms of goals, and a prospect might actually equal attainment of a goal or a subgoal directly. In any case, the emotions associated with events belong to a type of prospect-based emotions.

The potential for emotions based on events is in their prospect: what does the resolution of the event promise for the player, and is the event worthwhile in the sense that the player invests effort into trying to make the outcome desirable for oneself or for others. Hope, fear, satisfaction, fears-confirmed, relief, shock, surprise, suspense are some of the emotions experienced in relation to events and their prospects. Thus we can conclude that prospect-based emotions are fundamentally related to goals-of-self. Furthermore, they are thus subject to uncertainty, and the most important events in games are performances with game mechanics, where, as was established in chapter 7, the players' individual abilities function as uncertainty factors. Based on the above observations, suspense as a compound element of hope, fear, and uncertainty reveals itself as the key emotion in gaming encounters.

Fortunes-of-others emotions

The last example leads us to the other set of emotions having to do with events: so-called fortunes-of-others emotions. These include such good-will emotions as being happy or feeling sorry for somebody, and on the other hand, display of ill will in the form of resentment or gloating. In the contexts of games, these emotions apply to multiplayer situations, and the empathy felt towards the fate of fictional game characters or, as a spectator, to participants such as athletes or game show contestants on television. The important note to remember is that these emotions focus on the event rather than the agent itself. Thus they relate to goals-of-others rather than others as such – attribution emotions account for the the latter.

Attribution emotions

Attribution emotions are reactions geared towards agents, i.e. the behavior of other human beings, or, in the case of game, possibly the game system as an agent. The valence of attribution depends on the praiseworthiness or blameworthiness of actions, and their intensity on how the behavior deviates from expected behavior. Players may feel pride and appreciation towards themselves or others, but also reproach towards the actions of an opponent. If a single-player game is too difficult, the player potentially gets frustrated and regards the system as an agent that acts in reproachable manner, thus producing emotions of contempt in the player. The concept of genre is also relevant here, as a game system can be construed as an agent representing genre conventions, i.e. a certain set of expected behaviour, 'how things should proceed', and if the game deviates from the expected conventions, this is responded with an attribution emotion which leads to an attraction emotion. These types of emotions relate to the system as a dynamic whole.

Attraction emotions

Objects evoke attraction emotions – players like or dislike game props, settings, visuals, soundtrack, board design, an experience as an aesthetic whole, and so on. The degree of appeal or appeal and familiarity effect the intensity of attraction: high degrees of unappeal and unfamiliarity most likely produce an attraction emotion of disliking, or even disgust. Thus they lend themselves for deliberate use in the design of horror games, for instance. Attraction emotions relate to particular game elements and their implementation, especially the component and environment elements.

Well-being emotions

These are basic emotions that relate to desirable or undesirable events. Positive reactions give birth to joy that manifests as happiness, delight, pleasant surprise, etc. Negative reactions lead to distress such as depression, dissatisfaction, grief, etc. The intensity of the emotion is proportional to the degree that the event is desirable or undesirable, or in the special case of a loss (that is very relevant in the context of games), to its unexpectedness. Whereas I see prospect-based emotions relating to various goals regardless of their status in the goal hierarchy, well-being emotions relate to the victory condition and the gaming encounter itself as a whole, i.e. whether it has been successful as, e.g., social interaction and entertainment.

Repercussions for applied ludology

If we consider the ways that players develop tastes, i.e. liking and disliking to certain games and/or genres, the attraction and attribution emotions are relevant. When games are evaluated in the context of their genre, they are treated both as agents and objects: As agents, when their deviation or compliance to genre conventions is evaluated, and as objects, when e.g. their audiovisual or tactile qualities are liked or disliked. The intensity of these emotions is dependent on the degree of familiarity variable – especially in relation to knowledge and appreciation of genre conventions.

As the above examples already indicated, prospect-based emotions and fortunes-of-others emotions are integrally related to game system behaviour, i.e. the play of a game. Thus they are central to any theory of game-related phasic emotion processes.

This does not mean that the other categories are less relevant. I suggest the following: in the context of gaming encounters, the well-being emotions should be interpreted as focusing on the mood that the game proposes, i.e. the forms of fun that game designers such as Marc LeBlanc and others (see chapter 9) have discussed. Seen this way, well-being emotions and their compounds, such as distress or gratification, present the mood-related outcome of events and agents that combine to afford, e.g. challenge or fellowship in terms of Hunicke et al. (2004), in the gaming encounter.

Thus, efforts to create the mood proposal for a game design should start from the well-being emotions, and proceed to the other types – especially prospect-based and fortunes-of-others emotions – in analysing how they would support the desired result.

Player experiences as aesthetic experiences

Even though the attraction emotions in the OCC model can be interpreted to account for aesthetic appreciation, I believe that the 'magical' qualities of gaming encounters need to be addresses in more detail. One reason for this is that gaming encounters can not be objectified from the perspective of player experiences. Gaming encounters are also about aesthetically appreciating the events and agents. My premise is that the aesthetic and pretend nature of gaming encounter has consequences for the emotions that players experience, possibly intensifying and/or modifying them in particular ways.

Another inter-related question that remains open is: How does pretence (see chapter 7), possibly supported by a sense of presence, affect emotions? Regarding the question about presence, an initial supposition would be that the stronger the sense of presence, the stronger or more intense are the emotions the player experiences regardless whether there is pretending or not. In terms of Ortony, Clore and Collins' theory, the sense of reality variable would be directly proportional to the intensity level of emotions experienced. This also relates to the point by Grodal presented in chapter 5 that situations in games resemble real-life situations more closely than ones in narratives, as the player is an agent within the gaming encounter. Thus the magic circle simultaneously both magnifies the emotional intensity yet also provides a safety net with the pretend aspect and its relation to the sense of reality variable.

This tension between the everyday world – and its agents, events, and objects – and the ones in the game as a world leads us to theories on how aesthetic stimuli differ from everyday stimuli. Gerald Cupchick has written about aesthetics from the perspective of emotions. Cupchik's premise is that stimulus appraisals and responses to them, i.e. valenced reactions that happen in everyday life can be generalized to the aesthetic realm. According to him, 'Everyday stimuli denote objects, people or events in the world which possess practical utility.' Conversely aesthetic stimuli, such as paintings, are distinguished by a quality Cupchick calls 'unity in diversity'. (Cupchick 1994, 178.) This is something that happens also when diverse game elements become unified into succeeding game states in the behaviour of the game system.

Regarding cognitive processes towards aesthetic stimuli, Cupchick cites Rudolf Arnheim's theories on art and visual perception, according to which 'interrelations among semantic and stylistic qualities create the foundations for dynamic, expressive effects.' (Ibid.) This affords potential for diversified (or 'polyvalent') personal interpretations of the stimuli embodied into aesthetic works, and at the same time, contrasts them 'with the singular ('monovalent') meaning attached to utilitarian messages in everyday life'. Cupchick summarises that:

> Aesthetic stimuli possess greater qualitative diversity than do everyday stimuli, incorporating syntactic (i.e. stylistic) as well as semantic (i.e., subject matter) information. (Ibid.)

In my interpretation, gaming encounters possess both, i.e. real-life situations in stylized form: the consequence for player experience is a conceptual blending (in terms of Fouconnier & Turner 2002) of schemas and scripts (see chapter 6) with the aesthetic realm of pretense and make-believe. The magic circle of pretence frames aesthetic-emotional cognitive processes as well, and aesthetic stimuli function as antecedents of enjoyment. This has to do with the craftsmanship and design techniques we touched upon when discussing transportation and the virtues of entertainment products in chapters 8 and 9. In the next chapter, I will analyse how eliciting conditions for emotions are embodied into game elements and game states, which is a question of aesthetics as well, more precisely a question regarding the ways in which feeling is embodied into aesthetic worlds.

Game elements as perceptually abstracted stimulus

Cupchick goes on to discuss how perceiving aesthetic stimuli is related to cognitive process of interpretation and meaning. He calls this 'stimulus decoding' and studies it in light of contrasting theories on the psychology of perception. According to so-called gestalt view, meaning is contingent on the situation or context within which an object or event is perceived (ibid., 180). Another view on stimulus decoding is what Cupchick names configurative: it posits that configurations of features combine to form emergent objects. Objects that are important for attaining of practical goals are perceptually abstracted from their backgrounds, i.e. isolated (ibid. 179).

The question is whether the magic circle and the system behaviour within it override the configurative view in favour of the gestalt view. Or, in light of gaming encounters, the truth is a blend of these views, as goals are fundamentally important, and arguably their embodiments into game elements are 'perceptually abstracted' from the game state and game system behaviour as a whole. For example in basketball, the rim and the hoop presumably are perceptually abstracted in such a fashion, as well as the Pac-Man and ghost characters in **Pac-Man** (Namco, 1982). The gestalt view seems relevant in the sense that the game state and the context element together construct the 'veil' of the magic circle (i.e. pretense, in terms of cognition) to everything perceived.

In practice, this means that someone hitting another person in a boxing match is perceived differently than someone hitting another in the everyday street; a boxing match provides aesthetic stimuli in a gaming encounter governed by rules, whereas a street fight is anchored to everyday life, and its stressful uncertainties and dangers. The transformation to the aesthetic realm takes place also regarding scripts and schemas, through the Possible World Box (as discussed in conncetion with the theories of pretence in chapter 7). My game-related boxing example is highlighted by Cupchick's statement, which ties the discussion at hand to theory of player experience:

> The shifting of thematic fields or backgrounds can radically change the meaning attributed to an event. The important point is that thematic fields or contexts are

adduced in accordance with their relevance to a sender or receiver's goals and intentions. (Ibid. 180.)

In other words, the player prerequisites introduced in chapter 9 are also prerequisites for the aesthetic appreciation and enjoyment of gaming encounters and the game states and game elements within them.

Cupchick proposes two alternate models for stimulus decoding: 1) reactive model, where pleasure and excitement is sought from the aesthetic exprience according to the configurative view, and 2) reflective model, where the work's qualities are reflected upon as a multilevel structure of meaning. (Ibid. 182–186.) In the light of the theory of player experience, the two models can roughly be characterized as privileging psychomotor and physical abilities versus cognitive abilities, respectively. With the reactive model, a player's emotional disposition would be geared towards the core mechanic, and with the reflective model, to the theme of the game, i.e. the metaphor constructed for the game system and how it is communicated via means of narrative, characterization, and rhetoric. In terms of game design, designing for the reactive model would mean less focus on the conditioning nature of the core mechanic, whereas designing for the reflective model would weigh more leverage on the techniques of thematization.

Game states expanded to emotional states

In terms of the theory of player experience, the conclusion from discussing the aesthetic nature of gaming encounters is: the magic circle construed from the pretence that the gaming encounter necessitates is fundamentally important in understanding player experiences as aesthetic experiences. Moreover, the aesthetic nature of gaming encounters – be it performing game mechanics, appreciating the design and composition of game components and environments, or being by fascinated the simulations of minds of game characters (cf. Keith Oatley's theories) – is an aspect of the antecedents of enjoyment and eliciting conditions for emotions in games that can not be omitted from discussions of player experiences.

We will soon move on to the final chapter on the theory of player experience. In it, I will discuss conceptualisations of choice and decision-making, and move on to introducing a number of hypotheses on player behaviour. The theory of player experience will be concluded with a number of examples of how eliciting conditions for emotions are embodied into game elements and their configuration in game states. In fact, this brings us to the general consequences that the theory of player experience has for the definition of game state: It is necessary to expand the definition of game state to include the players and their emotional states. From the perspective of player behaviour and their emotional states, game state is in fact the systemic and emotional state of a gaming encounter as a whole, in a given moment of time. This means that in a multiplayer gaming encounter, this combined state includes emotional states of all the players, i.e. it is a constitution of inter-emotional states.

Local nature of game states; global nature gaming encounters

Another important conclusion is an analogy between local and global variables that affect intensities of emotions and two ludological concepts: game state and gaming encounter. Namely, the local variables can be taken as analoguous to the game state, i.e. affecting the 'local' moments in time that individual game states present during game play. Consequently, global variables can be seen to affect the gaming encounter which frames all game states within its overall duration. The principle of local variables affecting groups, and global variables affecting across groups of emotions, is applicable as well: gaming encounters consisting of sequences of game states produce effects across groups, while individual game states target and affect a specific group of emotions. This analogy enables analytic focus into the phasic processes of emotions and game play: i.e. when studying particular game state scenario, the focus is on individual emotion groups, and when studying the overall emotional spectrum of a gaming encounter, the focus is potentially on all groups.

Rules as Eliciting conditions; Eliciting conditions as rules

Another logical observation is that if rules are embodied into game elements, and game elements and game states embody eliciting conditions, then rules are, more or less, equal to eliciting conditions. This analogy can be conceptualised into two roughly different approaches to game design or analysis:

The first approach takes rules as its starting point: E.g., when game designers create rules, they end up creating eliciting conditions; when game scholars study rules, they produce observations about eliciting conditions as well. The premise could be called ludologist.

Conversely, the second approach takes eliciting conditions as the starting point, and proceeds to design or study them, ending up creating or finding rules – or embodiments of rules as rule set procedures, e.g., narrative sequences or scripted events in a game world. The premise could be called narrativist.

Essentially the division is a question of perspective. The point here is that with the concepts introduced, such differences in perspective can be discussed with common vocabulary, and both solutions contribute to player experiences and conceptualise them, in the end. These observations lead the way to an analysis method regarding the emotion potentials of gaming encounters, with the study of suspense elicitation as the case example. It will be presented in Part IV as a case study.

CHAPTER 11: What Player Experiences are Made of: Predictions and Sequences of Emotions

> [A]ll works of art, and more generally all pleasures of the mind – from roller-coaster rides to gardening – derive their pleasurability from the sequences of emotions they bring about. (Kubovy 1999, 138.)

As the conclusion to chapter 9, I adapted the notion of user prerequisites for entertainment products by introducing *player prerequisites* that conceptualise the psychological thresholds for enjoying gaming encounters and embracing them voluntarily. I argued that games are a form of entertainment where human psyche is engaged in a more complex way than in many other forms of entertainment. I also set the scene for predicting and analysing the subsequent player behaviour, once the prerequisites are met, by taking the premise that the individual variations in player behaviour can be abstracted (to certain extent) into habituated responses, i.e. action tendencies in terms of emotion theories. Now, in this final chapter of part III, it is time to fulfill the promise of delivering the framework for concrete and practical analysis methods of player experience. The key concept will be eliciting conditions. I intend to prove that enjoying playing games is largely about enjoying the various stylized eliciting conditions that game systems afford for their players.

Players are the entities that make decisions on how to act in the gaming encounter, regardless of the breadth of choices. Game states, and the game elements configured into certain relationships in them, imply certain conditions for player choices, and it has been suggested that emotions in general inform choices. This takes place in similar fashion as when emotions help set priorities to conflicting goals. Game systems have tended to privilege the predictability of player behaviour by narrowing the choices available to players – yet, there seems to be a movement towards open-ended game worlds where player creativity is given particular significance. Whatever the case, I suggest that we need to look at how emotions relate to theories about choice and decision-making.

Emotions, Choice, and Decision-Making

In his book *Strong Feelings: Emotion, Addiction, and Human Behavior* Jon Elster discusses the psychology of choice and emotions. According to him the '[a]bility to choose implies, minimally, sensitivity to expected rewards and punishments' (Elster 1999, 135). In practice, choice implies that if one has to make a choice between A and B, then the options have to have different consequences. Otherwise there is no choice, only a taking. The relevance for applied ludology lies in understanding the different types of choices that players are put to perform in games. Differently structured choices construe different eliciting conditions, and therefore it is useful to gain understanding of the psychology of choices – in order to analyse and design meaningful choices into games (cf. Salen & Zimmerman 2004, 61–7).

Elster distinguishes three levels of intentional action:

- Action without choice: Deliberate action that is insensitive to changes in the reward structure.
- Minimal choice: Deliberate action that can be modified by changes in the reward structure. Minimal choices are reward-sensitive choices.
- Rational choice: Deliberate action that stands in the right kind of relation to desires, beliefs, and information sets of the agent. It is based on the principle that 'people make the most out of what they have, including their beliefs and their preferences.' (Elster 1999, 135–145.)

The point here is the relationship of the choice and its consequences, and the temporal distribution of the consequences. This can be roughly characterized with a distinction to short-term vs. long-term rewards – a distinction which can also be conceptualised through goals rather than the rewards their attainment implies: Short-term and long-term goals, respectively (cf. Salen & Zimmerman 2004, 343–4). Moreover, this distinction can be, more or less directly, mapped to the distinction between high and low-order goals (see chapter 6). The overall point, then, is to evaluate whether Elster's typology of choices is applicable for the purposes of ludological analysis and design tasks. In order to make conclusions about the applicability, we shall look more closely into the intricacies of choices and decision-making.

Time and information as informer of choices

Elster discusses 'time discounting' as a variable on choices which is demonstrated by emotional dispositions. Dispositions affected by time discounting tend to privilege present, short-term rewards over future, long-term concerns (Elster 1999, 139). According to Elster, the reason behind time discounting is that ‘distant prospects lose some of the cognitive vividness by virtue of which they can motivate behavior in the present’ (Ibid. 147).

This is relevant also in the context of games. In practice, players in a given game might adopt a strategy where they privilege choices and actions regarding the present game state as such, just in order to be able to take actions and make choices, and therefore they would not link their actions to the higher order goals which are also temporally and causally distant. An example could be found among two stereotypical players of **Carcassonne** from two extremes: A ‘vivid one’ would not play any farmer components onto her tiles, as they produce points only during the end game, but a ‘patient’ one would only play farmers, subsequently gathering points only in the end game. I would suspect that most players of Carcassonne would hold the latter strategy as ‘dull’ exactly because of its lack of cognitive vividness, i.e. short-term rewards, in the present.

The hypothesis from time discounting would be that ‘flat’ goal hierarchies, i.e. ones with 1) few goals of 2) equal order, privilege action in the present, i.e. paratelic motivation where the action itself is captivating enough to function as a source of enjoyment, and the result of the game (e.g., win or lose, high score, etc.) is of secondary importance. This claim seems to hold true for Tetris and other digital, so-called ‘casual games’, such as **Bejeweled**, **Zuma**, etc. – also because games like these tend to have no victory condition, only an end condition. (In chapter 5, it was already established that games like these seem to privilege the paratelic motivation, i.e. the action itself rather than goals.)

Belief information functions as one informer of choices (Elster 1999, 147): Regarding games this means that one’s belief of what consequences choices will produce in the game system is crucial. Therefore the means and rhetoric with which the rule set is communicated is in a major role. Misunderstandings of rules, and the causal reward structures they implicate, may lead to misinformed choices. Then again, unpredictability in the behaviour of the game system produces, in fact, imperfect belief information. As a consequence, there emerges eliciting conditions for, e.g., prospect-based emotions, such as hope, fears-confirmed, surprise, and suspense. However, this imperfectness lacks the ‘illness and despair’ of life outside the game. So whereas individuals are prone to minimise unpredictability in life, they are in principle willing to safely maximize it in games – in fascination of safely experiencing emotions of the above type. Choices embodied into game elements, in gaming encounters, presents an actual instance where this kind of fascination can be exercised.

Impact of emotions on choices

Elster also writes about choice and emotion. Despite the fact that there are claims to the contrary, Elster argues that ‘emotions are involuntary undergone rather than consciously chosen, events rather than actions’ (Ibid. 150). He also notes that ‘most emotional experiences are greatly magnified if they take us by surprise’ (Ibid. 151), which supports the role of unexpectedness as a global variable affecting the intensity of emotions. This is validated, again, with the counter-example of a game where every state and their outcome (and ultimately the winner) would be known to all players beforehand -– it hardly would produce an exciting and emotional game experience for its players due to the lack of intensity across emotion types.

Elster distinguishes five aspects of whether and when emotion has impact on choice. Their relevance in light of games can be summarised to the following observations: Negative emotions such as fear, anger, and shame leave intentionality of choices intact but undermine reward sensitivity. They thus relate to action without choices, e.g. mere survival or revenge, which might in gaming encounters take the form of retaining status or choosing the ill fortune of others as one's primary goal (e.g., engaging into so-called 'grief play', as it is called in online games).

It is quite common that emotions leave reward sensitivity intact but undermine rationality – thus they relate to minimal but not rational choice. 'Jumping to conclusions' presents an example of how emotions undermine rationality in choices. In general, emotion leaves rationality intact across both mild and strong emotions, but Elster claims that it is debatable whether emotions could actually enhance rationality, as, e.g. Antonio Damasio (1996, 2004) has argued. (Elster 1999, 154—9.)

In terms of applied ludology, this means that games which elicit intensively emotional experiences presumably enhance replayability, as they privilege minimal choices and thus elicit subsequent ruminations of unwanted consequences. Time discounting, then, could be a game design pattern which modulates the ratio between the available choices, and the tempo in which they have to be made. Essentially this is what Tetris and other game systems which increase the tempo of introducing new goals and, at the same time, narrow possibilities and/or time to take actions in light of the goal(s) introduced.

In summary, there is nothing dramatic about games' emotional nature in relation to the choices they put their players to perform. Rather, emotion has its role in managing goals as it does in life outside the gaming encounter. However, it is another question whether games, with their heightened form of goal-seeking, produce relatively higher baseline of intensity for emotional reactions, and thus their impact on choice would presumably be respectively more significant as well. The aspect of pretence (see chapter 7) affects this phenomenon as well. It could be called the general eliciting condition of the magic circle which draws from the pretend and half-real aspects of the situation.

Information element as embodiment of choices

The take-away for applied ludology here is a general understanding of different types of choices and their relation to emotions. This leads to my argument that the types of choices the players are given has consequences for player experiences, and whether the game has minimal or rational choices, or actions without choice – or a variety of the different types according to certain kind of design – presents an area of inquiry for applied ludology. The central game element in an analysis method like this would seem to be information, and how it is embodied as rules and attributes into other game elements. Consequently, they are the focus of player choices, and emotions.

This kind of analysis should focus on the type of choices a game has, and in what succession they possibly follow each other. This is because these aspects of game system behaviour represent ways to embody eliciting conditions to particular game states, and thus they also represent means to modulate player behaviour. For example, a popular television game show such as **Deal or No Deal** (Endemol, 2003-), modulates player behaviour by giving the contestant sets of choices which are pure guesses (in the form of choosing briefcases and revealing the sums of money they contain), but interrupting this in certain rhythm by offering a deal which the player can ponder with certain information available to the contestant so that s/he can weigh the alternatives of taking the deal or not.

In terms of Elster's choice categories, the choices in Deal or No Deal that are based on guessing do not really represent choices, as the player does not have much information to base the choices on. What happens is only a taking, even if there is a choice between a set of briefcases – yet, the player does not know the value of these components as the attribute information is hidden. The attributes, in the form of sums of money, are revealed after the choice from inside the briefcases. Then again, this set of illusory choices is structured into rounds, in between which there follows an offer based on the information revealed about the component attributes (the sums). The choice 'deal or no deal', concerning the offer made, is reward-sensitive, yet when making the decision all information about the remaining component attributes is still not known, and thus it can be interpreted as being 'no more' than a minimal choice. Overall, it is important to note that the briefcases and sums of money present another way to embody the emotions of hope and fear, and suspense, into a combination of components and information, just as playing cards in our examples in the previous chapter.

The above observations highlight an important note about emotions' dual role in decision making: Emotions not only shape our perceptions and weighing of choices but they also shape our perceptions of rewards (cf. Elster 1999, 163;165). This has direct consequences for performing game mechanics, and more precisely choices regarding them: when, which game mechanics, and how. We will next discuss what different approaches to these kinds of weighings, i.e. processes of decision-making, there is. From this perspective, player strategies can be seen as strategies in managing emotions.

How emotions influence players: Findings & Hypotheses

In the following, I will present a number of findings from psychological literature on emotions that I argue are relevant in the contexts of gaming encounters. In most cases, I will present hypotheses of their consequences to player behaviour. The overall purpose is to highlight emotional aspects of psychological principles, but also to find validation from academic psychological studies to the obviously compelling psychological game designs that game designers have produced, mostly with the help of tacit knowledge. These hypotheses also build ground for an analysis method which focuses on game system behaviour. It is introduced in the first chapter of Part IV.

Moods influence decisions

In his paper 'Emotion, cognition, and decision making', Norbert Schwarz (2000) writes about the influence of moods and emotions on cognitive processes. He summarises several findings: For instance that individuals are more likely to recall information from memory that is congruent with their current feelings. Also, individuals are more likely to make an evaluation about any target more positively when they are happy rather than sad, and those in happy mood tend to overestimate the likelihood of positive events and underestimate the likelihood of negative events. Individuals feeling sad make the opposite evaluations. (Ibid. 433–4.) Translated into player behaviour, this would constitute a hypothesis according to which:

- Players in a happy mood, i.e. players that are presumably having success in a game, take riskier opportunities and are willing to make more daring decisions than those feeling sad. Gambling serves as an example of gaming encounters where this hypothesis could be tested.

The above has to do with how players process the information a game system gives them, i.e. players' cognitive processes, where cognitive abilities (see chapter 7) are stressed. Affective states influence these information processing strategies: Schwarz (ibid.) cites studies which show that individuals in happy mood rely on pre-existing knowledge, whereas individuals in sad mood focus their attention to on-going details. In conclusion, it is evident that positive affective states allow individuals to rely on their routines and plan ahead, whereas negative states elicit attention to details of the present game state which is seen as problematic and something to be solved. Translated into the language of ludology, this might mean that an unhappy player is more prone to make bad choices in, e.g., Texas Hold'em Poker.

Managing regret and disappointment

Psychological studies on decision-making have focused mostly on the emotions of regret and disappointment. These studies focus on expectancies of certain event, and how the confirmation or violation of expectancies is experienced. Basic findings conclude that regret is elicited by a process where a choice that is expected to produce the best result is taken, but the option turns out worse than the rejected ones. Even if the outcome is partially favourable it might elicit regret, because the rejected choices might have produced a more desirable result. Disappointment is experienced in cases where the unfavourable outcome is even worse than expected. (Zeelenberg et al. 2000, 522.) The hypothesis is that regret, even when the outcome was only partially favourable, leaves a player ruminating (see chapter 7) whether another choice or action would have been more successful: A higher stake would have given a higher reward, and so on.

There is general evidence that people experience stronger regret over acts of commission than omission, and that they emotionally amplify the effect of acts where they have made a decision that turns out wrong, rather than regretting acts of doing nothing. However, even though regrets over actions seem to be more painful in the short run, regrets over inactions feel more painful in the long run. (Studies cited in Schwarz 2000, 436 & Zeelenberg et al. 2000, 526.)

There is also evidence of individuals engaging in so-called regret management when faced with subsequent decisions after an initial one that caused regret. The subsequent decisions in a similar situation tend to be influenced by the experienced regret, which was illustrated in an experiment by Zeelenberg et al. where simple bidding game called Ultimatum was played in two rounds. During the second round, after gaining knowledge of the game system behaviour, players behaved in pursuit of diminishing current regret and minimising future regret. In case of disappointment, people are reluctant to make subsequent decisions, and begin feeling powerless and inactive, or rather do something different, such as pursue another goal. (Zeelenberg et al. 2000, 526–8.)

As we have already seen, this is generally what emotions are capable of doing, i.e. they form priorities among multiple goals. Disappointment and the subsequent reluctance to continue are characteristic to situations where players get stuck on a specific challenge and there are no others available, or they lose sight of chances to succeed in attaining a goal. If there are no other goals available, playing is bound to cease, as boredom and anxiety take over excitement. The hypothesis is, therefore:

- Multiple, non-preventing goals prolong gaming encounters, or at least provide players with emotional safety nets. Introducing new goals embodied into game elements (e.g. characters / environments) seems to support this kind of player experience.

Generally in the context of games, regret management manifests especially in cases of goals that are pursued with game mechanics that require an assessment of allocation, whether the object/source of allocation is resources (as in bidding) or strength, for example. In a digital game such the athletics simulation **Track & Field** (Konami, 1984), a timing mechanic is used to determine the angle of flight or jump. Presumably a player clearly overrunning the line is bound to overcorrect the timing on the next try, whereas a player failing only by an inch tends to correct only slightly – and presumably the same goes for the actual sport of long jump. This example represents an example of how cognitive and/or psychomotor abilities are developed and fine-tuned regarding a goal that requires performing a game mechanic in a critical time frame, i.e. a timing mechanic (among others, such as accelerating and moving).

In any case, games are bound to elicit emotions of regret, as they force the player to take decisions and persuade them to commit to performing the game's mechanics and the goals they relate to. Thus eliciting regret, instead of the bleaker feeling of disappointment, is not necessarily a negative aspect to a game, because it can support the action tendencies of trying again and keep on playing the game. These kinds of retries and 'one more time' attempts, which are very fundamental to playing games, constitute a case of so-called behavioural undoing: Active attempt to undo the unpleasant effects of the decisions that went wrong (Zeelenberg et al. 2000, 526).

These findings become even more relevant when we ponder them in relation to a suggestion presented earlier. Replayability and memorability are amplified by games that are particularly successful in inducing emotional reactions, as emotionally salient material is remembered better than neutral material (Oatley & Jenkins 1996, 274). Thus the hypothesis would be:

- Multiple and non-preventing (sub)goals that are able to elicit regret, in a moderate fashion, seem to support replayability. The more detailed hypothesis would be that when multiple and non-preventing subgoals are embodied into specific configurations of component and environment elements, regret in a degree that encourages repeated gaming encounters is elicited.

Strategies and hypothesis of decision-making, managing, and predicting emotions

Zeelenberg and his colleagues suggest that decision-makers use several different strategies in order to anticipate or avoid future regret and disappointment, i.e. negative emotions. These mutually inclusive strategies include (Zeelenberg at al. 2000, 534–7):

- avoiding decisions
- delaying decisions
- lowering expectancies
- investing more effort to gain a desired outcome
- derogating the attractiveness of a desired outcome
- setting vague expectations that are harder to disconfirm

If we look at game-related examples of similar strategies, respectively, first we can conclude that avoiding decisions is not really an available strategy, as any game requires the player to take actions of some kind. Then again, delaying decisions is a means to delay feedback of the outcome of the decision, and in games this is evident in the form of 'analysis paralysis' (cf. Holopainen & Björk

2005, 352–3), i.e. a situation where a player tries to think every single option and consequence thoroughly, and the game state does not proceed because s/he does not make a choice by performing a game mechanic. (Analysis paralysis is mostly a symptom in turn-based games without time constraints.)

Emotion theorists have written about emotions as heuristics that help in decision making: Humans cannot solve complex situations, such as incongruent goals, completely. Therefore emotional states organize our ready repertoires of action, as Oatley and Jenkins (1986, 258) suggests: 'emotions are better than doing nothing, or than acting randomly, or than becoming lost in thought'. So even though stalling the game due to endless analytical thinking from one player's part can be distressing to other players who await their turn, it would appear that the player experiences of some games, such as Chess, are based on it. Thus it could be suggested that a version of Chess with very low time limits for each move constitutes 'Emotion Chess'. Then again, a game system might impose a rhythm that prevents the game from stalling, or even punish players in case of such conduct ('delay of game' as a cause of penalty, foul, yellow card, etc. in sports games).

The third strategy was lowering of expectancies. It may take the form of prioritizing subgoals over another, such as only briefly monitoring and protecting one city in Missile Command (Atari, 1981) while actively protecting another, yet hoping that missiles would not hit the other city. (The game is a good example of a game design that forces players to shift their focus back and forth on a number of parallel goals in the goal hierarchy.) In practice, lowering of expectancies is more often due to the player making a negative self-assessment concerning the abilities or probability that performing game mechanics (and the goals they relate to) require.

The next strategy mentioned by Zeelenberg et al. is investment of extra effort. It is fundamental to many games: investing extra effort and care in performing the game mechanic tends to better the player's chance of succeeding. As we have seen, effort spent also functions as a local variable that affects prospect-based emotions.

Derogating an outcome is another way to manage emotions of disappointment. It is a coping strategy that manifests in individuals' inner dialogue of emotions, or in a social and communicative context of a game: The player downplays the result or its importance: 'I was not expecting to win anyway'. Finally, the strategy of setting vague expectations refers to a disinterested player, or a player who does not really understand the behaviour of the game system, or its rules to start with, so s/he 'just plays along' to see what happens. From a design perspective, players derogating outcomes is not necessarily a good sign, as it displayes emotions of resignation, i.e. failure in persuading them to adapt goals-of-self, which hints at a non-aroused disposition to the game: local and global variables affecting intensity of emotions subside into low degrees.

Also, in studies of responsibility, regret and disappointment by Zeelenberg et al. (2000, 523) they found that in the case of an suboptimal outcome,

> more disappointment was ascribed to a decision-maker when the negative outcome was the result of a random procedure than when it resulted from choice.

So, seemingly random procedures enacted by the game system are potentially experienced as more disappointing than those that the player feels she can influence. This has consequences for the use of chance in determining player success, e.g., abandoning outcomes dictated by a dice or a draw. According to studies, regret is more closely related to agency of self than disappointment, whereas disappointment is more related to the agency of others than regret (ibid.). In this light, failing due to chance is bound to elicit disappointment rather than regret, and the game system can just as well be seen as an 'other', i.e. an agent that is the source of the feeling of disappointment. If we return to the television game show Deal or No Deal, the chance-driven game mechanic of selecting the briefcases elicits disappointment (towards self), whereas making a 'weighed' decision concerning the banker's deal would elicit regret (towards others) in case of an unfavourable outcome. In fact, there was a prototype example of this kind of game state scenario during the show's first season in Finnish television: a player did not take a deal of 80 000 euros, ended up holding on to her own briefcase, and won 50 euros. A decision with such an outcome is bound to elicit regret afterwards.

The above is relevant to the hypothesis presented earlier, according to which multiple and non-preventing (sub)goals that are able to elicit regret, in a moderate fashion, seem to support replayability. Thus, another hypothesis is:

- If chance is introduced to the game system behaviour in a fashion that it does not overrule player choices – as, e.g., a chance procedure of generating new components, as in Tetris, Zuma, etc. – replayability is enhanced.

Social and para-social aspects of decision-making

In a gaming encounter, decision-making may also take a social flavour. Hertel, Neuhof, Theuer, and Kerr studied individuals' willingness for cooperation in a chicken dilemma game, and found that players in a happy mood are likely to imitate the behaviour of other players, whereas players in a sad mood analyse the game system and base their moves on that analysis (Hertel et al. 2000; Schwarz 2000, 435). In other words, players in contrasting moods choose different strategies to interpret the behaviour of the game system. Perhaps strikingly, the study showed that a happy mood did not increase willingness to cooperate in the game (ibid.). Anyhow, these findings can be linked to the general argument that emotions affect social judgment in particular (Oatley & Jenkins 1986, 283).

It is interesting to note that, in the light of this finding, the vast number of computer and video games designed exclusively for single player propose only the 'sad', analytical alternative. However, in my hypothesis this presents a case where the game system is perceived as an agent with certain behavioural schema that are scripted into ruleset procedures. This would explain anecdotal evidence on why disgruntled players often voice comments like ‘This game is stupid’ or ‘This game sucks’ at the game itself. These kinds of reactions are examples of so-called anthropomorphization, i.e. treating an inanimate object as a human being, with similar emotional intensity than real, living things (see Reeves & Nass 1998). In this case what is being anthropomorphized is not the technology as such, but the game system as an agent with behaviour.

With their ability to simulate complex phenomena with audiovisual means (such as character behaviour), digital games seem to support this kind of behaviour in a stronger sense than, e.g., board games where emotions are channeled towards other players, as is the case also with tabletop and live action role-playing games, and sports games. Presumably, then, a game with characters is more probable to evoke such reactions (cf. Gee 2003), as characters-of-self and/or characters-of-system embody simulations of living beings with (simulated) emotions of their own.

In general, the use of characters presents evidence of how the theme element is used in ‘emotioneering’ game elements. This brings us closer to the so-called para-social emotions towards characters in forms of drama (which we touched upon earlier when discussing transportation theory). In a gaming encounter, there can be both social emotions (of the fortunes-of-others and attribution types) towards other players, and parasocial emotions towards fictional characters that are embodied into the component elements (as characters-of-self/other/system). As a result, emotions of nurturing are elicited through characters and/or environments, as such games as **The Sims**, **Nintendogs**, **Animal Crossing**, and **Viva Pinata** (Rare, 2006) demonstrate.

Dolf Zillman has discussed the mechanisms that drama has for eliciting emotional involvement. Based on a number of empirical studies, he argues that emotional involvement is construed through emotional dispositions between empathy and counterempathy, rather than through the process of identification with a character. According to Zillman’s (1994, 40) review, empathy can be conceptualised as any experience that is a response to ‘information about circumstances presumed to cause acute emotions in another individual’, and/or reaction to emotional experiences of another individual, and/or the actions of another individual when they are precipitated by acute emotional experiences. Empathy seems to be controlled by dispositions, such as whether the other is considered a friend or not (ibid. 45) – which puts gaming encounters into a specific context, as friends can temporarily become ‘foes’ in the pretence of the magic circle.

Zillman points out that empathy is elicited through caring for the characters, and reversals of affective dispositions towards characters may greatly contribute to emotional involvement, i.e. when a foe turns into a friend; on opponent into a team-mate, or vice versa (ibid. 48–9). The conclusion at this point is that social and parasocial emotions have impact on decision-making processes, and thus also for player experiences as emotional sequences and the resulting moods (such as fellowship in the categories of LeBlanc & al.)

Overall in light of *Games without Frontiers*, these kinds of eliciting conditions are sought through thematisation via techniques of game rhetoric. How the eliciting conditions are embodied into game elements is an important aspect of this phenomenon, and we will return to it at the end of the chapter.

Humor elicitation vs Suspense elicitation

The fun-eliciting nature of gaming encounters has been already discussed, but it should be related to Robert S. Wyer and James E. Collins' (1992) theory of humor elicitation which provides us with necessary principles for understanding the similarities and differences between how information is valued in humorous and competetive situations. The theory specifies the conditions in which humor is experienced in social and nonsocial situations, and discusses how the experience of humor is based on an interpretation of a specific type of stimulus event, and subsequent cognitive elaborations concerning the implications of the event. Following Michael Apter's (1989) theories, Wyer and Collins (1992, 666) write: 'To understand the dynamics of humor, all aspects of an informational experience must often be considered.' I propose that with gaming encounters, the task regarding information remains largely the same.

Wyer and Collins define humor-eliciting stimulus through various aspects, one of which is especially relevant in terms of games. They write:

> The stimulus for the humorous reaction can be something that a person says, a nonverbal behavior that the person performs, or a combination of both. The stimulus event might also include nonbehavioral aspects of a situation. Indeed, a humorous response may often be stimulated by a number of verbal, nonverbal, and contextual features that are responded to as a configuration, none of which in isolation would be sufficient to elicit this response. (Ibid. 664.)

I argue that the stimulus of gaming encounters are configured in similar manner, as they produce co-behaviour of game states (of system) and emotional states (of players). In effect, gaming encounters can incorporate humor-eliciting stimuli, intentionally or unintentionally (which is another aspect of humor-eliciting simulus).

According to Wyer and Collins, common conceptions of humor are based on 'a sudden awareness of an incongruity between two objects or events, or the concepts associated with them' (ibid., 665). The awareness is achieved via a phasic process where, first, an incongruity is identified, and second, the incongruity is resolved or understood (ibid.). As the process is a problem-solving task of sorts, I argue that it can be likened to the process of identifying goals and their subsequent resolution. A process like this can also be seen as a form of conceptual blending, as discussed earlier, and moreover, understanding of metaphors, as Wyer and Collins also point out (ibid. 666). Thus they posit that 'incongruity resolution may be necessary but not sufficent for humor elicitation'.

Nonreplacement and diminishment are two important factors that affect humor elicitation. The first concept means that in a joke, the resolution and reinterpretation of the situation due to new information should not replace the interpretation that had appeared correct. In my interpretation, this postulate can be likened to a diegetic world of the joke that remains coherent from start to finish. However, the second concept, diminishment, requires that:

> The perception of reality that is established by the new information must in some sense be diminished in importance or value relative to the apparent reality that was first assumed. (Ibid., 667.)

For example, slapstick humor is based on this principle, as the protagonists seem to hurt each other or themselves, but the realization that this is not the case, i.e. that it only appears to be so, elicits amusement through the principle of diminishment.

Wyer and Collins point out that the reinterpretations that diminishment brings about do not apply to, e.g., new information revealed in connection with scientific discoveries or mystery stories. For the purposes of the theory under construction, dimishment highlights an important aspect of game systems, i.e. that the value of information in games mostly works in reverse fashion to humor, and similar fashion to mystery stories, especially. In Wyers and Collins' words, what happens when new information gets revealed in games is that 'the reality that is implied by the new information is of greater importance or value than the original, and so amusement is not experienced' (ibid., 668). Or, amusement is experienced through emotions of resignment, or in ironical sense, for example when a player has bad luck or receives useless information that is already known.

In games, information ownership also matters. If a player possesses information that she thinks is valuable, its revelation should not produce a humorous reception, but rather aid in attaining a goal, which means that the value of the information is increased rather than diminished. Incorrect answers to questions in quiz games present an example where the information the player provides is diminished, as it does not correspond with the answer. Perhaps, then, humorous games should proceed from the premise that diminished information is actually valuable.

Predicting emotions

Studies on decision-making (as we learned above) have proceeded from the assumption that in making a decision, possible future emotions resulting from the chosen action are taken into consideration (Zeelenberg et al. 2000). Furthermore, it is argued that all decisions involve predictions of future feelings (Schwarz 2000, 436). Decision-making has been seen to run primarily along the course of actual emotions, affective response, and anticipation of future emotion (Frijda cited in Zeelenberg et al. 2000, 522).

These arguments point out the nature of a game system as a kind of emotion engine, which not only elicits emotions from players but also leads them to predict their and fellow players' future emotions during the game. Gaming encounter, thus, presents an 'emotional huddle' of sorts, and in its center there lies a game system as an agent, the actions of which are predicted as well – through trial and error of scripts and schemas that are channelled through game mechanics to the game elements and system behaviour.

However, there are findings that individuals' intuitive theories of affective response may turn out incorrect and contribute to erroneous predictions of future feelings (studies cited in Schwarz 2000, 436). Individuals concentrate on a specific emotion-eliciting event while being ignorant of other variables that may influence their future feelings.

In a general level, Keith Oatley has noted that

> Games afford the possibility of engaged participation in an activity that generates meaning, in ways that, like life, are partly unpredictable. But games are constructed to avoid some of the stresses that occur in the ordinary world and that lead to illness and despair. (Oatley 1992, 356.)

This would mean that future emotions predicted in the context of the game state at hand can not be thoroughly anticipated unless the behaviour of game system, including possible other players, is completely predictable. Part of the enchantment of the gaming encounter with its 'magic' frame of pretense, safety, and detachment, is the willingness to cope with uncertainty (cf. Oatley above). Therefore a completely predictable game with perfect information would not qualify as this particular kind of stimulus arrangement.

A structural trait which is able to confine the spectrum of future emotions is the criteria with which the ruleset valorises player effort. If the criteria are highly binary, such as win/lose, the emotional axis of prediction runs roughly on the axis of joy–distress instead of more nuanced one, e.g. relief and pride – disappointment and remorse. The latter would require more qualitative scope in the criteria of valorizing player effort, but as a consequence, it would more likely enable support for a broader set of emotions. This has to do with how eliciting conditions are embodied into the game system, and how this is communicated to players via game rhetoric. A more detailed analysis will start from the following pages.

Eliciting conditions embodied into game elements

Based on the theories and hypotheses in the preceding chapters, I will close part III on the theory of player experience with an outline of how eliciting conditions have been embodied into game elements across various kinds of games. The premise is that gaming encounters afford eliciting conditions for emotions with three inter-woven aspects:

- the game elements themselves as embodiments of rules
- the game elements configured into a game state at a given moment in time
- the gaming encounter as a focused gathering of players in a certain context

The first aspect is evident, e.g., in the thematization of the elements with the help of a metaphor for the game system, such as a fantastic world with imaginary beings: as a component becomes character-of-self, e.g. Spider-Man or Hello Kitty, it becomes to embody certain thematic eliciting conditions based on the character brands. This aspect relates to the global variable of sense of reality, i.e. suspense of disbelief and the sense of presence, but also to proximity.

The second aspect highlights the conditions for performing the game mechanics that the game affords, i.e. whether the game state is favourable for performing the game mechanics with one's abilities, and in relation to one's current standing in the game. Finally, the numerous contexts of a gaming encounter set a baseline for the emerging eliciting conditions: for instance, an easy-going board game evening among friends most probably has different atmosphere regarding the players' emotional dispositions and moods than a televised game of survival in a desert island. These aspects have to do with the global variables of arousal – perceived ability to perform – and unexpectedness.

Overall, the global variables can also be seen as ones that affect the player prerequisites established in chapter 9.

Towards an analysis method

From these general premises we will proceed onto an analysis method, which presents an integration of the OCC model with the 'ECEGE' model (Eliciting Conditions Embodied into Game Elements).

The challenge in this method grows out of component relationships: Is it possible to separate emotions towards an agent itself, and the actions of the very same agent? How do emotions relate to the distinction between player and, e.g., character-of-self – i.e. does one feel contempt for the character representing oneself in the game, or is there self-blame towards one's own actions?

Here we should try to apply the findings from the empirical studies introduced earlier, and treat them as general principles. Regarding the relationship between player and character-of-self, there is most likely both contempt – i.e. counterempathy in Zillmann's (1994) terms – and self-blame, but the balance is proportional to the thematization of the character and the game mechanics afforded to the character. In sports games, there is no divorce between a player and his or her role (which can be likened to a character), which means that the abilities to perform in the role, and thus in the game, are equal to one's personal abilities. As a result, there is only self-blame. In other types of games, where the character's means to act are very restricted, it would seem to be more likely to feel contempt for the character and game system, than oneself. Avatars in games where the players can, e.g., verbally communicate and soforth express themselves more fully, the situation – and the line between contempt and self-blame – is, according to this hypothesis, somewhere in between the other two examples. In terms of emotional involvement, the process is moving from the axis of empathy and counterempathy to identification. The OCC model provides a solution to this dilemma with a local variable that conceptualises how the intensity of attribution emotions towards agents are affected: strength of cognitive unit is to account for cases

> in which the person experiencing the emotion is not the actual agent even though the emotion is characterized as involving the self (i.e., the person experiencing the emotion) as the formal agent (Ortony et al 1990, 77).

In effect, the stronger the bond with the 'cognitive unit', e.g. how strongly the player identifies or (counter)emphatizes with the actual agent, the stronger the emotion.

The analysis has been summarised in the table below, and can be found in tis entirety in Appendix F. I have tried to take the emotions relating to game elements individually: for example, components are treated as separate from what the player (agent) does with them. This solution is due to the fact that the OCC model behind the analysis tries to encompass our ways of being in the world and consequently the whole spectrum of human emotions, and therefore, in its applied ludological form, it should cover gaming encounters comprehensively as well; it should cover games as worlds of objects, events, and agents.

The distinctions between game elements are conceptual means that enable us to focus on details, i.e. the parts of a system and the local variables affecting emotional intensity. This does not contradict the systemic view that the behaviour of a system where the parts interact is more than a sum of its parts, and the dynamic combinations produce compound emotions, affected by global variables (Sense of reality, Proximity, Unexpectedness, and Arousal). This complexity has to be acknowledged in any theory of player experiences as well.

Eliciting conditions of game elements according to emotion types

In Appendix F, the reader can find an analysis of a sample of games and how emotions are embodied into their game elements. With the sample, I have tested which emotion types according to the OCC model are typically related to which game elements. The table below generalises the results in the light of the five emotion types, and game elements in each of their possible ownership attributes (self/other/system):

Emotion types	Prospect-based (focusing on events)	Fortunes-of-others (focusing on events)	Attribution (focusing on self or others as agents)	Attraction (focusing on aspects of objects)	Well-being / Attribution compounds (focusing on events and agents)
Systemic elements					
Component-of-self	hope / fear (in case element is involved in game mechanics when pursuing a goal)			attraction-to / aversion	
Component-of-other	hope / fear in case there is a goal of acquiring element for self	happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)	admiration / reproach	attraction-to / aversion	
Component-of-system	hope / fear in case there is a goal of acquiring element for self		admiration / reproach	attraction-to / aversion	
Character-of-self	hope / fear (in case element is involved in game mechanics when pursuing a goal)		pride / shame	attraction-to / aversion	gratification/remorse
Character-of-other		happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)	admiration / reproach	attraction-to / aversion	gratitude / anger
Character-of-system		happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)	admiration / reproach	attraction-to / aversion	gratitude / anger
Environment-of-self	hope / fear (in case element is involved in game mechanics when pursuing a goal)		pride / shame	attraction-to / aversion	
Environment-of-others	hope / fear in case there is a goal of acquiring element for self	happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)	admiration / reproach	attraction-to / aversion	
Environment-of-system	hope / fear in case there is a goal of acquiring element for self		admiration / reproach	attraction-to / aversion	

Emotion types	Prospect-based (focusing on events)	Fortunes-of-others (focusing on events)	Attribution (focusing on self or others as agents)	Attraction (focusing on aspects of objects)	Well-being / Attribution compounds (focusing on events and agents)
Compound elements					
Ruleset: Goals-of-self	satisfaction / fears-confirmed	gloating / pity	pride / shame		
Ruleset: Goals-of-other; other as opponent	relief / disappointment				
Ruleset: Goals-of-other; other as team-mate	satisfaction / fears-confirmed				
Ruleset Procedures	satisfaction / fears-confirmed			approval/disapproval	gratitude / anger
Game mechanics of-self	satisfaction / fears-confirmed	gloating / pity	pride / shame	attraction-to / aversion	gratification/remorse
Game mechanics of-other (as opponent)	relief / disappointment	happy-for / gloating	admiration / reproach	attraction-to / aversion	gratitude / anger
Theme (as metaphor, i.e. other as agent)	satisfaction / fears-confirmed		admiration / reproach	attraction-to / aversion	gratitude / anger
Interface	hope / fear (in case element is involved in game mechanics when pursuing a goal)			attraction-to / aversion	
Information-of-self	hope / fear (in case element is involved in game mechanics when pursuing a goal)		pride / shame	attraction-to / aversion	
Information-of-other	hope / fear (in case element is involved in game mechanics when pursuing a goal)	happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)		attraction-to / aversion	
Information-of-system	hope / fear (in case element is involved in game mechanics when pursuing a goal)	happy-for / gloating (in case element is involved in game mechanics when pursuing a goal)		attraction-to / aversion	
Behavioural elements					
Players - self	hope / fear		pride / shame	attraction-to / aversion	gratification/remorse

Emotion types	Prospect-based (focusing on events)	Fortunes-of-others (focusing on events)	Attribution (focusing on self or others as agents)	Attraction (focusing on aspects of objects)	Well-being / Attribution compounds (focusing on events and agents)
Players - other		happy-for / gloating	admiration / reproach	attraction-to / aversion	gratitude / anger
Players - system			admiration / reproach	attraction-to / aversion	gratitude / anger
Contexts-of-self	hope / fear				gratification/remorse
Contexts-of-other		happy-for / gloating			gratitude / anger
Contexts-of-system					gratitude / anger

Table 16. *Emotion types (according to the OCC model) typically embodied into game elements.*

As a summary of the table, let us see which elements are likely to afford which emotion types, i.e. take part in constructing respective eliciting conditions:

- Prospect-based emotions: Goals-of-self, Game mechanics-of-self, Information-of-self/other/system, Interface, Ruleset procedures, Context-of-self/other
- Fortunes-of-others emotions: Goals-of-others, Game mechanics-of-others
- Attribution emotions: Character-of-self/other/system, Environment, Component-of-system
- Attraction emotions: Component-of-self/other/system, Environment-of-self/other/system, Information-of-self/other/system
- Well-being emotions: Character-of-self/other/system, Players (self/other/system), Context-of-system.

It could help us to understand the emotion types if we renamed them in terms of gaming encounters. This would mean, on one hand, considering which emotion types have to do with performances and goals, i.e. play, and the aesthetic nature of play. On the other hand, we shoud consider which emotion types relate to player preferences in games, and the moods that transfer to other activities after gaming encounters. Thus, I have come up with the following groupings:

- *Play emotions:* prospect-based, fortunes-of-others, attribution emotions

- *Aesthetic emotions*: attraction emotions
- *Preference & transfer emotions*: well-being & attribution compound emotions

It is worth pointing out the pervasiveness of goals in light of player experiences, once again: to whatever game element goals become embodied, it is that element that will elicit prospect-based emotions. For example, if the goal is to capture a certain space in the game environment, the environment element becomes to embody the prospect of having its ownership, even though the actual capturing will happen by performing a game mechanic designed for that purpose.The game mechanic will embody the player's effort towards the goal, it does not embody the goal itself. Nevertheless, the combination of game mechanic and its rule-bound relation to the environment embodies also subsequent (as of yet potential) attraction emotions towards the environment, especially if another goal is to substitute the preceding instrumental goal of capturing, i.e. the goal transforms into a preservation goal of retaining ownership to the space (with subsequent game mechanics for attaining this goal).

This example serves to show that it is difficult to categorize the eliciting conditions between game elements unambiguously, as they take part in the dynamic whole of the game system. Therefore it is relevant to understand also how eliciting conditions combine into dynamic wholes, in game states.

Next, it is necessary to turn the tables, so to speak: I will present a number of examples how the above emotion types and their corresponding emotion-eliciting embodiments can be found in existing games.

Examples of eliciting conditions specific to particular game elements and game states

This time we will move from the behavioural elements towards the systemic ones. Thus we will move from compound emotions to more specific emotion types. Finally, I will present examples of game states where the individual game elements combine into particular eliciting conditions. The observations documented in what follows are supported with the findings in the 100+ Game Project (see Appendixes F & G), and lead the way to the suspense model of game entertainment documented into chapter 18:

Context-of-system eliciting well-being emotions

As was established earlier, the context of a game system and its gaming encounters can in theory be expanded endlessly. Thus the numerous contexts can bring various emotion-eliciting potentials to an individual gaming encounter. In general, however, the context can support the more abstract well-being emotions of joy and distress by its familiarity or unfamiliariaty, for instance. A traditional, well known game with a lengthy historical context of providing social interaction, such as Backgammon in the street cafes of Instanbul or Petanque in the parks of Barcelona, may thus privilege well-being emotions where the game's main role is the facilitation of the social event (a focused gathering) rather than in eliciting more specific prospect-based emotions, for example.

Other players eliciting well-being/attribution compound emotions

Relationships between players are bound to elicit emotions, and especially through players as agents, and through the events they are associated with. The reality television show Big Brother can be seen as fundamentally dependent on this emotion type, i.e. that emotions of appreciation, reproach, gratitude, anger, and even love or hate emerge among the participants. In the game, due to its long duration, these emotions arguably function as constituents of long-term moods, but also dispositions towards others.

However, less intense and more circumscribed emotions can be found in gaming encounters of lesser scale than a game broadcast via television. In general, continuous appraisals of other players' performances and choices, and vice versa, appraisals by other of the choices and performance of oneself, elicit well-being and attribution emotions (with their relevant local variables) in any gaming encounter.

Goals-of-others eliciting fortunes-of-others emotions

The emotion-eliciting potential of goals-of-others is especially important in gaming encounters where players are organised into pairs or teams, and especially if the members have different goals. For example, in football, the preventing goal of the goalkeeper has high relevance for field players, and the field players' achievement goals of scoring to the other end are as relevant to the goalkeeper. Both are potentially delighted for the other, or feel sympathy for the other's performance. Generally the attribution emotions between players can be seen to affect fortunes-of-others emotions: if one feels respect for a fellow player, even in case of an opponent, feeling sorry for his/her bad luck, for example, is a potential emotion.

Information elements eliciting attraction and prospect-based emotions

An obvious attraction-eliciting example of information element would be jackpot information of casino or lottery games. The appealingness of large sums of money is bound to elicit attraction. In a game context, however, the ownership of the information, or components corresponding it, is conditional. Thus it presents a goal, which leads to the path of prospect-based emotions.

An attribute value of a card can also elicit attraction, due to its scarcity within a game, or again, due to its location or existence being unknown. An ace or a trump card in card games presents an example. In the television game show Deal or No Deal, briefcases withhold information that corresponds to sums of money. In the beginning, the player chooses one briefcase for himself, and this kind of ownership makes it an object with attraction-eliciting potential, especially as its worth (in money) is not known. Once again, all the briefcases and the unknown information they contain provide prospect-based emotions.

It is possible that the information attribute is known, but it elicits attraction by marking the player's ownership to components or environment. This is the case in board games such as Carcassonne, or Ticket to Ride, where components do not carry any other information than a specific colour, but the colour assigns them as components-of-self for a particular player, who should harbour emotions of attraction towards them if she enjoys the game and is willing to win.

Game mechanics eliciting prospect-based and attribution emotions

Game mechanics come into being as players perform them. These performances embody the player's effort, and tus they present events and agents for appraisals of both the performer (self) and those participating (others) as well as a possible audience. Thus game mechanics, besides eliciting the obvious prospect-based emotions due to their direct relation to goals, also elicit attribution emotions due to their performative nature.

When a game has a number of game mechanics for attaining the same goal, they expand the choices available to players – which game mechanic could be the best for the prospect to be confirmed in a positive resolution? Choices like these elicit emotions. For example, choices between various submechanics thematized into the form of different weapons, as in many digital games with a war theme, present different propositions for trying to attain the goal.

Environment elements eliciting attraction and prospect-based emotions:

If the ownership status of game environment, or parts of it, is in question – i.e. it embodies a goal, then it is potentially attractive and as long as it is not in the player's possession, it presents a prospect. Go and Carcassonne present game environments that elicit emotions of attraction and prospect.

A specific location in the game environment might elicit emotions by embodying a specific rule, and thus also embodying a prospect. In race tracks, a finishing line is such a special location that embodies both victory and end conditions of the game. In basketball and football (and many other similar games), there are specific areas in the game environment that can be seen to elicit more intense goal monitoring than other areas: in football, the penalty area and goal mouth, and in basketball, the three-second area and the three-point perimeter. Then again, Monopoly (as many other board games) elicits attraction and prospect-based emotions through the distribution of its real estate: the high-rate areas and generally hotels emerge as such 'hot spots' of eliciting conditions as the game goes on.

Component elements eliciting attribution emotions: Characters

Components elicit, through their material form and information attributes, attraction emotions, but they also embody eliciting conditions for attribution emotions, especially when they are thematised as characters, whether in the ownership of self, other, or system. With their advanced means of simulating behaviour, especially digital games have exemplified design of characters that elicit emotions such as appreciation and reproach. In the case of Nintendogs, for example, pride towards one's virtual dog, or pride towards one's sims in The Sims, is not out of the question either. Lara Croft of Tomb Raider presents more obvious popular examples of character-of-self that elicits admiration not only through her virtual presence but by her simulated actions.

Other examples of how the use of simulated gestures and expressions function as emotion-eliciting features of components include the Yorda character of Ico. An interesting example is the game **September 12th** (Newsgaming.com, 2001), which uses weeping gestures and sounds of animated Iraqi civilian characters (as components-of-system) to convey the emotions of loss and anger to the player.

However, the ability to elicit emotions through components as characters is arguably not a privilege of digital games. Figurines in board games reach for the similar emotion-eliciting effects. Furthermore, they do not have to be detailed miniatyres, if the theme itself is familiar and influential enough: The simplified Sauron prop in **Lord of the Rings: Board Game** is an example of this. **Marvel Heroes** (2006) presents another kind of implementation (see image in chapter 4), but nevertheless draws from the popular Marvel Comics universe. With Chess, the tradition of the game has assigned the King component such a lasting status, a father of all victory conditions so to speak, that it is bound to elicit emotions, however simplified its material presence.

Game states: Particular relations of game elements into emotion-eliciting configurations

As the above examples already show, the emotion-eliciting feature of an individual game element is largely conceptual, as in player experiences the elements combine into sequences of emotions, the origins of which might be hard to distinguish individually. If there is a discernable object of study, it is a game state in a given moment of time with the elements configured into certain constellation. Therefore I will briefly discuss some examples of game states with particularly interesting consequences for eliciting conditions.

First, let us consider a typical slot machine game, with the victory condition of three of the same symbols on a horizontal line. Now, the symbols (fruits, numbers, or something similar) are the components-of-system, and they have been mapped to the environment element, which in this case is the three wheels which rotate once the handle (or 'arm') of the machine, i.e. the interface, has been pulled. As the victory condition is based on a three components aligned to a certain geometrical relations, an individual component as such really does not have a significant emotion-eliciting value – unless it appears as the second, and is the same as the first. In any case, the final and third component-of-system has the highest emotion-eliciting potential, as it decides whether there is a win or not. In fact, when the aligned combination of three is completed, it becomes a collective component-of-self for the player, as it will be compared to the combinations of three defined in the prize table. In other words, the moment when individual, and relatively meaningless individual components make a combination that has significance in light of the victory condition, is the most significant one. It constitutes a particular game state which triggers the inspection of victory condition, and therefore it is also the game state that embodies the resolution to the suspense provided by the rotating wheels. This means that the game states during which each symbol is unknown, and in the process of becoming known, i.e. the states when the wheels are rotating between each symbol stopping at its final position, are potentially more emotion-eliciting than the actual resolutions before the final and third one.

Next, another interesting game state in the context of eliciting conditions for emotions is found in football. It is the penalty shot. As the ball is placed on the spot within the penalty area, the focus centres around only two players, when normally there are almost always more involved. In terms of the theory of game elements, components-of-self and other get reduced, and the ownership status of the component-of-system (ball) is not under contest. The fluid continuation of one game state to another is suspended – as it is during goal kicks, throw-ins, and corner kicks, but in the case of a penalty shot the possibility space regarding the following game states is dramatically reduced to two possible outcomes: goal or no goal. The game state thus embodies more predictable emotional outcomes than a random state during the game, and thus the local variable affecting the intensity of resulting emotions (from the suspense of hope + fear + uncertainty to satisfaction/fears-confirmed) is strengthened. The inevitable temporal delay that precedes the penalty kick also intensifies the prospect-based emotions by heightening arousal, as there is more time to consider the possible outcomes than in most 'live' scoring situations. The first game state in 100 meter sprint in athletics, combined with the 'ready-set-go' game rhetoric device, produces similar arousal and emotions of expectancy and suspense.

In light of the penalty shot example, it is interesting to consider similar examples from other realms of games. In my interpretation, the choosing of briefcases afforded to the player in the television game show Deal or No Deal is rather similar. If the game show would reach a final game state where 1 cent and a million dollars would remain, when the following ruleset procedure would be to open the player's briefcase, the situation would be comparable, in its eliciting conditions, to the deciding kick of a penalty shootout of the World Cup. The ultimate game state in this category would be, of course, each round of Russian Roulette – where the possible resolutions are polarized to the extreme: life vs. death.

Interesting configurations of game states do not have to be as grand in scale as the preceding examples. In games like Bejeweled, Texas Hold'em Poker, Go, and Tetris, there are numerous game states where the combination of components and their configuration on the game environment leave a prospective space open for future components to be placed on.[4] For example, in Tetris an individual space open on a near-complete row, or in the above slot machine example an alignment of two of the same symbols waiting for the third, would present instances of such game states which have particular emotion-eliciting potential. They signal prospects for game mechanics, as they highlight a promise of an attained goal.

The above examples were meant to give evidence of the emotion-eliciting potential and power of game elements and their configurations into game states across the realm of games. We will encounter more of similar findings in Part V, where specific case studies with similar research questions are put forward.

Conclusions for the theory of player experience

For the sake of analysis it is relevant to study player experiences as sequences of emotions, which transform into one another as game states, game elements, and gaming encounters transform during the behaviour of the game system. This means that the ways in which compound elements, such as game mechanics, combine game elements into another present essentially also combinations of emotion types, their eliciting conditions, and action tendencies. First, this phasic nature of game play is in line with the generally accepted phasic nature of emotions. Second, it is the transformations (from hope to fears-confirmed, etc.) that produce emotionally involving player experiences.

Thus we need to dissect the emotional sequences, because it enables us to distinguish different generic principles – or, patterns – regarding how games afford emotional experiences. Focusing on these combinations also allows us to pay closer attention to the global and local variables that affect their intensity, and treat them in game-specific, ludological manner. As a result, I argue that we are able to analyse also how the variables are embodied into game states (including players & contexts). The question for the analysis becomes: How are the variables, global ones such as unexpectedness and proximity, and local ones such as degree of desirability with likelihood affecting the intensity of hope, 'translated' into the rule set of the game, and consequently into its embodiment into game elements and their configurations in a game state. The question for

[4] Björk & Holopainen (2005) have observed this to be a game design pattern of the name 'Hovering closure'.

design becomes: How could one set combinations of such variables as 'design drivers' – i.e. conduct emotion-centred design that proceeds from psychological principles to design and implementation of game elements and their interaction.

Another challenge concerns interpreting game elements in light of the three-fold distinction to events, agents, and objects. For example: Should the information element be treated as an object, agent, or an event? Information is of no use in a game, if the player or the system can not use it for a specific purpose. Thus information as a compound game element always implies agency, i.e. it is used for some purpose in an event by an agent. Because of this practical function in relation to goals, it does have value that affords object-related emotion types as well. In fact, it is the aspect of game elements as affordances, through their embodiments of rules, that they always and already imply agency, i.e. what they afford the player to do – or by negation, prevent the player from doing. In conclusion, the overall player experience emerges out of sequences of game system behaviour, rather than isolated game elements, even if the latter play a part, literally.

Player experience in the context of entertainment consumption

Key concepts and findings of Part III are illustrated in image 13, see below:

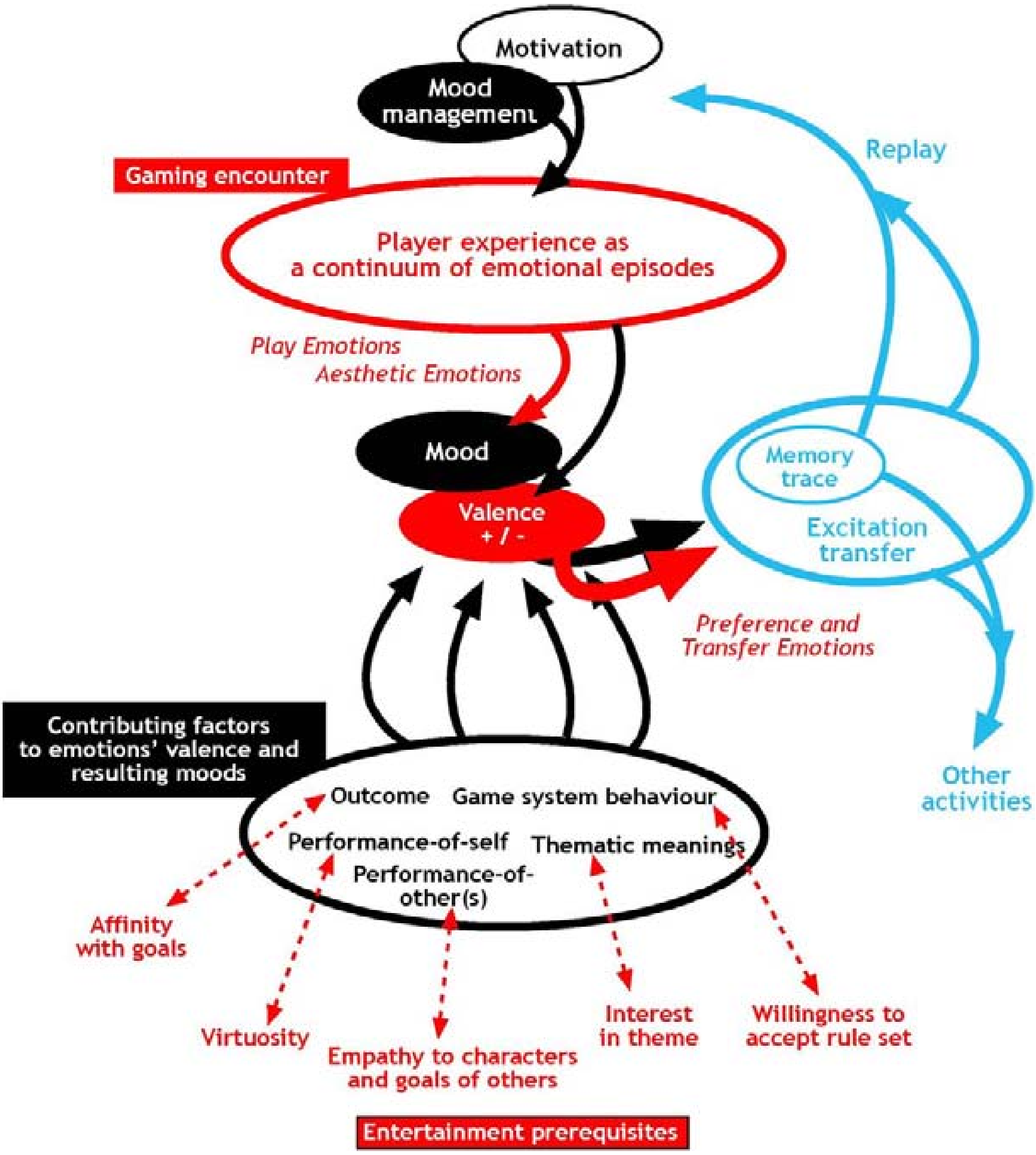

Image 13. *Player experience in the context of entertainment consumption. The image summarises the theory of player experience by visualising the processes of motivation, emotional experiences that lead to moods, the factors that contribute to the experience, and how the experience carries over either to replay or other activities. Key concepts and results – mood management, emotions as valanced reactions to events, agents, and objects, play emotions, aesthetic emotions, preference and transfer emotions, entertainment prerequisites all figure in the whole, which also hides others, such as eliciting conditions, and the local and global variables affecting intensity of emotions.*

Part IV: STUDIES IN GAME SYSTEMS

In this part, I will begin to convert the theories and concepts formulated in parts II and III into analysis and design methods. They will be taken into use in the next part which consists of case studies carried out with the methods introduced.

The studies in game systems come in four chapters and three topics: First, there are two chapters on game mechanics. The first discusses their role as central elements in the co-behaviour of game systems and players during a gaming encounter. The latter will introduce a library of game mechanics which functions as a reference tool, and also as a ‘dictionary’ concerning the later case studies.

Second, I will discuss how the game system communicates with the players. This communicative aspect of game systems I will call game rhetoric. I will outline it across the wide spectrum of games as a multi-modal technique with which players are persuaded to play, and which becomes evident when they are handed rewards and punishments, but also encouragements and instructions. Game rhetoric is the central technique to communicate how the ruleset is embodied into game elements, and how, as a result, eliciting conditions for emotions emerge. I will call the generic communicative principles as figures, as is customary in the study of rhetorics as the study of effective persuasion. The figures of game rhetoric present the specific instances of game rhetoric that are used in communicating information concerning particular game states. These figures are collected into a library which has similar function as the one consisting of game mechanics.

In my attempt to construct an applied form of ludology, the notion of game rhetoric has substituted an attempt to construct rule typologies. This is due to an observation that whereas the theory of game elements defines what rules relate to, i.e. into which elements they become embodied, then a rule typology, if there is one, rises out of the way that rules are communicated to players. In effect, I see this communication act taking place with the help of game rhetoric figures which may take advantage of a wide variety of semiotic resources: speech, writing, sound, animation, and so on. One might go so far as to say that rules are game rhetoric, if one accepts that in fact all game communication is, in the end, communication of rules.

The third chapter of Part IV will discuss theories of how to classify works of art based on their form and/or content, i.e. theories on genre. Throughout *Games without Frontiers*, I have established a number of different distinctions within the wide world of games. There is no reason why categories of emotion, or player abilities, or game mechanics, or goal types, could not be used as the defining criteria for game genres. An emotion-centred genre classification of ‘games of attraction (emotions)’ is perfectly valid, as would be a goal-centred one of ‘games of symmetrical goals’, or one taking player abilities as the classifying principle, e.g., ‘games of word fluency’. Therefore I will try to bring the various theories discussed in the thesis together with the concept of genre as well. As a result, we will arrive at a number of different vantage points to game genres.

CHAPTER 12: Studying Game Mechanics

In a formal sense, the essence of games is how they work, i.e. how they display system behaviour and afford player behaviour. In other words, the essence is in how they incorporate players into the formal structure, and vice versa. In this chapter we will move from defining game elements to conceptualising their interaction, without forgetting the player as a behavioural entity. The perspective will be from the standpoint of a player, i.e. how does s/he engage with the game system and its elements. Game mechanics is the key element class, almost literally, as it provides the players means to access the game system and create combinations of two or more elements in the hope of performing a successful plan in relation to a goal – whether it is considered ‘a play’, ‘a turn’, ‘a move’, ‘a sequence’ or something else in the rhetoric of the system. Game rhetoric also relates to the set of cognitive abilities the game necessitates for successful play: By privileging certain abilities, a game system constructs a rhetoric of those abilities, e.g. a rhetoric of physical abilities as with sports games, or a rhetoric of quantitative reasoning as with games such as Sudoku.

This chapter will introduce the basis for a method with which to distinguish and analyse the set of game mechanics in a game. This will lead into a collection of game mechanics, i.e. a ‘library of game mechanics’ that is documented in Appendix B. The library will be taken advantage of in the subsequent analysis methods (see Part IV), and applied into other case studies as well.

What are game mechanics and dynamics: a Review

There is some semantic confusion among game research and design references on the use of the concept ‘game mechanic’: both ‘mechanics’, ‘mechanic’, and ‘mechanism’ are used. Merriam-Webster's Collegiate Online Dictionary provides a number of meanings to the word ‘mechanics’: it refers to ‘physical science that deals with energy and forces and their effect on bodies’ and ‘mechanical or functional details or procedure’. [5] In the context of games, the ‘energy and

[5] http://www.britannica.com/dictionary?book=Dictionary&va=mechanics&query=mechanics

forces' of the first definition are best understood as parts of the ruleset that govern the players and their efforts in changing game states towards attaining goals.

This definition relates directly to the formalisations of games as a structure with ends and means (e.g., Parlett 1999, 3): The means give birth to a struggle in achieving one or more objectives, i.e. goal rules, that constitute the ends. Fittingly, the dictionary definition of 'mechanism' states that it is 'a process or technique for achieving a result'. It would seem, then, that mechanisms exist in games in order for the player to achieve particular results, i.e. attaining goals of various orders (in the context of a goal hierarchy). Regarding the semantics, the conclusion is that in the context of game studies and design, the terms mechanics/mechanism are used as synonyms, and it is largely a question of taste which one to use. I have opted for 'mechanics'.

Another word often closely associated with mechanics is 'dynamics'. It has been defined, for instance, as 'a branch of mechanics that deals with forces and their relation primarily to the motion but sometimes also to the equilibrium of bodies', or 'a pattern or process of change, growth, or activity'[6]. So, if mechanics presents instances of specified processes that affect a particular game state or a sequence of them, dynamics is about the patterns and variations of these processes that influence a number of game states throughout the course of game play. Dynamics, then, is what goes on when the game system is operated, i.e. being played in a gaming encounter. In terms of Games without Frontiers, it equals system behaviour.

Regardless of the semantic disparities, let us review existing definitions of game mechanics and dynamics, and references to them. As with many other concepts frequently used in game design and research, 'mechanics' or 'mechanism' is often mentioned in passing but not rigorously defined (as in Adams 2001; Crawford 1982, 10, 26, 27; Hansson 2002; Hardin 2001; Johnson 2001; Klevjer 2002; Larsen 1999; Mackay 2001, 37–60; Parlett 1999, 9; Rollings & Morris 2000, Rollings & Adams 2003).

Alternatively the concept is defined in such a broad fashion that it is not useful for analytical purposes. For example, a glossary in the popular boardgaming web site Boardgamegeek.com states the following definition for mechanics: 'Part of a game's rule system that covers one general or specific aspect of the game.'[7] As with this definition, it is not clear what particular game elements or features the notion of 'mechanics' relates to, or mechanics is left undefined and the focus is on explaining what a certain prefix for the notion means.

This is the case with game designer Charlie Cleveland's discussion on 'meaningful game mechanics' where he states that 'game mechanics are rules,

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[5] http://www.britannica.com/dictionary?book=Dictionary&va=dynamics

[6] http://www.boardgamegeek.com/gameglossary.htm

7 Found in Boardgamegeek.com's glossary: http://www.boardgamegeek.com/gameglossary.htm

player choices, and other designs that have been created with intent and consequence in mind' (Cleveland 2002, 85). Cleveland wants to encourage the implementation of mechanics that give players chances to make meaningful choices and force the players to think about the consequences of their choices. This is a valid design goal, which can be systematized through typologies of choice, for instance (see chapter 11). Cleveland does not define mechanics in detail, but for him, mechanics clearly has to do with the feedback loop of available player choices, and how the players deal with them. In terms of the concepts addressed in chapter 6, Cleveland is discussing the process of goal monitoring, as it plays an important part in this feedback loop. Another designer, Joshua Mosqueira (2003, 73) treads along the same lines as Cleveland, when he gives a broad definition: 'game mechanics and interface are the media through which the player interacts with the system'.

The 'prefix-syndrome' is evident in the thinking of two other game designers: Trond Wingård Larsen (1999) treats the 'visibility' of game mechanics by taking the meaning of mechanics for granted, as does Anders Hansson (2002) in discussing the mechanics of a particular sports game subgenre.

In the context of board and card games, acoording to Andrew Hardin (2001), there is debate among game design communities on the importance of mechanics vs. theme. He discusses the issue in relation to how the game takes hold of the player, i.e. 'immerses' her into the game. This tension between mechanics and player's sense of involvement is apparent elsewhere as well: according to Mosqueira (2003, 73), 'A player's immersion rests solely upon the seamless integration of the game's mechanics into the world'.

What does this mean? Game theme was discussed earlier as the subject matter that is used in contextualising the ruleset and its game elements to other meanings than what the game system as an information system requires. In other words, a metaphor for the ruleset is designed. In light of game mechanics, the function of meaningful context becomes apparent from this explanation of theme: 'Having rules and mechanics based on assumptions regarding the subject matter of the game.' [8] As was noted when discussing theme as a metaphorical concept for the game system, the mechanics should make sense in relation to the metaphor that the theme articulates and upholds. Conversely, in an abstract game without a theme, the mechanics are not attached with any other meanings than the functional means to keep the game going, i.e. affording the player to attain the goals stated in the ruleset.

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[8] Before we can compile a list of common game mechanics, we have to look at existing categorisations. Boardgamegeek.com lists 41 game mechanics (in March 2006) that exist in board games and card games. There are obvious overlappings among the mechanics listed, as the criteria for categorization are not unambiguous. Moreover, some of the listed mechanics seem to be proportionally different: 'simulation' as a mechanic is not as specific as 'dice rolling' or 'singing', for instance. Many of the mechanics listed are used in digital games as well, such as 'Point to Point Movement' and 'Unit deployment'.

In terms of the theory of player experience, the question is whether the game mechanics' relation to goals is understood

- through cognitive processes, such as conceptual blending, where the action the game mechanic puts in motion is blended in the player's mind with its possible effect, i.e. its consequences for attaining a goal
- or through a process of recognition, where the schemas and scripts articulated by the theme element as a metaphor help the players to anticipate what the consequences wil be.

In any case, the arguments referring to the inter-relations between theme and mechanics point out that even though mechanics are deducted from goal rules, there are mechanics that have particular relations to other game elements, as the goal rules are embodied into game elements – components, information, environment, and so on. In this light, mechanics are quite fundamental to games as compound elements between players and other elements. They are also what the players use in order to produce effects in the game as world, and thus performing game mechanics may be a source of pleasure in itself, as the notion of effectance suggests (see chapter 9).

Game mechanics as embodiments of effort

Overall then, 'mechanics' is obviously another fuzzy game-related concept – players, designers, journalists, and theorists seem to know its meaning but few have gone to the trouble of explaining it thoroughly (much like with the terms 'game play', 'playability', etc.). There are some noteworthy exceptions.

Game designer Marc LeBlanc (2003) and his colleagues (Hunicke et al. 2004) have defined mechanics as 'The rules and concepts that formally specify the game-as-system', and game dynamics as 'The run-time behavior of the game-as-system'. These definitions are useful but need some revision in light of the theory formulated here – especially 'mechanics', which, if understood according to the above, has basically already been deconstructed into smaller parts with the definition of game elements in Part II. That is why I want to keep game mechanic as a distinct element with a very concise scope of meaning within the overall theory, even if it is a central concept, especially concerning player experiences.

Game mechanics as individual player actions

Game researchers Sus Lundgren and Staffan Björk provide a definition of 'game mechanic' that is helpful in refining the definitions:

> A game mechanic is simply any part of the rule system of a game that covers one, and only one, possible kind of interaction that takes place during the game, be it general or specific. A game may consist of several mechanics, and a mechanic may be a part of many games. The mechanic trading, for example, simply states that during the game, players have the possibility to trade with each others. (Lundgren and Björk 2003, 4. Cf. Lundgren 2002, 18.)

The keyword in this definition, as with the others, is 'interaction' – how the player and the game system correlate to each other, and consequently 'co-behave'. Let us adapt this definition to the theory of game elements. The 'general or specific' interaction that Lundgren and Björk refer to equals the interaction of two or more game elements – e.g., component, environment, and the player in a board game. The key point is that this interaction is put in motion by the player or the game, and the interaction is governed by the ruleset. Understood this way, game mechanics is something that is available to both players and designers; for players to perform within the game and for designers to implement into the game in order to both afford and constrain the players by means to take action, and/or encourage certain kind of game play in relation to goals and their design. For instance, a 'trading' mechanic is obviously a means to stimulate interaction between players in a gaming encounter with multiple players, and encourage transactions in game component ownership status from components-of-self to other and/or system. Similarily, a 'Contract' mechanic would represent actions where a player proposes a pact to another player so that they would gain advantage in the game. Both of these examples of game mechanics imply social interaction and encourage players into it.

So, game mechanics bring the ends and means of the game together in a specified way. There are always game mechanics, minimally one, from which the player can make choices when planning to attain a goal by taking actions in a game. In a turn-based game, for instance, the player's turn consists of choosing from the available mechanics and operating one or more of them in the hope of affecting the game state towards the attainment of a goal. Various alternative mechanics afford a wider variety of strategic choices for the player, and they might also broaden the set of abilities that the goals necessitate the players to perform.

The difference between a rule and a game mechanic is that there can not be a mechanic without rules, i.e. without prescribed game element relations. A game mechanic makes a particular set of rules available to the player in the form of prescribed causal relations between game elements and their consequence to particular game state(s). This is followed by other players, or the game system itself operating a ruleset procedure in the form of an algorithm, such as adding to the score, or introducing a new challenge by instantiating a new goal defined in the ruleset. Therefore, in terms of design, game mechanics are means to guide the player and the game into particular behaviour by constraining the space of possible plans to attain goals.

Core mechanic: Sequences of game mechanics

In conclusion: Game mechanics is a functional game feature that describes one possible or preferred or encouraged means with which the player can interact with game elements as she is trying to influence the game state at hand towards attainment of a goal. The practical realization of a game mechanic is a sequence which starts from a player and is conducted via a direct or indirect interface to the system, thus combining at least two game elements (the player and another element) into interaction. Moving a piece (i.e. a component element) on a game board (environment) with a mouse (interface) presents an example. The resulting combination of game elements as a result of player performance, i.e. a game mechanic, has prescribed consequences to the game state. Thus, game mechanics assign causal relations between player performances, game elements and game states and the ways rules (especially goals) are embodied into them.

In their book *Rules of Play*, Katie Salen & Eric Zimmerman talk about the 'core mechanic' which is defined as the actions that players repeat in a game, again and again (Salen & Zimmerman 2004, 316–22). The useful distinction to the term dynamics comes from the fact that whereas core mechanics focuses on the player's actions, dynamics focuses on the operation of the gaming encounter as a whole, i.e. the operation of the ruleset through ruleset procedures and run of information between players and the system. Thus we can actually define the system-responses that facilitate and govern the core mechanic as the core behaviour pattern of a game system. In a game like Tetris, this pattern consists of the core mechanic of the player arranging the blocks, and the game system responding with ruleset procedures, such as producing new blocks (components) onto the game space (environment) and adding to the score (information). These are the mechanics that the system has available to it, and thus we see that there is a reciprocial relationship between player and system actions – this is what can be conceptualised as their co-behaviour. When the behaviour has expanded to all the players participating, in repeated fashion, there emerges a dynamics, which is the dynamics of the gaming encounter.

Both core mechanic and core behaviour pattern are useful in defining genres, as we will see in chapter 14. I will now move on to study the inner structures of core mechanics. In order to identify if there are popular, wide spread core mechanics shared across various games, we have to see what individual game mechanics these core mechanics consist of. Are there primary, secondary, or other types of roles for mechanics in the particular core mechanics they combine into? What could be the criteria according to which their role and importance is defined? These questions will be studied in the following.

Mechanics as affordances for performing abilities and skills

Game mechanics' consequences are often potential in the sense that their realization is dependent on the player's skill, chance factors and/or how other players perform game mechanics. The game system evaluates, or acknowledges an evaluation by other players, concerning whether the mechanics was correctly performed or not, and to what extent it was a success or failure. The skill in performing game mechanics is related to a set of cognitive and/or psychomotoric ability, tactical skill, performative aptitude, etc., depending on the game genre and the challenges particular to it.

An anecdote serves to highlight how game mechanics' relation to goals and player abilities distinguishes games from one another. A colleague of mine once presented, at a lunch table discussion, his perceptive analysis on why football ('soccer') is the most difficult team sports game to master. His explanation was based on a categorization of sports games into 'games with a dead ball' versus 'games with a moving ball'. Another categorization was based on whether all players had their own ball or whether there was one common ball in play. In his view the games with a dead ball are always easier, as the ball is static, so its movement does not interfere with one's play, i.e. with performing game mechanics. **Golf** is a prime example of a game with a dead ball, and also of a game where every player possesses their own ball, i.e. components-of-others do not directly figure in one's own actions towards attaining goals. The hardest games to master are the ones with a moving, single ball which every player desires (i.e. the ownership status of the component element is always open to change, and bound to change, as it is incorporated into the goal hierarchy of the game). However, even among these kinds of games there are differences. According to my colleague's analysis, basketball is easier than football because the players use hands, i.e. the primary human limbs to hold on to objects, in trying to achieve the main goal of throwing the ball through the hoop. In football, the use of hands (the goalkeeper notwithstanding) is not allowed, which increases the difficulty of the game, and as one's performance is, due to the configuration of the environment element, constantly disturbed by others (unlike in, e.g., volleyball where the net divorces the opponents from oneself), football is, logically, the hardest team sports game to master there is.

The point to learn from this anecdote is how game mechanics are affected by the configurations of other game elements, such as the organisation of players, environment rules, goal structure, etc: as a result, the dynamics of a gaming encounter of Golf is different from the one of football. Also, introducing a chance factor (via a ruleset procedure) into a core mechanic consisting of a set of game mechanics, is a way to make the game less competetive, as the outcome will not be entirely down to the players' skills, i.e. developed and trained abilities. Chance has been mentioned, thus, as a feature that contributes to a game being 'casual' (as opposed to 'hardcore' or 'expert' games where training and experience have a significant role). Chance makes the gaming encounter more equal to players' individual differences regarding the required abilities, but also, in doing so prevents display of individual cognitive and/or psychomotor styles in play.

In digital games, game mechanics are mapped to control mechanisms such as specific gamepad buttons (or combinations of them) on the interface peripheral, or they are icons, menu bars, etc. on the screen interface, and the player has to manipulate them in a certain sequence. In the **Tony Hawk Pro Skater** series, game mechanics are combinations of skating moves mapped to the control schema, and their realisation depends almost entirely on the player's skill in handling the controls (for a particular example of similar mechanics, see Hansson 2002). In other words, the interface element, in this case the console game pad, becomes the embodiment of the metaphor for the different movements and tricks. Then again, games such as Dance Dance Revolution and others with the dance mat peripherals, or the Sony EyeToy camera, try to remove the more or less arbitrary metaphor. The competetive edge of Nintendo's Wii game console, with its motion-sensor controller, is based on 'naturalising' video game controls by removing the metaphors that have been dominating video game play (e.g. 'press A to jump'; the controller button as a metaphor for a jumping game mechanic).

Trond Wingård Larsen's discussion of 'visible game mechanics' relates to this difference between digital and non-digital games:

> Most people have played one board game or another, such as Monopoly, Ludo, and so on. In these games, the game mechanic is totally visible. In Monopoly, players roll the dice and move that number of squares. That square has an effect on the player that is explicitly written on the square itself or on a corresponding card. Novice gamers are used to visible game mechanics. (Larsen 1999.)

In Chess, game mechanics' consequences are (at least supposed to be) more far-reaching in nature, as there are less options available to the player, mechanics-wise. Actually, there is only one mechanic consisting of manipulating components (moving a component-of-self, i.e. a piece) in relation to the game environment (the grid that usually takes the shape of a board). Nevertheless, the game is complex due to the countless different game states that may potentially emerge as relations of components on the 8 x 8 grid environment. Moreover, as with board games in general, carrying out a game mechanic – such as 'moving' – is not usually dependent on the player's psychomotor skills in adapting to a interface control schema, rather, it is dependent on basic psychomotor abilities we use in everyday life to engage with objects. Therefore, game mechanics related to chance and luck are often introduced in order to create balance in player success and counter-balance players' different skillsets. An 'Operating' mechanic that produces a variable that affects the potential consequence of the mechanic in a quantitative fashion, such as throwing a die in order to find out the maximum distance for moving on a board, is a popular example. On the other hand, in digital games such as a platform jumping games, operating mechanics are more or less a question of performing according to one's psychomotor abilities, such as skill in manual dexterity (see chapter 7).

We will close the definition of mechanics with a reference to perceptual psychology. J.J. Gibson's theory of affordances (see, e.g., Gibson 1977) describes how we perceive objects' potential uses, for instance how seeing a chair instantly is associated for its specific purpose to provide an object to sit on. The chair affords sitting, a vehicle affords driving -– and game mechanics afford playing a game. Learning to play, i.e. mastering the execution of game mechanics in a particular game, is largely about realising the mechanics' affordances and learning their consequences (cf. Gee 2005). An experienced player knows that a lever in a digital adventure game affords pulling, and therefore she is most probably bound to manipulate the game-object by the mechanics available to her.

We 'know' that a die afford rolling, a hoop affords a ball being thrown through it, a racquet affords hitting a ball, and so on. The established affordances of games are numerous, and new ones are introduced by taking existing objects and transforming them and their affordances into game elements, such as the microphone and its affordances for **Singstar** the Karaoke game. Player strategies consist of conceptually blending together the available game mechanics, the current game state, and the potential but yet unrealised future game states. A goal embodies a desirable future state, and the game mechanics afford thinking about its realization. If there were no game mechanics, there would be no conceivable way to achieve the goal.

To summarise, game designers and visual artists construct metaphors for game mechanics by often taking advantage of players' general awareness of affordances. Thus, 'naturalised' or 'conventionalised' affordances are found across games: Doors to be opened, buttons to be pressed, dice to be thrown, microphones to sing with, etc.

These observations are significant in the context of meaning-making and interpretation processes and games. They all add to a particular game rhetoric. These issues were already addressed in relation to theme and metaphors in chapter 4, but we will return to the topic in chapter 13 on game rhetoric.

From mechanics to dynamics and gameplay

The concept 'game play' can be explained as the relation between game mechanics, the configuration of game elements in a game state, and the dynamic behaviour of the game system from one game state to another during the gaming encounter. Gameplay emerges from the sum of the 1) temporal sequences of players deploying the mechanics made available to them and 2) the responses of the game system in relation to the change in game state. This is the 'run-time behavior' (Hunicke & al. 2004) of game dynamics, i.e. sequences of game mechanics as realized in the feedback loop between the players and the game. Drew Davidson (2003) employs 'gameplay' in similar fashion, 'to describe and define the mechanics of interactions within a game which enable players to engage and progress.'

In this context, analysing game play equals analysing a number of game states, and the game mechanics performed and game elements engaged into interaction between individual states. Here it is useful to note the differences between single-player and multiplayer dynamics: in the first case, the analysis focuses on the interaction of the player and the game system in a number of states, as there are no other actions. In the case of two or more players involved, the game system functions as a hub for the dynamics of a gaming encounter. Therefore, analysing this dynamic means that one has to identify what happens between game states.

Dynamics relates to the theory of 'cybertexts' (Aarseth 1997), and its adaptation to the study of games by Markku Eskelinen. He writes about 'textonic' and 'scriptonic' game elements (Eskelinen 2001), i.e textonic elements that exist in the game and scriptonic elements that get realised through their presentation to the player. The relationship of mechanics and dynamics presents essentially the same phenomenon: in a game, there is a repository of available mechanics, and a number of them, in varying sequences, realized as the game dynamics, as the player plays the game. The more mechanics there are, the more their realization through dynamics potentially varies between one player and another – i.e. individual sessions playing the game diverge from each other due to variations in the dynamic behaviour the gaming encounter takes. This is due to differing player choices and strategies, i.e. when and in what succession to perform the mechanics that are available, and with what degree of success.

One of the particular features of digital games is that they can impose their dynamics on the player(s) in algorithmic and automated fashion. This happens, e.g., by introducing challenges in a temporal, spatial or random sequence (or a combination of these). Rhythm games and, e.g., **Space Invaders** present an example of the temporal kind, **Tetris** of the random and temporal kind, and **Half-life** of the spatial and temporal kind. For instance, **Parappa the Rapper** (NanaOn-Sha, 1996) and **Frequency** (Harmonix, 2001) feed the game dynamics with challenges based on their music and in particular its rhythm, which is fundamentally a temporal phenomenon. Tetris accelerates the tempo of the falling components, the shape of which is determined by random. In games that produce a detailed, multi-dimensional game environment, such as Half-life or **Halo**, the challenges are located within the spatio-temporal continuum of the environment that is being simulated.

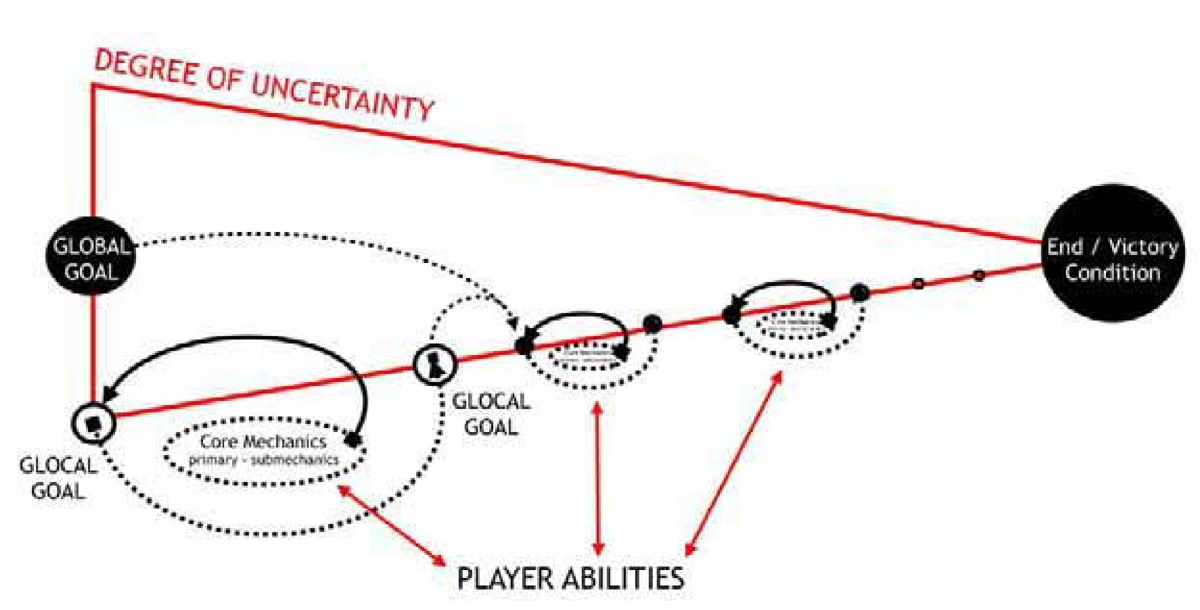

Image 14. *Illustration of how game systems proceed towards certainty through their behaviour where core mechanics, local goals, global goals, and player abilities interact.*

From particular mechanics to generic ones

In order to understand how a particular type of action performed as a means to attain a goal, or progress towards it, can be made to work in numerous games, we have to name the action in general manner. This means that we will discuss mechanics classes, such as ’moving’ and ’placing’. The main reasoning for this approach is that generic titles enable classifications of game mechanics across game genres and platforms from card to board to video games. [9] In addition, this solution enables us to identify and compare core mechanics across games and technologies.

It is important to realise that 1) there are often several game mechanics in an individual game, and 2) that they function in relation to each other and often have a certain hierarchy. Space Invaders, Tetris and Pac-man are examples of digital games based on few mechanics – there is aiming and shooting by maneuvering your ship in Space Invaders, moving and placing the blocks in Tetris, and maneuvering the Pac-Man character in the maze, respectively. These make up their core mechanic, in Salen and Zimmerman’s terms. When the core mechanics are combined with game system-imposed rhythm, there emerges a dynamics that equals repetitive yet engaging gameplay. Whereas early digital games were built around few game mechanics (also due to technological limitations), multiplication of mechanics is characteristic to contemporary digital

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9 Merriam-Webster's Online Dictionary. http://www.britannica.com/dictionary?book=Dictionary&va=rhetoric&query=rhetoric

games. In games such as **Black & White** (Lionhead Studios, 2001) and **Grand Theft Auto III** (Rockstar Games, 2001), or **Dead Rising** (Capcom Entertainment, 2006), there are numerous mechanics available to the player at the same time.

Reverse engineering game mechanics as an analysis method

In order to arrive at a library of game mechanics I have analysed a sample of games with the purpose of detecting their game mechanics. From this analysis, I have synthesized a library of game mechanics where mechanics classes can be grouped into a number of categories based on multiple criteria: Which game element a game mechanic privileges in its deployment, or which goal type it is performed in the hope of attaining, or which cognitive or psychomotor player abilities performing it successfully requires. These criteria link the findings into aspects of the theory of player experience, such as how eliciting conditions for emotions are embodied into game elements. E.g., a game mechanic that is used in capturing components-of-others, such as in **Checkers** awakens eliciting conditions into the prospect of changing the ownership status of the components. As a consequence, the game mechanic and the components (which embody goals) also embody predictions of future emotions in the moment of performing the mechanic.

In order to understand the function of game mechanics, I suggest reverse engineering a number of well-known core mechanics. Analysing the mechanics serves, first, the purpose of uncovering the specific combinations of other game elements within the sequence the game mechanic consists of. The above example of Checkers illustrates how this gets us towards analysing player experiences as sequences and prospects of emotions. Second, deconstructing core mechanics is useful in pointing out whether the mechanics is actually part of another mechanics or a concrete realisation, an occurrence, of a more abstract mechanics type. Third, analysing existing mechanics sheds light on how mechanics are often organised around one game element, making it – e.g., a specific component and/or the game environment – the reference point when trying to influence a game state. This has consequences for the player experience as well, as the eliciting conditions for emotions emerge through the prospects of performing game mechanics, and the prospects are affected by the local variables that affect emotional intensity, such as degree of desirability and likelihood (see chapter 11).

By understanding what game mechanics are made of, we can detect and extract them from existing games for analytical purposes. This helps in coming up with both new mechanics and combining known ones to achieve new forms of game system behaviour, and consequently (and ideally) new kinds of player experiences. For finding out what are the primary and secondary game mechanics in a game, we need a systematic method of analysing game mechanics, the goals they are related to, and the human abilities their performance requires.

Mechanics in relation to goals as challenges

For the sake of analysis and design, it is important to pinpoint the distinction between goals, the player abilities they afford and necessitate, and game mechanics as exercises in those abilities, i.e. as actions that players perform to the best of their abilities.

Extracting the game mechanic from the goal is not always unambiguous. For example, 'recall' and 'protect' are tasks that imply challenges in the form of goals, but they are not necessarily directly embodied into game mechanics, such as a recalling or a protecting mechanic. In any game, the game mechanics are designed to empower the player with means to carry out the tasks, but in the process, they might get thematized with the help of another metaphor, and/or the same game mechanic might be used in various other tasks relating to different goals. The goal protect is achieved via e.g. combat, and the combat game mechanics are designed to protect something, e.g., a goal embodied into components or environments, but they could also relate to a set of other Achievement and or Instrumental goals. The goal of recall is to submit an answer to a question, for instance, and cognitive abilities in the domain of memory (e.g. Memory span, Associative Memory, etc., see chapter 7) are exercised in attaining the goal.

This example highlights another distinction, i.e. the one between the player ability, roughly cognitive and/or psychomotor, that is needed to perform the mechanics, and the game mechanics itself. In terms of Carroll's model of cognitive abilities (see chapter 7) pattern recognition has to do with abilities known as Closure speed, Closure flexibility, and Perceptual Speed. Pattern matching is a common cognitive procedure related to goals in games, but there is always a distinct game mechanic available to the player to express the recognition of a pattern to the system – e.g. placing as in Tetris, Carcassonne or Dominoes, or arranging, as with **Bejeweled** (Popcap Games, 2000). Certain player activities, such as co-operation, do not necessarily require specific mechanics, but the forms of co-operation can be designed (i.e. be constrained) with specific mechanics that supports the co-operation of players, such as a contract game mechanic which, when performed, feeds information about player relationships into the game system, and subsequent ruleset procedures (such as dividing points, etc.) are run based on this information.

The players' wants and needs are not game mechanics, even though the game system tries to manipulate them via goals. The players use the game mechanics of a given game to express their will and desires to the game system, but the game system (or its proxy, e.g., the game master in table-top role playing games) dictates whether and how the input is accepted into the system. For example, if the player desires a card (or any other component) that is in another player's possession, the player has to use the available mechanics, governed by the system, to try to get it. He can not just go ahead and take it, unless the ruleset defines such as game mechanic. In card and board games, these means usually include such mechanics as trading, collecting, bidding, etc. In digital games, there might be specific combat mechanics available to defeat the other player in order to get to her belongings, and in sports games, such as in basketball, the ruleset defines what means one is allowed to use in trying to steal the ball from an opponent: for example, a football type of tackling (mechanic) with full body contact is not allowed.

Game mechanics as verbs: Three Categories of Game Mechanics

Game mechanics are essential elements in that they are always about doing something significant in the game. In everyday experience, they are what playing a game is about. Game mechanics are best described with verbs: Choosing, guessing, moving, aiming, shooting, collecting, kicking, trading, performing, bidding, etc. Thus the nature of a mechanic, i.e. the action it conducts, might come to define the game experience as an interactive experience for the player. For instance, jumping defines ski jumping, and guessing or knowing characterizes quiz games.

Quite often in a game there is a certain game mechanic that characterizes the game as taking choices and actions. In games with a single game mechanic, it literally is what the game is about. Submitting a stake by placing it on the table is what characterizes **Roulette**. Placing a stone on the grid is what characterises **Go**. Moving, fighting, and conversing with characters-of-system is what characterises many digital games of the ‘adventure’ genre, such as the **Legend of Zelda** (Nintendo, 1986-)series, etc.

In addition to these characteristic, ‘game defining’ mechanics, there are often game mechanics that seem to be in a supporting role, yet they are instrumental in attaining a goal. Their function is to assist in performing another, primary game mechanic. In basketball, moving by running and dribbling supports the goal of throwing the ball through the hoop, as movement closer to the hoop makes the goal less difficult to achieve. In digital games like **Defender** (Atarisoft, 1982) or **Half-life**, the reciprocal nature of moving and aiming & shooting mechanics manifests itself in similar manner. One has to move, which requires a certain ability, to the best possible location in order to make a shot, which requires another ability. Parallel to this cognitive/psychomotor sequence runs the emotional sequence with its variables and eliciting conditions: valenced reactions to goal monitoring, under which there is the event of moving, the fellow or opponent players’ (agents) actions, and the aspects of objects in the gaming encounter.

In games with multiple components-of-self, there is often first a choice of which component to act upon, i.e. which component will the primary mechanic focus on, and after that, the player performs the game mechanic. Chess presents an example.

To summarise, it seems evident that there are game mechanics in different roles. Next, I will divide them into three categories with the help of distinguishing their position in the goal hierarchy. Besides this, there is the question of whether a game mechanic is available to the player in a constant or a conditional fashion; always or temporarily.

Primary game mechanics and submechanics

I will employ the global–local variable familiar from our discussion of games and emotions to explain whether a particular game mechanic is available in relation to any game state or certain game states.

In the first case, it is a global game mechanic. If a game mechanic is only available conditionally, e.g. only in a specific location or during a specific time, or for a certain duration spanning a number of game states, or to a player with certain role attributes, it is a local game mechanic.

The core mechanic of the game often consists of a set of game mechanics that are available globally but only one at a turn, i.e. use of one rules the other one out for that particular game state. This is the set of primary mechanics. It is primary because it is related to the highest order goal that the game presents to its players at that time.

Primary game mechanics often have another mechanics in a supporting role: player performs the mechanic and another (or a set of them) becomes available to her. Hitting the ball out of your opponent's reach definitely characterizes Tennis, but there is also a mechanic having to do with moving to the best possible position from where to hit the ball (in similar manner as choosing the piece to be moved in Chess).

These I will call submechanics. They are related to lower order goals, yet these goals are instrumental (i.e. they belong to the corresponding goal type) in completing the highest order goal. In order to hit the ball out of your opponent's reach you will have to be in a position to perform the point-winning and goal-completing hit. Moving alone does not win the point for the player – the hitting does, and that is why it is the primary (directly goal-related) game mechanic in this case.

How the players manage to perform a submechanic often sets her expectations of attaining the goal. Consequently, this performance also produces predictions of future emotions, i.e. prospects for them. Let us continue with the Tennis example: My perceived ability to hit a winning shot is higher if I manage to move into a position that allows me more time to aim and perform the shot. My predicted emotions are thus ones of positive rather than negative, as I have played successfully in effecting a game state where the likelihood of positive result regarding the goal is high. In similar fashion, the hand dealt to me in a game of Poker produces a baseline of emotional prospects for the future choices of betting or folding.

Sequences like these constitute the core mechanic globally available to players, and the behaviour of the game system that facilitates and governs it constitutes the core dynamic. Primary mechanic is the essential singular aspect of what 'game play' in a given game is about, and submechanics often introduce variety and unpredictability into the dynamics. It might also be that the cognitive and/or psychomotor abilities that performing the primary game mechanic necessitates become to characterise the player experience. For example, the player experience of **Dance Dance Revolution** is rather characterised by dancing (as a set of cognitive and psychomotor abilities) than expressing and sequencing, even if these two mechanics would represent it in terms of the library of game mechanics.

Modifier game mechanics

Regardless of how many game mechanics a game system employs in total, all mechanics might not be always available. A game might have mechanics that are only locally available to players. They might be available only during certain game states or for a certain temporal duration encompassing a number of game states. Game mechanics might also be conditional, e.g., a player has to have a certain role or other player attribute to perform them, or obtain a certain component or a certain location in the game to be able to perform the mechanics. A turn-based structure imposes a condition, 'on one's turn', for deploying mechanics. Many so-called 'power-ups' function in a way that is conditional in relation to time, game state, or place: If a player drives over a symbol in the kart-driving **Mario Kart** game series (Nintendo, 1996-), the character-of-self is awarded weapons or special attributes for a limited time or number of turns.

These kinds of locally available game mechanics will be called modifier mechanics. They may be instrumental, or give advantage for completing higher order goals, but not necessarily. In Tennis, the strength with which to hit the ball may make one hit completely different from another. Thus there is a game mechanic of applying strength in the appropriate moment and place – a set of specific psychomotor abilities – which function as a modifier mechanic the primary one of hitting.

Global, Local, and Glocal goals

However, there is one more distinction to be made. The goal of the core mechanics is not necessarily the same as the ultimate, highest order goal of the game. For instance, the goal of the core mechanic as an individual set of player choices and actions might be to accumulate points, but the goal of the game might be to have the most points after a number of rounds, i.e. rounds of core mechanics between players. In Tennis, the core mechanic accumulates points, which amount to games, which amount to sets – and the highest order goal of overcoming one's opponent is defined either as two or three sets to be won.

Thus, the goal of core mechanics is not necessarily always a global goal but in instrumental relation to it. Therefore I will name the goal of core mechanics as glocal goal, referring to its simultaneous relation to global victory and/or end conditions, and local goals.

Method for collecting the Library of Game Mechanics

The library of game mechanics is gathered from a sample of games played via various media and technologies. The sample is evident in the examples, even though the process with which the library has been gathered is somewhat of a chicken and an egg dilemma. However, in general the work has been conducted in line with the general, iterative and cyclical research process which was outlined in chapter 2. In the following, I will illustrate this process with a brief example of how the mechanics classes have been abstracted from analyses of actual games.

Wario Ware case

Wario Ware Inc., Mega Microgames (hereafter WW) is a game by Nintendo for the Game Boy Advance and GameCube consoles, released in 2003. The analysis will concentrate on the Game Boy version.

WW is an interesting subject because the game consists of over 200 so-called micro-games that last about five seconds each. In the games, the player is presented with goals that range from catching a falling stick to stopping a penalty shot in soccer, or taking a photo of a flying squirrel, etc. However, it is not only the short duration that makes these games within a game 'micro' – it is also the fact that each game equals a single goal that requires only few mechanics, often only a single one. Each level, i.e. a set of micro-games, in the game culminates to a 'boss' level, where multiple game mechanics are used, but usually – as we'll see – these are combinations of the handful of mechanics the mini-games employ (Gingold 2003).

From the standpoint of my overall theory, WW is also interesting since each micro-game is preceded by an imperative that gives the player an idea of what to do in the next few seconds. In terms of game rhetoric, these imperatives are rhetoric figures that guide and persuade the player to play. The figures, such as 'Jump!', 'Drop!', 'Eat!', 'Catch!' are thus also included in the analysis. I believe that analysing the 'micro' nature of WW and its game mechanics is useful, because the game displays a number of fundamental game mechanics that are used in all kinds of games across media and technologies, despite the fact that their embodiments are displayed here in digital form.

Examining these games with few mechanics and how they are combined in the slightly more complex boss levels also enables us to see how more complex digital game systems like Grand Theft Auto: Vice City combine their primary mechanics (e.g. manoeuvring, aiming & shooting, combat, manipulation, etc.) into other game elements, such as a complex simulation of an urban city and its inhabitants as the game environment, and the numerous components and ruleset procedures within it.

The WW analysis also illustrates how the mechanics are always fused with the goal of the game, and therefore in the design of two games, the same mechanic might be used but for inverted goals. It is also worth noting that the game rhetoric figure of imperative voiced before the beginning of each micro-game in itself 'names' the mechanic to be used, or states a metaphor for it. This points out the fact that each goal description, definition of victory or losing condition, mission briefing, etc. is basically a recipe of the mechanics to be performed, but the style and tone of game rhetoric that is used, and its semiotic modes in general, translate the recipe into a particular thematic form employed in a particular game. In other words, a recipe of manoeuvring and combat becomes a tale about how the prince or princess must be saved, or another similar metaphor, possibly dictated via narrative means for the player. We will return to these aspects in the next chapter on game rhetoric, but these tentative observations serve to show how my research process has progressed, and how it has benefited the overall theory.

Wario Ware game mechanics

WW consist of 9 levels, all of which contain approximately twenty micro-games. Wario Ware contains over 200 micro-games, which are picked randomly for the player during an individual gaming encounter. Therefore, for the sake of brevity, my analysis presents a sample that equals the games from the 'introductory games': game mechanics of 13 micro-games are analysed in total. Their game mechanics are analysed level by level, game by game, with the following information provided of each:

- the micro-game title and a description of its challenge
- the rhetoric figure, i.e. an imperative that readies the player for the challenge
- the mechanics classes the micro-game employs and the goal implied
- possible additional notes

Micro-game title & description:
Crazy Cars – Press the A button to execute a jump, hopping over the car (hot dog, shark, or boulder) out to run you over.

Rhetoric: Jump!

Mechanics: Performing (to jump), Manoeuvring

Micro-game title & description:

Wario Whirled – Wario is placed on a spinning plate. The player has to press the A button at the right time to stop the spinner on Wario.

Rhetoric: Stop me!

Mechanics: Operating (to stop)

Micro-game title & description:
Saving Face – Catch a pole falling from the top of the screen with the A button when it drops.

Rhetoric: Catch!

Mechanics: Catching (to catch)

Micro-game title & description:
Diamond Dig – Control Wario's drop with the control pad, and try to get him to land in the pit where the diamond is.

Rhetoric: Aim!

Mechanics: Manoeuvring (to hit)

Micro-game title & description:
Dodge Balls – Use the Control Pad to control a toy car and flee two rolling soccer balls.

Rhetoric: Flee!

Mechanics: Manoeuvring (to flee)

Micro-game title & description:
Repellion – Shoot enemy spaceships on top of the screen. The player only has as many missiles as there are ships.

Rhetoric: Attack!

Mechanics: Aiming & shooting, Manoeuvring
Notes: The manoeuvring mechanic functions as the aiming mechanic, similarly as in Space Invaders.

Micro-game title & description:
Wario Wear – Dress Wario. Move with the Control Pad to catch the shirt as it falls from the top of the screen.

Rhetoric: Dress!

Mechanics: Manoeuvring (to catch)

Micro-game title & description:
Hectic Highway – Control a car with the Control Pad and try not to hit any other cars on the highway.

Rhetoric: Dodge!

Mechanics: Manoeuvring (to avoid)

Micro-game title & description:
The Maze That Pays – Use the Control Pad to collect gold coins from the corridors of a maze.

Rhetoric: Collect!

Mechanics: Manoeuvring (to collect)
Notes: Due to the fact that the task of collecting is embodied into a game environment, a collecting mechanic is substituted into a manoeuvring mechanic.

Micro-game title & description:
Super Wario Bros. – In this version of Super Mario Bros., move Wario with the Control Pad to stomp on the Goomba characters. The player has 4 jumps.

Rhetoric: Stomp!

Mechanics: Manoeuvring (to catch)
Notes: Basically manoeuvring becomes an aim & shoot mechanic in this micro-game, but as Wario's movement is constant and the player can only effect its vertical direction, there is no shooting (in the sense of pulling a trigger) as such.

Micro-game title & description:
I Spy – The player controls the spotlight with the Control Pad and has to keep Wario under it.

Rhetoric: Spotlight!

Mechanics: Manoeuvring (to catch)

Micro-game title & description:
Mug Shot – Grab Wario's mug as it slides vertically across the counter.

Rhetoric: Grab!

Mechanics: Catching (to catch)

Micro-game title & description:
BOSS LEVEL: Sparring Wario – Press the A button to punch a sparring ball at the right time, when the ball swings near you.

Rhetoric: Spar!

Mechanics: Attacking / Defending (to punch)

In conclusion, this brief case study shows that first, game mechanics having to do with manoeuvring are suitable for micro-games such as Wario Ware's, or second, whatever the game mechanics is, it is subordinated to a type of goal that has timing as its main criteria for success. It can be said that the manoeuvring-timing combination is the basis for the core mechanic of '5 second games'.

When we move on to analysing more complex gaming encounters and their game mechanics, and the core mechanics they make up, we need to extrapolate a method from the findings in this chapter thus far. I will close the chapter by introducing a method.

Game mechanics analysis template

The table below presents an analysis template based on the principles established for analysing game mechanics above. It employs the distinctions to

- global, glocal and local goals, i.e. how the goal hierarchy is distributed in relation to individual game mechanics and the core mechanics they make up
- primary, sub, and modifier game mechanics, and their relation to respective goals, i.e. the mechanics' status in relation to game state and its goal.

Availability in the Game as World		**Core (global) game mechanics**			**Local game mechanics**	
Status in relation to game state & goal The above categories explained from the perspective of their relevance to player	**GLOBAL Goal**	**Primary mechanic**	**Submechanic(s)**	**GLOCAL Goal**	**Modifier mechanics**	**LOCAL goal**
	The overall, highest order goal of the game.	What the player does in relation to the game state during a standard turn or sequence.	What action(s) the player has available to her as a consequence of the primary mechanic, or as instrumental means to perform the primary game mechanic.	Goal of core mechanics.	What the player does in a specific game state which occurs on some condition (related to location, player role, time, etc) specified in the rules.	Goal related to modifier mechanic which may be instrumental to various order goals.

Table 17. *Game mechanics and goals analysis template.*

I will illustrate the use of the above template with examples of five games from different genres: a video game, a card game, a board game, a gambling game, and a sports game. These are documented below using the table template.

Availability in the Game as World		**Core (global) game mechanics**			**Local game mechanics**	
Game	**GLOBAL Goal**	**Primary mechanic**	**Submechanic(s)**	**GLOCAL Goal**	**Modifier mechanics**	**LOCAL goal**
Mario Kart	Win race by being first at the finishing line	maneuvering	accelerating/ braking	achieve leading position by passing other cars	using a power-up	improve ability-of-self / detract from ability-of-others

Availability in the Game as World		**Core (global) game mechanics**			**Local game mechanics**	
Black Jack	multiply stake by beating the house hand	placing a bet	choosing additional cards	Beat dealer's hand without going over 21	splitting in case of two of same-valued cards	(doubles the chance) attain high order goal
Niagara	Deliver a combin-ation of jewels to home base	allocating 'move' points	moving one's boats	get to move a boat and reach a shore; avoid waterfall	picking a diamond when adjacent to it	transport diamond home
Slot machine	Multiply stake by getting a set of symbols listed as a prize	slotting a coin	operating the machine	Get a combination of symbols listed on the prize chart	Doubling in case of a win	double the prize
Billiards (9 ball)	Pocket ball number 9	shooting & aiming	strength	hit and pocket the targeted ball	opening shot	break the opening formation

Table 18. *Five games' game mechanics and goals analysed with the method..*

The red squares are marked as relating to the local goals that are instrumental for higher order goals. The rapid analysis of the four games serves to show how it is not always the global mechanics that are instrumental to achieving victory condition, i.e. the goal in the very top of the goal hierarchy. A locally distributed modifier mechanic might be a high order goal in itself (as with Niagara's game mechanic for picking up diamonds to one's boat), and/or instrumental to the highest order goal. Also, in the above cases it might be argued that the submechanics of Black Jack or a slot machine are actually its primary mechanics, but this would be based on a scenario where there is no money at stake. Then again, that is obviously not the way players prefer to play such games.

In an analysis of which is the primary game mechanic of a game, the goal it relates to has the final say. (We addressed this principle earlier with the Tennis-related example of moving versus hitting the ball.) Let us analyse Tetris, once again. It does not have a victory condition, but only an end condition. Nevertheless there is a highest order goal, which is to preserve free space in the game environment. This is achieved by moving the blocks and placing them into combinations with each other, which triggers the ruleset procedures where full horizontal lines disappear and space is freed. Now, the moving does not relate directly to the high order goal of freeing up space, but it supports the other game mechanic of placing. But actually there is no specific placing mechanics of any kind, as placing happens according to system procedure as blocks touch on another vertically. There is, however, a modifier mechanic that allows the player to drag the block instantly down, rather than waiting for it fall all the way. Thus, the game mechanics analysis of Tetris would produce the following result with a compact version of the template:

Availability in the Game as World		**Core (global) game mechanics**			**Local game mechanics**	
Status in relation game state & goal The above categories explained from the perspective of their relevance to player	**GLOBAL Goal**	**Primary mechanic**	**Submec-hanic(s)**	**GLOCAL Goal**	**Modifier mechanics**	**LOCAL goal**
	Do not let a block touch the upper border of the game environ-ment in order for play to continue.	moving the block	rotating the block	Find best position for the block, i.e. produce combina-tions of 8 in order to score points.	Dragging the block down; a ‘shortcut’ mechanic.	Accelerates moving a block in case there is vertical space below.

Table 19. *Analysis of game mechanics and goals in Tetris.*

In fact, there is no primary mechanic quite in the sense that the games above had, because the lower order goals constantly change according to the combinatorial patterns that emerge from components being placed onto the game environment.

In this case we could state as a finding the following: What characterises Tetris as game is not so much the mechanics it allows to perform, but the procedures of goal rules, i.e. the combinations of the components (blocks) and their conditional disappearance through game system procedures. If we presume that positive emotions while playing Tetris are mostly due to the visceral animation of disappearing block, once the player is equipped in the cognitive and psychomotor abilities needed to perform the game mechanics, then the hypothesis would seem to support this finding.

What do we learn from this kind of analysis? We gather game-specific knowledge of how game mechanics work in relation to goals, and the method also helps to explain intuitive observations, such as ‘one can not win a game of billiards by using strength only' in terms of game-specific theoretical concepts. As we saw with the Tetris case, the method also highlights how it is potentially another element than a game mechanic – a verb – that characterizes playing a game. As I noted earlier, sometimes it might be the set of player abilities that the goals and game mechanics both afford and require that characterise playing the game. Thus, we could complement the above analysis method by adding the analysis of cognitive and psychomotor abilities into its course. This is important in order to understand the 'pleasure principles' of games in an analytical fashion. We will move onto a study towards this direction in the case study section, in chapter 17.

Library of Game Mechanics

I have studied a sample of games with the above method, and this study has produced a library of game mechanics. It is documented in its entirety in appendix B. Harvesting the library has been by no means a simple tasks, and the label of each mechanic 'species' is always up to debate, i.e. should keeping possession of a component be called 'preserving', 'maintaining', or 'manipulating'. I have had to solve issues like this by trying to keep the library coherent, yet it has to be admitted that it presents an approximation of what players do in the universe of games. The library has evolved through several iterations, which is evident also in the mechanics cards of the GameGame; they represent an earlier iteration of the library.

Still, the process of gathering the library with a sample of different types of games has also served another purpose, i.e. testing whether the goal categories introduced by Björk and Holopainen (2005, see summary in chapter 6) manage to reach beyond digital games. As a result of the mechanics study, I ended up introducing additional goal categories, such as 'Match' and 'Discard', which are quite prominent in card games.

I will close the chapter by including a list of the titles of all the game mechanics categories in the library, 40 in total, in alphabetical order:

- Accelerating / Decelerating
- Aiming & Shooting
- Allocating
- Arranging
- Attacking / Defending
- Bidding
- Browsing
- Building
- Buying / Selling
- Catching
- Choosing
- Composing

- Conquering
- Contracting
- Controlling
- Conversing
- Discarding
- Enclosing
- Expressing
- Herding
- Information-seeking
- Jumping
- Manoeuvring
- Motion
- Moving
- Operating
- Performing
- Placing
- Point-to-point Movement
- Powering
- Sequencing
- Sprinting / Slowing
- Storytelling
- Submitting
- Substituting
- Taking
- Trading
- Transforming
- Upgrading / Downgrading
- Voting

CHAPTER 13: Game Rhetoric: Multimodal Figures as Tools for Persuasion

After discussing how emotions are modulated in games, I will move on to theorizing about a subject closely related to it: games as meaning-making systems. This does not, however, mean that emotion drops out of the equation, quite vice cersa.

Emotion theorist Keith Oatley and his colleague Johnson-Laird have promoted a theory of emotions that they call communicative. Their proposal is that emotions are communicative due to so-called control signals within the brain which 'set it into distinct modes that reflect priorities of goals and that predispose toward appropriate classes of action'. Subsequent actions also communicate emotions to other people. This is the intersocial aspect of emotions. (Oatley & Johnson-Laird 1996, 363.)

It is also generally accepted that usually an emotional control signal is accompanied by a signal of the informational kind (Oatley & Jenkins 1996, 254). This points to the phasic experience of emotions where a cognitive process is followed by a bodily expression (see chapter 5). This is the psychological basis that I will base my notion of game rhetoric upon: game rhetoric deals with the symbolic means of communication that influence the informational signals of our cognition, and subsequent emotional reactions. Player experience as a whole can in fact be seen as a communicative situation between the game system and the player(s), and there is also non-verbal communication involved, such as facial and bodily expressions. This is the essence of a gaming encounter in the Goffmanian sense, and the figure presented in chapters 3 & 4 presents an abstraction of it.

The various means and techniques with which games invite players to play, i.e. convince them to step into the 'magic circle' (Huizinga 1971, Salen & Zimmerman 2004), can be seen as persuasive communication. Game rhetoric is about persuading players into rule-bound performances and pretending. If rules are something that is used to circumscribe the player into a space of possibilities and constraints, then game rhetoric provides this circle with a shelter of potential meanings, articulations and interpretations. Whereas the information element in the game system is used to store information about game states (scores, results, placings and other relations between contestants, etc.), game rhetoric has to do with how the information is communicated to players, with the help of the theme element and the thematization techniques employed, and in general with means addressing our senses, both visceral and physical.

To give a couple of examples, a simple act of game rhetoric occurred whenever it was that Chess pieces were modelled as to represent a kingdom and its army. This was an early example of creating a metaphor for the game system. If a rock-paper-scissors core mechanic is used in a martial arts fighting game as an inter-relation of different moves, kicks and punches, etc. (cf. Rollings & Morris 2000, 83–86), this kind of 'stylization' is a particular act of game rhetoric that functions in the context of thematization. After that, the final game theme emerges from the semiotic resources used: If the fighters are represented as robots according to the mecha tradition of Japanese popular culture, instead of human martial arts experts or soldiers, the theme of the game ends up somewhat different in flavour and it potentially affects the game experience – at least particular player communities regard mechas 'cooler' than traditional Chess pieces.

In terms of my overall theory, these particular techniques of game rhetoric mentioned above were focused at the component element, i.e. the pieces of Chess or animated characters in a digital action game. There are particular rhetorical techniques in relation to each game element, and as a set, they make up the meaning potential of any particular game. In many games, this meaning potential is confined by the theme element – in other words, the subject matter of the game and the metaphor it is communicated with functions as the start and end point of any meaning-making practices outside the functional, systemic meaning stored into the rules. This chapter will concentrate on analyzing meaning-making practices that game designers craft by using rhetoric figures.

What is rhetoric?

Famous modern rhetorician Kenneth Burke has described the function of studying rhetoric by referring to the famous biblical myth about the fall of the Tower of Babel and the confusion of languages that followed. Burke (1950, 23) writes about rhetoric being 'concerned with the state of Babel after the Fall'. My premise is that the Babel of Game Analysis & Design has fallen, and the figures and tropes of games are intact, but they are all around us, in a confusion and cacophony that needs to be sorted out.

Generally, rhetoric is understood as 'the art of speaking or writing effectively', or 'the study of writing or speaking as a means of communication or persuasion'[10]. Here game rhetoric will be discussed as a specific part of game design trade that aims to take hold of players' attention and persuade them to play along. The rhetoric techniques that exist out there, in games, will be analysed and categorized. Traditional and contemporary views on rhetoric are

[10] *Merriam-Webster's Online Dictionary. http://www.britannica.com/dictionary?book=Dictionary&va=genre&query=genre*

explored in the process, with the aim of producing an unified theory of game rhetoric. Its practical implementation will be a library of game rhetoric, in similar fashion as a library of game mechanics (chapter 7).

We need to start from the classics of rhetoric. Cicero provides the premise with his three dimensions of rhetoric: docere, movere, and delectare. Docere refers to teaching on an intellectual level, movere to engaging the audience emotionally, and delectare to keeping the audience captivated and interested in following the discourse. Cicero argued that a good orators should always pursue a synergy of these three dimensions. (Barilli 1989, ix, 30.)

On being persuaded

These three virtues of rhetoric can be tied to the virtues of game design, and the theory of player experience: communicating the rules and mechanics of the game in a manner that the player learns them easily, providing emotional experiences via challenges embodied into goals and their resolutions, and delivering these in a manner that keeps the player interested in the game – in a smooth 'flow' where the difficulty of attaining goals by perfroming game mechanics is not overwhelming but suitably challenging and interesting.

Kenneth Burke saw that rhetoric is rooted in an essentially and continually renewed function of language: 'the use of language as symbolic means of inducing cooperation in beings that by nature respond to symbols' (Burke 1969, 43). Another, more recent scholar of rhetoric, Steven Mailloux, has defined rhetoric as 'the political effectivity of trope and argument in culture'. He sees that this definition includes two traditional meanings of rhetoric: figurative language and persuasive action (Mailloux 1989, xii.) We are discussing the symbols and their organisation into game-specific tropes, the function of which is to induce players into playing.

In addition, engaging into play might be the first step into being persuaded to response differently to matters. In terms of persuasion theory, there exists a basic distinction to three behavioural outcomes (Miller 2002, 6—12):

- Being persuaded as a Response-Shaping process
- Being persuaded as a Response-Reinforcing process
- Being persuaded as a Response-Changing process

Game rhetoric may aim to any one or all of these ends, whether the question is about responses to the goals the game proposes, or aspects of the theme that are used to shape, reinforce, or change responses. So-called serious games, with e.g. political themes, are interesting in the context of all three aspects of persuasion.

Multimodality of rhetoric

It is clear by now that in contemporary thinking, rhetoric is not only about speech. It has been argued that in the 21st century rhetoric is increasingly multimodal instead of 'monomodal', i.e. different forms of communication more often than not address several senses at the same time. Contemporary rhetoric uses several semiotic modes instead of one, and thus the makers of messages address various modalities. (Kress & van Leeuwen 2003, Kress et al 2001.)

However, it can also be argued that games have been multimodal ever since the first ones existed: even the earliest board games addressed at least the visual and tactile senses with material boards and pieces. These tangible modalities often include illustrations as well. This is in line with general descriptions of rhetoric as always having been 'compherensive, total way of using discourse' where the physical aspects of communication are not sacrificed for the intellectual ones (Barilli 1989, vii). So, game rhetoric appears to have ancient and multimodal roots, even dating back to Babel – yet its study has been sparse.

Whatever the case, the theory and the subsequent analysis method promoted here present a synthesis of culturally orientated theories on meaning, systemic theories on communication, ludology and narratology. From notes on rhetoric in general we will move to closer examination of the multimodality of game rhetoric, and the subsequent modal techniques it employs. Eventually these observations will be adapted into analysis of game elements and player experiences.

Rhetoric and play

Within his considerable contribution to study of play and games, Brian Sutton-Smith has discussed the various cultural rhetorics regarding play. Sutton-Smith distinguishes eight types of rhetorics at work in culture when play and games are discussed: Rhetorics of animal progress, child play, fate, power, identity, imaginary, self, and frivolity (Sutton-Smith 1997).

I fully acknowledge the existence of these rhetorics in culture at large, but I see them, in the terms of cultural studies, rather as cultural discourses. They are seldom focused into games' particular formal structures as such, or different types of gaming encounters, but surround games and articulate them in a general, broader context of cultural phenomena. I do believe that particular rhetorical stances can be found in games (as we will see later) that support and amplify the particular types of cultural rhetorics Sutton-Smith discusses – e.g. the rhetoric of the self. Still, the notion of rhetoric that I employ operates mostly on a different level: Whereas Sutton-Smith discusses discourses about and around games and play, I focus on the means and techniques with which games give birth to a particular discourses within the actual interactions during game play.

Rhetoric and game studies

The idea of game rhetoric has been promoted by two game theorists, from slightly different perspectives. In his essay on the subject, Drew Davidson sees rhetoric as ’the study of techniques and rules for effectively using communication to convey meanings’, and adapts rhetorical theory to game analysis. He elaborates on the distinction of rhetoric and game play:

> The rhetorical elements are how the mechanics show players how to play. This is the subtle distinction between the rhetoric of the gameplay and the gameplay itself. But this distinction can blur. I believe when gameplay mechanics are well integrated within the overall game design, the rhetorical elements become a seamless part of the game and it’s hard to separate the two. If the overall game design is a unified whole in which the gameplay mechanics are incorporated, then the rhetorical elements are just a part of playing the game, as opposed to an obvious technique or rule to be understood in order to play. Good gameplay makes for good rhetoric, which makes for a good game. (Davidson 2003a.)

My discussion of game rhetoric does not radically depart from Davidson’s. What he sees as ’rhetoric of gameplay’ comes close to what I discuss under the notion of theme, and theme is essentially an element that is constituted of information that is communicated by figures of game rhetoric. My theory tries to contribute more intricate methods for studying game rhetoric than what Davidson (2003b) provides. I believe that with the help of the theory of game elements and player experience, the ’unified whole’ of a game and the role of rhetoric techniques within it can be understood better.

Steffen Walz is another game scholar who has voiced the idea that there exists a rhetoric particular to games. He defines rhetoric as a ’discipline concerned with symbolic action, identification, persuasive operations, strategic communication, and proper (cross-medial) expression’ and argues –– reformulating Aristotle – that the design of a medium ’may almost be called the most effective means of persuasion it possesses’ (Walz 2003, 196). Walz discusses the rhetorical nature of game design in this context.

Drawing on rhetorical theory, Walz distinguishes attitude change as the fundamental criteria of succesful persuasion: someone not playing a game is persuaded to play it. Walz also re-reads Kenneth Burke’s theory of rhetoric in the light of digital games’ means of persuasion and identification. Burke defines identification as the socio-psychological reason for any kind of cooperation, and social cohesion in general. Burke equates identification to the symbolic nature of rhetoric, i.e. its use of symbols for generating expectations and fulfilling them. (Burke 1950, Walz 2003, 197.)

Walz’s discussion of game rhetoric results in a comphrehensive model of different aspects of player persuasion and motivation, and the possibilities and necessities for identification in ’symbolic’, ’systemic’ and ’structural’ dimensions. He also evokes traditional meanings of rhetoric, such as guidance, that are helpful in thinking about rhetoric in relation to games. (Walz 2003, 198—9.)

I agree with the premises of Walz's theory. However, Walz does not present particular rhetorical analysis of games, and his theory is focused on digital games. This means that I will try to focus my own contribution to analysis of game rhetoric with concrete case studies and methods that are independent of particular game technologies and the modalities they privilege. I do not see game rhetoric as a particular rhetoric that players express through playing. In the view proposed here, game rhetoric is a set of communicative techniques between the game system and its players. Therefore, game rhetoric is a tool of makers of rules – game designers.

Game Rhetoric without Frontiers: Communication & Semiotics

Semotics is the discipline concerned with studying signs, in all their forms and meaning-making modes.

Kress and his colleagues, drawing from Michael Halliday's theories of functional linguistics, establish what they call 'essential functions which any communicational system must meet' and which are general requirements for any human communicational system. (Kress et al 2001, 3.)

In the following, I list the three functions and interpret them for our context:

- ideational function – representing and communicating game states
- interpersonal function – representing and communicating social/affective relations between participants in the act of communication, i.e. facilitating player relations in gaming encounter
- coherence – representing, simulating, and communicating in coherent fashion in the context of other elements; in the context of the possible metaphor for the game system

The parties of communication in a game are the game system, which embodies the signs and modes the game designer(s) has implemented into it, systemic and compound elements, and players as a behavioural element who interact with the system, thus operating and interpreting the game system as a system of information and meaning.

As we see, the functions for a human communication system have to do with representing and communicating, and in my view, simulating, in the context of gaming encounters. Therefore it is necessary to establish the focus of these three communicative techniques:

- Representation focuses on what the game system wants to represent about a certain game state, as embodied into the game elements and their configuration into game states.

- Simulation focuses on what the game system wants to simulate about a certain phenomenon, i.e. with what degree of fidelity the metaphor for the game system is construed in relation to its referent system.
- Communication focuses on how that is done, through which elements and which modes, for the players taking part in the gaming encounter.

These in combination produce game rhetoric: It is built on the rule set and information elements as compound elements. They are communicated either with representation and/or simulation, and as a result, the theme becomes apparent in the embodiments of rules and information into other game elements.

Game theme and ruleset as meaning-making systems

Game theme was discussed as one category of game elements in chapters 3 & 4. It was defined as the subject matter that is used in constructing a metaphor for the game system, i.e. for the ruleset, the goals, and other game elements. Game theme provides the backdrop of meaning for everything that takes place in the game. If there is no specific theme, as in abstract games, the game in itself, i.e. its ruleset substitutes the need for a theme. Additionally, there might exist such a considerable tradition, i.e. a historical context, to the game (Chess, Poker, lottery games, etc.) that meanings of the tradition are always potentially present alongside its explicit thematization.

In his study of board games, David Parlett distinguishes ’theme games’ as one type of board games, ”to cover the plethora of modern board games chiefly characterized by a thematic subject matter, such as property trading or crime detection.” (Parlett 1999, 9.) He suggests that thematized games usually borrow game dynamics of abstract games, but in the process, they may originate new dynamics of their own:

> [A]ll thematic games are bound to employ mechanisms and procedures based on or derived from traditional abstracts […] and may well embody significantly new mechanisms (’ludemes’) […] (Ibid.)

Many games across media and technology are characterised by a ’thematic subject matter’, as Parlett puts it. Therefore, it is not relevant to distinguish a category of theme games, but rather state that a significant part of games indeed employ a theme element. In the context of game rhetoric, I define game theme as follows: Game theme is a set of multimodal rhetorical techniques used to create meaning to game states with the help of metaphorical concepts.

Examples of game themes are found across various game technologies: the science fiction setting of the **Metroid** video games, the horror in **Silent Hill** or **Zombies** the board game series, trade and exploration in **Settlers of Catan** and its expansions and variants, art auctions in the card game **Modern Art,** urban crime in **Grand Theft Auto**, the fantasy of the **Zelda** video games or **Lord of**

the Rings board games, 1960s agent fiction of computer game **No One Lives Forever**, espionage and anti-terrorism of the Tom Clancy digital games (from **Rainbow Six** to **Splinter Cell**), domestic neighbourhood life in **The Sims**, rollerskating and graffiti in **Jet Set Radio**. Game design and industry are the themes of the GameGame (see chapter 4). All these particular themes circumscribe the dynamics of the games and add layers of meaning into the dynamics' execution through the modes of moving images, text, and sound. They construct metaphorical concepts, such as 'game system is spy fiction', or 'game system is a Tolkien novel', and on the level of game elements, 'game environment is Middle Earth' or 'character-of-self is James Bond'.

So how does theme function as the context of game dynamics, and what is 'context' regarding meaning, anyway? In his theory of texts and meanings, Mikko Lehtonen (2000, 110) argues that texts as 'semiotic beings' do not exist without their contexts, i.e. without readers, situations and functions. He describes traditional views on the relations of text and context:

> In traditional notions of texts and contexts, contexts are seen as separate 'backgrounds' of texts, which in the role of a certain kind of additional information can be an aid in understanding the texts themselves. In this kind of notion of contexts, it falls to the reader's lot to be a passive recipient. S/he is the decoder of notions included in the text who exploits his/her possible contextual knowedge to reveal meanings that are fixed and final already in advance. Text resembles a crossword puzzle with one and only one solution, and context in turn is a number of reference books that the solver of the puzzle consults in order to find the right solution. (Lehtonen 2000, 110.)

It might be old-fashioned, but my notion of theme as the context of meaning in games does function somewhat according to these 'traditional notions', i.e. theme functions as a backdrop for game dynamics, but then again, the dynamics and theme are not separate in any sense, but rather constantly interconnected as a particular type of semiotic event. But, the difference is the very fact that in games the thematic context is actually used to assist the player and inform the player in solving the very concrete challenges, or puzzles, the game presents. Thus theme as an implementation of a metaphor that helps the players to conceive a game system's and its ruleset's meanings is often crucial. Abstract games tend to employ such metaphors that they are understood with fundamental metaphorical concepts of our experience in terms of space and time. An example is found, e.g. in Tetris, Space Invaders, or **Yenga!**, where the up–down metaphor is in a central role.

Please note also that my notion of context in relation to theme is different than the notion of context as a game element (as defined in chapter 2), i.e. context as a collection of informal, external aspects to the game-system that possibly affect the game experience (personal histories and game tastes of the players, the physical location of the game, etc.). The reason is that my primary interest is not in the meanings that are produced by players playing a game in a particular context, but rather on the means that games use to engage players into production of meaning in the first place. Lehtonen writes that ’it is most fertile to consider contexts variable and special cultural resources, with the assistance of which readers produce meanings in texts’ (ibid. 114). In this chapter, I see theme/ruleset as the formal resource of semiotic potential, and players as agents that interact with that potential, bringing their own cultural resources with them into this cooperative making of meaning. The goffmannian notion of frame, i.e. how social and communicative experiences are made sense out of by the frames where they take place, is important here as well, as it is a closely related concept with focused gathering and gaming encounter (Goffman 1976, Kress et al 2001, 21).

Means of persuasion and engagement in games

What are the techniques in games that are used, in Kenneth Burke’s terms, to ‘induce cooperation’ of players and the game system? What are the techniques that invite players to play and keep them in the game? These questions are very much related to the theory of player experience – modulation of emotions – discussed in part III. In terms of classic rhetoric, we are basically discussing ludic means to design the synergy of docere, movere and delectare, and how to encourage players into articulating and interpreting it via engaging with the game and its dynamics.

The most basic level of game rhetoric is the communication of rules. Usually they are communicated in the form of a rule book or manual, i.e. as written language, possibly complemented with illustrations. However, especially contemporary games seldom leave their communication at that. Rules are contextualised in relation to thematized game elements: for instance, the game environment is addressed as a specific board representing the continent of Africa (as in the most popular board game ever in Finland, African Star). This choice already evokes meanings of ’Africa’ as a semiotic being. Kress et al also talk about semiotic affordances, especially in relation to genres (Kress et al 2001, 144), i.e. genres build expectations that affect how the rhetoric is greeted.

Narrative and characterization

In other words, rules are ’disguised’ into thematic meaning, and in many games there are pursuits to narrate background stories that ’precede’ rules. They often lead to narrative arcs that run along the ruleset, or the ruleset is made to conform with narrative events, or it is made meaningful via narrative means. Narrative is here understood in a narrow sense, i.e. as recounting of events by someone to somebody on a temporal axis. ’Narration’ consists of a set of devices (order, tone, etc.) with which narratives can be created (see e.g. Prince 1987).

In general, narrative means can be used to convey a game theme and/or rules to the player(s), as narrative is a particular means to structure information.

Prologues, abstracts, 'how to play' passages, tutorials, mission briefings, cut-scenes, and epilogues in the form of narrative (verbal passages, voiceovers, animations) are common devices to set and uphold the game theme. For instance, there often are temporal and spatial changes from moving from one game level to another: the next level is another planet in another time, etc. These thematic disjunctions, which are often also disjunctions in the goal structure of the game, can be justified with a narrative sequence so that the context of gameplay remains meaningful, as opposed to arbitrary sequence of rules imposed on the player. In fact, using narrative techniques in a game promotes a particular metaphorical concept – 'game is story' – which may help players to understand the game's ruleset and motivate into playing the game.

Narrative is one type of rhetoric, or mode, to convey thematical meanings. Techniques of transportation, as discussed in chapters 8 and 9, can take advantage of narrative in creating a sense of presence in a fictional world. Affinity to characters was one of the player prerequisites for enjoying gaming encounters, and the empathy or counterempathy created by narrative devices and characterization can be a decisive rhetorical means to persuade the players to care for game characters.

Themes are often fictions or fictionalisations of real-world phenomena, and narrative is used in communicating this fictionality. Roger Caillois (1961) has remarked that rules themselves create fictions. Thus, they lend themselves to being narrated to players. There is a 'rhetoric of fiction' as suggested by literature theorist Wayne C. Booth, who analysed 'the rhetorical resources available to the writer of epic, novel, or short story as he tries, consicously or unconsciously, to impose his fictional world upon the reader.' (Booth 1983, xiii.) Speaking of literature, Booth argues that 'the author cannot choose to avoid rhetoric; he can choose only the kind of rhetoric he will employ.' (Ibid. 149.)

As long as any kind of thematic semiotic resource is employed, the same goes for game designers. They always employ the rhetoric of the ruleset, at minimum. Booth also writes about a number of principles that literary authors strive for, such as 'ordering of intensities' (Booth 1983, 60), 'grasping and sustaining the reader throughout the work' (ibid., 124), 'molding beliefs' (ibid. 177) and 'manipulating moods' by trying to control the reader's degree of involvement or distance to the events narrated, and authors may try to address the reader's moods and emotions directly (ibid., 200-1). These are all principles that we have discussed in light of gaming encounters and their emotional potential.

Booth's thoughts relate to what Kress et al call 'social semiotics': that relation between form and meaning is always motivated by the interest of the maker of the sign to find the most plausible form for the expression of the meaning s/he wants to expresss (Kress et al 2001, 5). Thus game designers are sign-makers, who are engaged in two ways: in terms of the design of representation and/or simulation, and in terms of the design of the message for communication (cf. Kress et al 2001, 7)

Representation and simulation

Narrative is not the only means to communicate game theme, however. Representation or material design of game elements can be used to rhetorical ends. Naming game components (characters etc.) and game environments (game world, setting), or modelling the pieces and designing the game board, or providing a game interface in the form of a gun or a guitar are thus all examples of game rhetorical techniques, and tehcniques of embodying eliciting conditions for emotions into game elements. In the classical rhetoric manner, they aim to guide and persuade players into certain actions and interpretations. As an example, a deliberately sarcastic attitude to the game industry is sought by the rhetoric employed in the asset cards of the GameGame.

Whether rules are communicated with theme-driven or ruleset-driven rhetoric, it is the task and nature of players to try out how the rules operate and test their limits. Game mechanics are the set of means for the players to achieve the game's goals, and they are subjected to the victory condition or end condition of the game. For instance: if the victory condition is to guess seven correct numbers out of thirty-nine possibilities (as in the Finnish state lottery), the player has to have a game mechanic available to her with which to pick out the seven guesses. Thus, communicating the victory condition is always a communicative act that is conveyed with certain kind of rhetoric ends. It aims to guide and persuade the player to use the game mechanics available to her.

Game theme is also embodied in the literal and verbal rhetoric of the game, i.e. what names and descriptions are given to actions that take place in the game. This rhetoric is an element that is used in creating the context of meaning that the game theme provides. In games where the game play is mostly about controlling different resources, e.g. in various strategy games, a game mechanic such as allocation (of resources) most likely has a different in-game vocabulary if the theme of the game is one of managing a football team, than in the case of a game where the player manages a city infrastructure. In the case of football management, the mechanics is likely to be implemented as substituting, and the city planning metaphor probably means that it is implemented as budget and resource management. The rhetoric is adapted from the metaphor that is used in communicating the system to the players.

Game rhetoric as multimodal discourse

So far, I have described some forms of persuading players via game rhetoric. Next, we will take a look at the multimodality of this kind of persuasion. In order to understand the specific techniques of meaning-making regarding games, we have to understand something general about meaning that is produced via various different modes of expression, i.e. images, sounds, etc. Gunther Kress and Theo Van Leeuwen (2001) have suggested the notion of multimodal discourse, i.e. 'unified and unifying semiotics' to explain multimodal semiotic phenomena. I find their theory concise and practical enough to be adapted for the use of my overall theory, and it also helps us to elaborate on the techniques and forms of game rhetoric.

Games, whether material or digital, are often multimodal. They use various semiotic modes – written language, image, sound, materiality of objects – to express meanings. Game rhetoric equals the variety of semiotic techniques that give birth to the multimodal discourse particular to games. I will spend the rest of this chapter to discuss specific techniques of game rhetoric and how these techniques contribute to meaningful player experiences. This requires a detailed look into the theory of multimodal discourse.

Kress and Van Leeuwen sketch four domains of practice in which meaning is made. These strata are:

- discourse
- design
- production
- distribution.

Let us embark on a closer inspection of the four strata and their relation to gaming encounters.

Discourse and games

Discourse is defined as socially constructed knowledges of some aspect of reality that can be realised in different ways, using different semiotic resources and modes. (Ibid. 4–5.) Kress & van Leeuwen use discourses of 'ethnic conflict' as their example, and it is a discourse that gets articulated in various ways in games as well, often in thematized, fantastic contexts. Examples include the various crime triads in **Grand Theft Auto III** and **Vice City** (Rockstar games, 2001 & 2002), and certainly the highly political discourse of ethnic conflict in **Under Ash** (Dar Al Fikr, 2002), the pro-palestinian 'First-person shooter' game. Basically any game with a war theme, whether based on actual history or an imaginary one, brings a discourse of ethnic conflict into a game. Examples of political conflict and its discourse are evident in a board game like **Class Struggle** (Avalon Hill, 1978), where communist and capitalist ideologies are put into battle.

The complex issue of discourse and games tends to escalate to games where a particular political discourse is articulated. This is evident in the recent 'serious games' movement which has focused on the analysis and production of games with political, pedagogical and/or ideological agendas. For instance, **Tactical Iraqi** or **America's Army** (US Army, 2001), games used by US army in military training, have raised attention in the academic community and the game developer community. It is important to understand, however, that their basis is in the tradition of gaming and simulation exercises for pedagogic and other purposes from 1950s onwards. It is true, however, that digital media enables new kinds of rhetoric techniques for this particular field as well.

Actually, regardless of the agenda, the point actually is that any game system articulates a discourse, by minimum a discourse articulating its rules. Seldom is a discourse free of matters formally external to the game, i.e. several contexts will likely be embedded into the discourse when players engage with it. It is from these interactions that the cultural rhetorics of games, in terms of Brian Sutton-Smith, arise.

Design: choice of semiotic resources and modes

On the second strata, design, Kress and van Leeuwen write:

> Design stands midway between content and expression. […] Designs are (uses of) semiotic resources, in all semiotic modes and combinations of semiotic modes. Designs are means to realise discourses in the context of a given communication situation. But designs also add something new: they realise discourses in the context of a given communication situation which changes socially constructed knowledge into social (inter-) action. (Ibid., 5).

In this way, game designs communicate discources through their game elements and system behaviour: an example of a specific instance of the 'ethnic conflict' discourse realised through embodying particular features into game elements is found in Under Ash, where game-object components are realised as Israeli soldiers which behave in hostile manner, i.e. they are simulations of challenges to be overcome as they pose a threat to goals-of-self (i.e. the player).

Kress and Van Leeuwen stress that design as practice is separate from the actual material articulation of the semiotic event, i.e. it is the task of design to choose from semiotic resources the actual modes and media with which to realize the 'end product' of design. (Ibid. 6.) In practice, game designers make high-level decisions of what kind of game technology to use – and choices are available from 'low tech' pen & paper to advanced technologies such as computers or mobile phones. Each technology enables a certain semiotic, expressive potential: e.g. of images, material objects, etc. Game designers make modal choices about whether to use written language, or sounds, or images, via representation and/or narrative and/or simulation, to actualize the ruleset procedures as semiotic events to the player.

An important notion for the choice in semotic modes is that they have developed different strengths in conveying messages to an audience and persuading them to learn and act. Kress et al (2001, 16) call this the functional specialization of a mode, and it is based on an assertion that

> visual, actional and linguistic modes of communication have been refined through their social usage to make meaning in different ways and to produce different meaning-making potentials – what we refer to as functional specialization […]

In communication, the choices made from a set of potentials the different visual, actional, and linguistic modes have are ‘rhetorically organized to provide an integrated multimodal whole’ (ibid.). Without doubt, this kind of specialization has been taking place during the course of history regarding games as well, but as the media and technologies used in facilitating gaming encounters develop, new means to employ semiotic modes are invented while others become conventions (e.g., the materiality of games with boards and props).

Game production: articulation and interpretation

This leads us to the third strata: production. Kress and van Leeuwen define it as ’the organization of expression’ i.e. ’the actual material articulation of the semiotic event or the actual material production of the semiotic artefact.’ (Ibid.) Production takes place with the means of semiotic modes and resources that have been specified with design. It incorporates both those producing (articulating) the semiotic event and those consuming (interpreting) it. For Kress and van Leeuwen, any kind of communicative act requires that both articulation and interpretation take place (ibid. 41). From this perspective, as players play games, they produce signs within the modes that the game designer has designed the game system to allow them to, and within the medium that each game instantiates. Thus, as with most means of communication, there tends to develop a gap between design and production, and ’design becomes a means for controlling the actions of others’ as Kress and Van Leeuwen state (ibid. 7).

Distribution

The final strata is the most simple one in the context of my theory, as it runs out of the scope of the thesis. Distribution refers to recording, preservation and mass production dissemination practices regarding semiotic materials (ibid.). With games, what is distributed are actually media, as each game system functions as its own medium with its particular selection of semiotic modes.

Different types of game systems employ different technologies to mediate themselves to the player: card games use a deck of cards, board games employ material boards, pieces, and props, and digital games take advantage of information technologies such as personal computers and game consoles. Consequently they have different means of distribution: sports games and, e.g., live action role-playing games and so-called pervasive games are gaming encounters best understood as events, and this has consequences for their distribution, as they can not be distributed as products.

Semiotic Principles for Game Rhetoric

In addition to the four strata, Kress and van Leeuwen introduce two semiotic principles that function as direct links between discourse and production: provenance and experiental meaning potential. We will analyse their consequences for game rhetoric in the following.

Game provenance: importing behaviour

Provenance is defined as follows:

> [Provenance] refers to the idea that signs may be 'imported' from one context (another era, social group culture) into another, in order to signify the ideas and values associated with that other context by those who do the importing. This happens, for instance, in giving names to people, places or things (e.g. in naming a perfume 'Paris') when there is no 'code', no sedimented set of rules for naming pefumes. (Ibid. 23.)

Most games employ techniques of simulation, i.e. modelling the behaviours of a referent system, to some degree. This simulative logic means that it is seldom only signs that can be used to evoke the thematic context (e.g. a historical setting) in the context of the game. Rather, provenance in games takes the form of importing behaviour, i.e. dynamic systems, rather than singular, static signs. The historical entities' behaviour should be simulated with historical accuracy as well.

The degree to which provenance in games takes this kind of behavioural dimension is related to the relationship of theme and game system behaviour: the more directly the behaviour is extracted from the theme, the more importing via provenance there is. In a board game such as Puerto Rico (Rio Grande Games, 2002), 'Puerto Rico' might be substituted with 'Macau', and the game dynamics of imperialist strategy would remain essentially same, having to do with trading and resource management mechanics. The relationship of particular thematic details (such as the name of the setting) to the game dynamics is in this case arbitrary yet it has consequences for the game system as a meaning-making system. Theme and game mechanics reside as individual semiotic beings brought together in the production of the semiotic event, rather than there residing a seamless 'theme-mechanics' semiotic being.

On the other hand, in a digital game like **Grand Theft Auto: Vice City**, the theme and dynamics are woven together so closely that the act of provenance, i.e. evoking the Miami of 1980s crime fiction, ranges from including an extensive 1980s pop music soundtrack to dressing the game characters in the era's particular fashion, and importing familiar scenarios of urban crime fiction, especially the television series Miami Vice.

The consequence for studying games is that in cases like these it is increasingly hard to draw the line between theme and the ruleset – see the rules from the theme, so to speak, if we assume that rules can exist in isolation from a theme in the first place. In any case, the practical consequence for game scholars and students is that analysis tasks become more complex and time-consuming. At the same time, they necessitate quite elaborate knowledge of the game under analysis, and subsequent notation methods of details in the system behaviour. We will arrive at such methods in chapter 16.

Experiential meaning potential: modelling and mechanics

This concept comes quite close to Lakoff & Johnson's theory of metaphorical concepts as something that fundamentally structure our experiences and means to make sense out of the world. I believe that the concept of experiental meaning potential in fact helps us in finding concrete techniques for implementing this aspect of game rhetoric into a game, or analysing its implementation in a game system under scrutiny. With the concept, Kress and van Leeuwen refer

> […] to the idea that material signifiers have a meaning potential that derives from what it is we do when we articulate them, and from our ability to extend our practical experience metaphorically and turn action into knowledge. (ibid. 22.)

They use the sound quality of 'breathiness' as an example of a sign that derives its meaning from our knowledge of the kinds of situations in which it may occur, e.g. being out of breath due to running (ibid. 10). With their interactive and multimodal nature, especially digital games take advantage of the experiential meaning potential of signs. Once again, this is used in connection with simulation, especially in the form of game characters and their behavior that relates to our knowledge of bodily existence and 'extending it metaphorically' to the character. Thus, experiential meaning potentials of such signs as different emotions ('pain', 'joy', etc.) are frequently used in the designing and animating game characters.

However, the uses of experiential meaning potentials are not limited to digital games. Basically any type of game mechanic, i.e. player action performed in a game, relates to the experiential meaning potential that its name carries – 'trading' evokes our knowledge of buying and selling, 'driving' our knowledge of driving a vehicle, 'swimming' our knowledge of what swimming is like, and so on. Or, the meaning potential is not so much experiential, based on actual knowledge based on experience we have, or on metaphorical concepts, but a promise or fictionalisation of the experience. Thus games afford experiences that one can not or is not allowed to have otherwise, such as governing an imperium, or killing, or committing crimes in general.

Modes of game rhetoric

Next, we will explore the semiotic modes that games employ in realising their meaning potential and discourse. Kress and van Leeuwen (2001) and Kress et al (2001) discuss a number of modes ranging from music to tangible materials such as plastic. In light of this conception of mode, I will list a number of semiotic modes for games, i.e. any medium which is used either by designers to embody rules, and/or players to perform and feed information to the game system. The list is not exhaustive, as theoretically any kind of mode could be used in designing a game system. The main point of the list below is to highligh the multimodal nature of games by giving examples of how the mode has been used in games:

- *text*: rules in written form, written answers to quizzes
- *symbols*: X's and O's of Tic-Tac-Toe
- *image*: illustrations on cards, boards, etc.
- *moving image*: narrative
- *animation:* visually emphasizing game elements or animating their behaviour
- *speech:* used for conveying narrative, or game mechanics performed through speech
- *song:* game mechanics used for expression in the form of singing, e.g. in singing contests or Karaoke games (e.g. Singstar series, Sony Computer Entertainment, 2004)
- *sound effects*: sound that emphasizes a game mechanic, ruleset procedure, etc.
- *music*: melodies used for dramatic purposes, either so-called non-diegetic music not originating from the game world, or diegetic music that does originate from the simulated game world (e.g., radio stations in the Grand Theft Auto series), or performing music as a game mechanic
- *rhythm/tempo*: imposing a tempo for the game system behaviour
- *touch*: game mechanics based on touch, tactile forms of communication by the game system
- *direction/vector*: imposing direction(s) of movement for game elements, or establishing a particular perspective for player role, i.e. from where the player is able to perceive the game system and its behaviour (e.g. in a number of digital games, a first-person perspective which positions the player as 'one' with the character-of-self and its means to perceive the game world)
- *gesture*: game mechanics performed through gestures, e.g. in gymnastics (or as with games for Nintendo Wii console)
- *posture*: game mechanics performed through bodily stances, e.g. gymnastics

- *physical force*: physical stress, weight, or strain as game mechanic or as a means of communication by the game system
- *matter* (such as clothes): character costumes in live action role-playing games, team jerseys communicating player organization in sports games

Other modes could include light, temperature, smell, or even brain waves, which have been employed in research projects where video game controls have been implemented to function through the brain waves that the players transmit.

Semiotic modes as experiental affordances of player experiences

It would seem that certain modes are more suitable to convey some kind of experiences than others. Horror is a useful example.

In a horror video game, first person perspective into three dimensional world presents a combination of semiotic modes that affords fantastic yet visceral sense of horror. This is due to the fact that it emulates the sensory periphery, i.e. that something might be behind the player, and so on. Thus, the choice of semiotic modes and the consequent modalities, and their particular configuration, leads to an experience where uncertainty concerning what happens in the game is modulated by perspective, i.e. distribution of information in a particular way for the player.

Horror with the semiotic and modal means of a board game, then again, has to be based on psychological innuendo and sense of dread. It may take advantage of a sense of inevitability, as, e.g., **Betrayal at House on the Hill** (Avalon Hill, 2004) does: players know that at some point there will be a 'haunt' and one player will turn against the others in some way (according to different scenarios), yet until the haunt happens everything is uncertain.

These two brief examples serve to remind us that even if there are concepts that can be used to analyse games across various technology and media, as my theories suggest, the experiental potential of one game technology might be considerably different than that of another. Therefore, analyses of player experiences based on hypotheses, are important.

Modal and stylistic techniques of game rhetoric: a Sample

We will move on to the specific techniques that persuade and address players by using a particular semiotic mode or combinations of modes. Let us begin with a number of examples from various games. The following list consists of different examples of what I refer to as the 'figures' of game rhetoric:

Game	**Token example of communication**	**Semiotic modes used**	**Purpose, i.e. persuasive function**
Mario Kart DS (Nintendo, 2005)	'3-2-1' countdown in the beginning of a race	text, animation, and sound effects	readies the players into trying for the best start possible
Betrayal at House on the Hill (Avalon Hill, 2004)	'the Haunt' ruleset procedure, which follows at some random point during the gaming encounter	material props	the players are persuaded to believe that one player's character-of-self 'betrays' the others and is imposed with an opposing goal
Texas Hold' em Poker	'River', 'Flop', and 'Turn', i.e. the different phases of ruleset procedures where cards are dealt to the table	Speech, gestures	to build anticipation and afford / persuade checking, raising or passing a stake
Buffy the Vampire Slayer: The Game (Hasbro, 2000)	Choose a scenario to begin game	text, material props (scenario-specific villains etc.)	To begin the gaming encounter, players are persuaded to choose one from a number of different scenarios, i.e. varying rulesets, based on the production seasons of the television show
Zookeeper (Success Corp., 2003)	Animals make animated faces when three of the same are aligned and disappear (as a result of the player performing the game mechanic); sound effects are used when time limit is getting near zero; 'Level up!' message is displayed and the animals replaced with new ones (via animation) once the player attains the subgoal of single level	animation, sound, text	Communicating player progress, simulating animals' emotional reactions in order to make them more attractive and lively

Game	Token example of communication	Semiotic modes used	Purpose, i.e. persuasive function
Tekken series (Namco, 1995-)	The player is presented with a choice to 'Choose your character' in order to engage in a fight of martial arts, with a character-of-self, against an opponent	animation, sound, text	Characterization through animated gestures and martial arts moves, i.e. making the characters more attractive
Lost Cities (Rio Grande Games, 1999)	In the back cover of the packaging it reads: 'For the daring and adventurous, there are many lost cities to find.'	text	The player is promised an experience of excitement and adventure
Modern Art (Mayfair games, 1992)	The manual states: 'In Modern Art, you are the owner of one of the world's most famous modern art galleries.'	text	Metaphor for player role: The player is identified with the glamorous world of art and gallery owners.
Ricochet Robot (Rio Grande Games, 1999)	The manual states: 'In each round, the objective is to collect the chip in the center.'	text	Explaining to the player how the goal is embodied into a component ownership status.
Coloretto (Abacus Spiele, 2003)	From the back cover of the packaging: 'Like a Chameleon, a player may change his color many times during a game. However, players who change colors too often will not do well and may even earn minus points for doing so. This means, that a player must wait for the proper time and place to make the change, but do it before his opponents do.'	colour, numbers	Metaphor for player role: The player is identified with that of a chameleon, and certain tactical advice are given regarding the goals of the game.

Game	Token example of communication	Semiotic modes used	Purpose, i.e. persuasive function
Ticket to Ride Europe (Days of Wonder, 2005)	The manual states: 'When a route is claimed, the player places one of his plastic trains on each of the spaces of the route'.	text, image, material props	Player ownership on the game environment is communicated through persuading the player to mark the environment with components-of-self, i.e. the plastic trains.
Football	The assistant referee holds up a display device with the sign '4'.	Numerical information via a led display	Indication to players, coaching staff, and players that there will be four minutes of added time to the game time at the end of a half.
Once Upon a Time (Atlas Spiele, 1993)	In the game , there is a card that states 'Happy ever after'.	material prop, text	Communicating the victory condition: the goal of this game of cards is to take the role of the Storyteller and be able to bring a story into a closure according to one's own cards. The victory condition is embodied into the card in question, which also produces a happy ending.

Table 20. *Techniques of game rhetoric in a sample of games.*

From the above sample, and subsequent 'harvesting' of more examples (see case study in chapter 20), we can try to extract a number of tentative categories of game design rhetoric, where similar figures found in games are grouped under a heading that describes their general persuasive function. This would present an integration of number of seemingly individual examples of how game systems are designed to communicate with their players.

These figures would present figures of game rhetoric without frontiers, i.e. they would group multimodal communication techniques of various kinds. Furthermore, figures of game rhetoric take part in setting up eliciting conditions for emotions as semiotic beings that imply action tendencies for players with their persuasive nature.

By charting the figures and their potential semiotic modes, we can categorize to which particular function of addressing players they are used, and possibly also suited for. Thus, by expanding the above sample, we can begin to distinguish different modes of address. A tentative premise for categorizing them could be emotion types (from chapters 10 & 11), i.e. under the rhetoric of prospect-based emotions we would find categories such as 'figures of confirmation' and 'figures of relief', and under the rhetoric of fortunes-of-others emotions categories such as 'figures of pity', and under the rhetoric of attribution emotions 'figures of admiration', and so on. To get closer to this, I will spend a few pages with a case example.

Figures of Game Rhetoric, a Reading: Mario Kart DS

I will close this chapter with a simple case study. Playing **Mario Kart** for Nintendo DS hand-held console (Nintendo, 2005) shall function as a brief example of a gaming encounter and its particular game rhetoric. I will examine a 'Grand Prix' in this video game where players adopt a Nintendo character, such as Mario, Luigi, Princess Peach, and Yoshi, as their character-of-self and race against each other in different circuits. In addition, each character has a selection of kart vehicles with different attributes, such as speed and acceleration, which have conesquences for the game mechanics (manoeuvring and aiming & shooting). A grand prix consists of four races in a set of four circuits. The higher a player manages to finish in a race, the higher are the points awarded to him. The points from individual races are added, so that after the fourth race the player with most points in total is the winner of the Grand Prix.

The analysis results are presented in the table below:

Game State or Event (in chronological order)	Description	Semiotic modes used	Persuasive function and the emotion / tone of address	Relation to token emotion examples
Select mode	Choice between Grand Prix, Time Trials, Vs, Battle, and Missions	text, images, animation, music	imperative	
Select class	Choice between 50cc, 100cc, and 150cc	text, images, animation, sound & music	imperative	

Select character	Choice between different characters and their karts	Portraits of characters, animations of characters in their vehicles, sound & music	seduction: ‘Choose me’, punctuated with a character shout in the form of a sound effect if chosen by the player	
Select kart	Choice between different character-specific karts with different attributes	Portraits of characters, animations of characters in their vehicles, visualization of vehicle attributes, sound & music	seduction: ‘Choose me’, punctuated with a character shout in the form of a sound effect if chosen by the player	
Select cup	Choice between different cups, i.e. sets of four circuits	text, images, animation, sound & music	Theme metaphor: Circuit names are from the ‘Mario universe’, i.e. Wario Stadium, Koopa Beach 2, etc. History: the highest ‘rank’ the player has achieved in the circuit with previous tries Reference: Circuit names include references to previous versions of Mario Kart in other Nintendo game consoles (SNES, N64, etc.)	
Confirmation screen	Choice between Ok, Cancel, or Quit	text, images, animation, sound & music	imperative	
Transition to race, i.e. game environment	Cinematic animation sequence that introduces circuit and its surroundings	animation, sound & non-diegetic music	introduction to challenge, cf. establishing shot in film	

Transition to player role	Establishing player perspective to third-person, behind character-of-self. In a multiplayer game, the human opponents are indicated with nicknames displayed above character-of-others.	direction, animation, sound	Positioning player into role, signalling existence of character(s)-of-other(s) and characters-of-system	Identification-of-self, Identification-of-others
Race start countdown	3-2-1-START animation sequence signalling race start and persuading the players to get ready	animation, sound	anticipation for race start, i.e. a local goal of making a quick start, and a timing game mechanic that has to be performed to achieve the goal	Get set - ready - go!
Race: lap information	During the race, lap time and position are constantly displayed	text, images, animation, sound & music	Keeping player aware of own performance in relation to goals	
Race: map display	During the race, overview of the circuit as a map is constantly displayed, along with positions-of-others and items-of-others	Map visualization in two dimensions, visualization of race standings with character portraits and item symbols	Giving the player additional information about characters-of-others and characters-of-system	

Race: overtaking	Performing the game mechanics (manoeuvring, accelerating and braking) to overtake a character-of-other or character-of-system and thus moving oneself up in the standings, i.e. attaining an instrumental goal for winning the race	animation, sound	Character-of-self shouts jubilantly when overtaking occurs	
Race: being overtaken	Character-of-other or character-of-system overtakes character-of-self, thus moving up in the standings	animation, sound	Character-of-other shouts gloatingly when overtaking occurs	
Race: driving off course	Driving of the limits of the rules embodied into the game environment as the circuit	animation, sound	Animation sequence where player is shown the character-of-self taken back to the circuit	
Race: generation of items	Hovering cubes appear into specific locations of the circuit	animation, symbols	Curiosity: Question marks on the cubes indicate that their contents is not known	
Race: Collecting an item	When manoeuvring over a cube, it triggers a draw procedure of items, the result of which ends up in the possession of the player	animation, symbols, sound	Players are persuaded to manouvre over the cubes in order to attain ownership to the item-of-system that they contain. Suspense is built with the draw animation that resembles slot machine procedures.	

Race: using an item	When in possession of an item, the player can perform a local game mechanic depending on the nature of the item: the item might enable aiming & shooting, momentary acceleration, or stealing an item from character-of-other or character-of-system	animation, symbols, sound	Performing the conditional and local 'item' game mechanic is communicated with animation & sound - in case the item potentially affects fortunes-of-others (such as causes them to spin and slow down), the character-of-self shouts and gestures jubilantly	
Race: being affected by an item	Character-of-self is affected (e.g., hit) by an item deployed by character-of-other or character-of-system, and as a result her performance in the race suffers temporarily (e.g., by being slowed down)	animation, sound	As an indication of the displeasing result, the behaviour of the character-of-self is simualted through animation and use of sound	
Race: next lap	As character-of-self crosses the finishing line, a character-of-system appears with a display that shows which lap is in question	animation	As indication of the progress towards the end of the game, an animated character is used to convey the lap information; lap time for the previous lap is also recorded	
Race end	GOAL! animation that signals reaching the finishing line	animation, direction	As an indication of the end condition of the game being resolved, an animation and a shift of perspective is used	

Race closure	The character-of-self rides the circuit by itself after finishing the race	animation, non-diegetic music, direction	Depending on the player’s final standing either a jubilant or sad tune is played to indicate the success of player perfomance, i.e. the game system communicates either in a happy-for or sorry-for tone for the player. In addition, the character-of-self is animated either with happy or sorry gestures.	
Race finish information	Final standings, total race time and lap times, and points gained are displayed	animation, text, non-diegetic music	Race finish information is communicated to the players: points gained are punctuated with a ‘clinging’ sound resembling a shower of coins.	
Grand Prix standings	Total point standings from all races are displayed.	animation, text, non-diegetic music	Total Grand Prix status regarding players standings is communicated to the players.	
Replay	The race can be followed from a replay.	animation, sound	Players may relive the race by watching a replay of it.	
Next course	A choice to move on to the next circuit is presented. In case the race finished was the final race, Grand Prix closure follows.	text, animation, sound & music	Player are persuaded to continue on to the next race.	
Grand Prix closure	A sequence clebrating the top three players is displayed.	animation, sound, non-diegetic music	An animated sequence is used for celebrating the three best players as they race to the podium.	

Grand Prix finish	The player standing, assigned rank, and race times are displayed.	text, animation, sound & music	In case of a successful grand prix finish into the top three, the player is congratulated and possibly new circuits are added to the game.	

Table 21. *Analysis of the game rhetoric of Mario Kart DS.*

Conclusions: Six types of Game Rhetoric

The examples and case study above indicate that identification of game rhetoric figures is possible through an analysis method. From the above, we could already establish a number of them, such as two common ones '3-2-1', or, the technique with which the three fastest racers are announced at the end of the game: 'Podium' could be a figure of game rhetoric.

These two examples point to the fact that there are different needs for communicating with the player in relation to the phase the gaming encounter is in. '3-2-1' is clearly something that is used to start a game, whereas 'Podium' would communicate the end results.

Therefore I have come up with a distinction to six types of game rhetoric, based on the abstracted model of game system behaviour as a temporal process as presented in chapter 12.

The six types of game rhetoric are essentially related to addressing the player in different phases of the play experience:

- *Gratification rhetoric* tries to persuade the player to play, and/or buy, the game to start with
- *Motivation rhetoric* tries to motivate the player into the role it affords to act from
- *Goal rhetoric* explains the game's goals, and embodies them into the game elements
- *Means rhetoric* is closely related to Motivation rhetoric, as it tells the player what are her means to perform in the hope of attaining goals. Thus, it is a way to communicate the available game mechanics to the player.
- *Feedback rhetoric* informs the player about her progress in the game, i.e. supports her goal monitoring. Feedback rhetoric has two subcategories: A) *Valence rhetoric*, which encourages, praises, or punishes the player concerning her performance, and B) *Goal resolution rhetoric*, which communicates the fate of goals.

- *Outcome rhetoric* has two subcategories: A) *End rhetoric* which communicates the game's end, or its proximity, and *Victory* rhetoric, which tells who won and/or what the fate of the players or characters was.

The function of this categorization is to present a set of concepts with which to analyse the rhetoric of games, and design persuasive, emotion-eliciting communication into games. In the case study in chapter 20, the reader will see how this set of concepts can be used in an analysis task.

As a summary, I have included a figure, expanded on the one about general game system behaviour towards certainty. It illustrates the approximate temporal phase in which players are addressed with each rhetoric type:

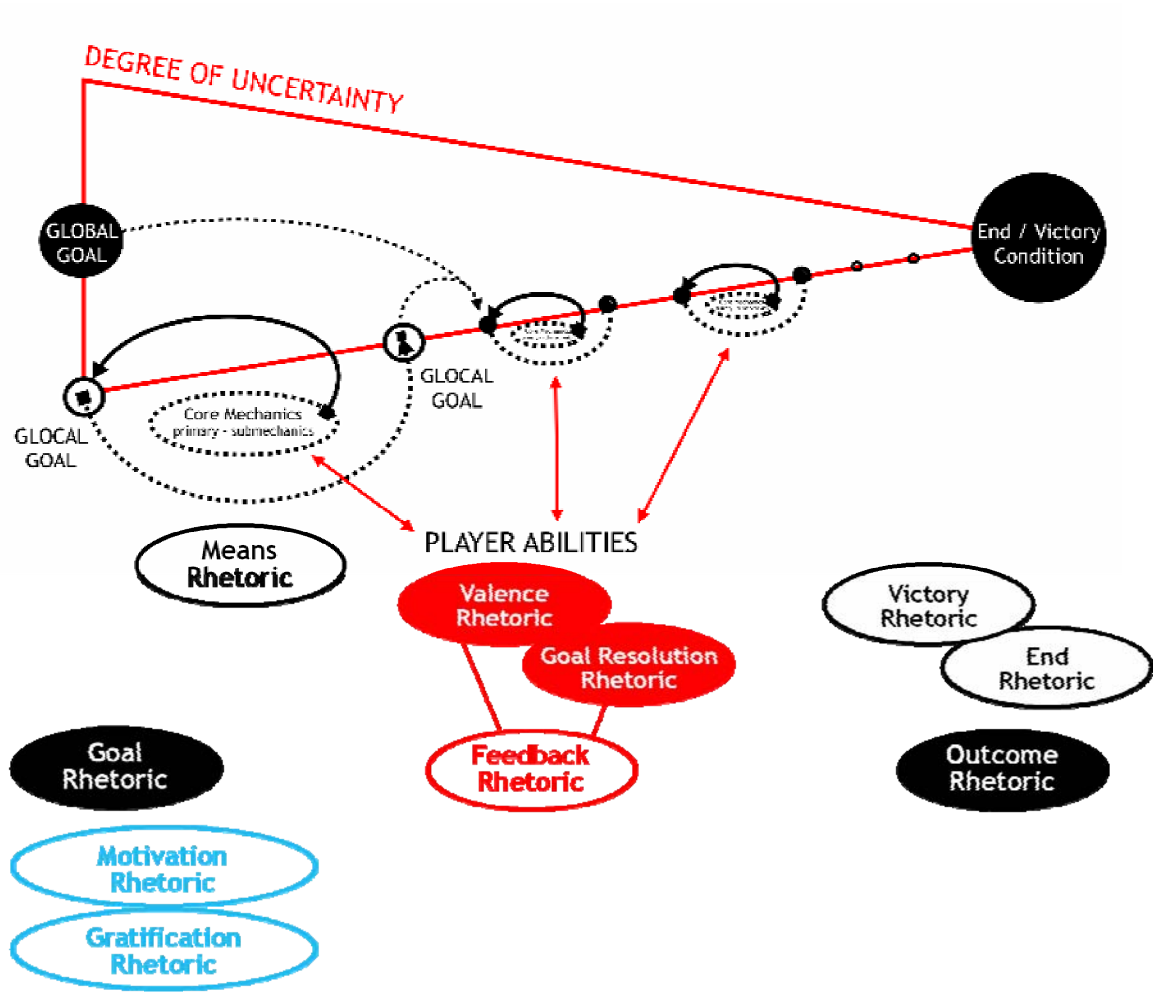

Image 15. *Six types of Game Rhetoric in relation to game system behaviour. Gratification, Motivation, Goal, Means, Feedback, and Outcome Rhetoric.*

CHAPTER 14: Game Genre Framework: Multiple Perspectives to Game Genres

> Genre – 1: a category of artistic, musical, or literary composition characterized by a particular style, form, or content

After establishing a number of distinctions with which to potentially classify games into different categories, such as emotion types, sets of game mechanics, rhetoric figures, or player abilities, it is relevant to study the notion of ’genre’. We will now focus specifically on the question whether there are categories of games ’characterized by a particular style, form, or content’, as the dictionary definition states.

The chapter demonstrates that ’genre’ both enables and entails multiple perspectives, depending on the observer and her interest for knowledge. It is important to realise that ’genre’ has various meanings and functions. Genre theorist Rick Altman (1999, 14) distinguishes four uses for film genres, and these uses can be analysed to pertain to game genres as well: First, genre can be used as a blueprint, i.e. a production formula. Second, genre is a label that functions as a tool for marketing. Third, it functions as a recognisable contract between a genre game and its players. The contract enables players to articulate and reflect their personal taste in games, and make purchasing decisions based on it. Fourth, genre refers to a common structure that can be found in a number of games, this larger set thus constituting a genre.

Genres are not stable, but they evolve through time, production and development models, audience expectations, and trends in gaming encounters. Therefore, the chapter will not present an exhaustive genre categorisation, but rather aims to demonstrate that already on the level of formal structures, often no outright answer can be presented as to the question of what constitutes the primary trait that positions a game into a certain genre.

The author has touched upon the genre issue briefly before (Järvinen 2002a & 2002b, 127), arguing that efforts in categorising digital games cannot be solely based on either their different audiovisual characteristics or their interactive features, i.e. theme or game mechanics, respectively. In many instances, the theme dictates the mechanics rather than vice versa. For example, it is the ’real-estate trade’ theme of Monopoly that gives birth to the ’trading’, ’building’ and other mechanics that enable players to take actions in playing the game. In other cases, the theme is ’pasted’ on top of a familiar game system and its mechanics:

this often happens with dice and card games. An example is Anathema (APE Games, 2003), a card game which employs a theme about the Salem witch hunt but is essentially a version of a card game known as Cassino (see Parlett 2000, 401–2): the metaphor of witch hunt is used in thematizing Cassino. In conclusion, neither thematic nor mechanic traits should be completely ignored when positioning a game into a genre.

Despite these challenges, my premise is that 'genre-thinking' is useful regarding games. We need tools that help us in distinguishing one game or a set of similar games from another. Different perspectives to genres and categories also increase our understanding of how specific formal structures possibly give birth to genre expectations, and vice versa: Are expectations fulfilled with the help of formal structures? Do genres function as semiotic affordances, as Kress et al (2001, 144) suggest? Moreover: Do informal genre contracts forged between players and genres necessitate certain formal game elements?

Genre definition through game elements

My premise is to analyse genres from the perspective of the different game elements, and the distinctions produced in the theory of player experience. This will produce, accordingly, categorisations with different vantage points: One from the perspective of game theme, and another based on game play, i.e. game system behaviour. The third approach has to do with different types of emotions and moods, and consequently enjoyment and pleasures, associated with games. Do certain genres facilitate specific sorts of emotion types and moods better than other genres, and does this present criteria for genre categorizations?

To paraphrase the dictionary definition in the beginning of the chapter, we are looking for categories of game systems characterized by a particular theme, game element, game mechanic(s), game system behaviour, or player experience. This will function as a multi-faceted definition of game genre. It allows us to step ahead to study the criteria for the characteristics, and the characteristics themselves. Roughly put, mechanics and game elements answer for the 'form' mentioned in the dictionary definition, and the inter-relations of game system behaviour and theme for the 'style' and 'content'. This definition includes multiple perspectives instead of a particular one, as articulated by Greg Costikyan (2005), who defines genre as 'a shared collection of core mechanics', i.e. in light of particular configurations of game mechanics in relation to goal hierarchies. I see this as a valid principle for categorization, and the analyses concerning game mechanics and the goals they relate to introduced in chapter 12 lead the way to a systematic analysis method introduced in chapter 15.

We will later take a look at the role of each element class in relation to formation of genres. For instance, are there certain game genres that get defined especially due to features of their use of the environment element? In addition the behavioural elements, players and contexts in gaming encounters, are discussed in connection with the so-called contractual nature of genre.

Contexts of game genres

Before moving on, there is one question to be pondered: What is the scope of genres? Due to games' rule-based and dynamic nature, this question is more complex to answer with games than with, e.g., works of literature and film. This is because film and literature presuppose fixed boundaries within the reading or watching process – from start to finish, everybody's a 'winner' provided one can read – as opposed to the quirky nature of gaming encounters that differentiate individual experiences based on skill and/or luck, for instance.

Game genres are smaller sets than game 'species', such as Roger Caillois' agon, alea, mimicry & ilinx (Caillois 1961), or subsequent efforts in classifying games in general (see Avedon & Sutton-Smith 1971, 401–407, Klabbers 2003, Aarseth & al. 2003, Elverdam & Aarseth 2005). These classifications mostly correspond to categorisations found in film theory, such as narrative vs. abstract, or fiction vs. non-fiction films. In my view, they operate on another level than genres. Genres produce order in 'lower' regions of game ecology, within the classifications that are the result of the above studies.

It has been argued (Aarseth 2001, 153) that each game actually presents an individual medium. The theory of game elements presented in part II legitimates this claim: each game-system requires its own means (components, props, board, or technology) to mediate its behaviour to players. According to this logic, a die is a game medium, where numbers one to six have been implemented to the shape of a cube, which fittingly has six faces. In the case of digital games, which require an interface element, there exists a 'high-tech' meta-medium (computer, game console, mobile phone) that is reprogrammed to function as the game medium.

Genre as technology-independent concept

As the above passage suggests, game media or technology are not discussed here as genre nominators. They are objects of game taxonomies that want to emphasize (or forget) the fact that games have historically shifted between technologies 'high' and 'low'; between a deck of cards and mobile phones. Each game technology has influenced the games played via it with its specific features, and vice versa: at least with digital games it seems that games are pushing the development of domestic entertainment technology.

The pairings of game species and their technologies are listed below:

- Card and dice games: Material components as game medium.
- Pen and paper games: Writing or marking as a specific means to embody game mechanics with which to produce input to the system (quizzes, lottery games).

- Board games: Game medium embodied into material game components (pieces, props) and game environment (board).
- Computer games: Digital game medium with game system as a computer software enabling complex algorithmic ruleset procedures, and a specific interface peripheral that functions both as a metaphor for game mechanics that the players perform and as an input/output device for the system. In addition, a display device is used for making the game elements embodied in virtual form accessible to players and to facilitate the gaming encounter. Game consoles function on the same basic principles.
- Mobile games: Telephone or handheld game medium that enables various contexts of use and employs a specific interface for system inputs and outputs.

The premise of the genre discussion that follows is not bound to a certain technology. Instead, it aims to shift focus beyond the technology used in organising a gaming encounter. In my view, the fact that one game is played with a deck of cards and another is played with board and pieces should not steal all our attention, i.e. we should not stay blind to common aspects of game elements and systems that lie beyond their material differences. As a consequence, 'mobile' games are not distinguished as their own genre either, unless there is evidence of a certain game element that warrants making a classification like this. A gaming encounter where the specific game element features, such as an interface of telephone, or handheld game medium, affect the game system behaviour in a significant way would present an example. (The presently emerging, so-called pervasive games might warrant this kind of genre criteria.)

In conclusion, the game technologies listed above do not figure in this particular genre discussion in other sense than highlighting historical transformations and transitions of game genres that were, at least in part, enabled by a new technology or by a need for it. For instance, simulations and strategy games have developed into complex, computational forms since the adaptation of computers as a game technology.

Specific features as genre nominators

The development of games with a certain subject matter, i.e. theme, has proliferated with the popularity of digital games, i.e. ones played with computers, game consoles, and mobile devices. Among board games there is a relatively larger number of abstract games than in digital games, and numerous dice and card games do not employ thematic, metaphorical concepts in any other sense than through embodying information in the form of numerical or symbolic values into game components. This is essentially because both dice and a deck of cards are game systems that enable numerous games by taking advantage of the same, standardized game components but incorporating a different ruleset into the gaming encounter.

Genre labelings among digital games have been based primarily on their thematic traits, as in subgenre titles used in game journalism, such as ’character-driven platform game’ or ’story-driven action game’. These adjectives put emphasis on the theme element in the form of a rhetoric framing that functions as a context for the goals, characters, environments, etc.

One distinction to be made when thinking about the possible nominators of a genre is between low-level traits of a game, such as different configurations of player relations, i.e. whether the game offers single or multi-player game play, and/or different game modes (such as fast-paced ’arcade’ versus more complex ’career’ or ’simulation’ modes), and high-level traits such as adventure, fighting, race, chase, etc. The low-level traits could also be described as ’trans-ludic’ traits, as they transfer across game genres and technologies.

Among digital games, specific game features and their quantitative or qualitative adjectives seem to have enough power to become genre labels in popular discourse: ’Massively multiplayer online role-playing game’, MMORPG, or ’Real-time strategy’ (RTS) present two examples. There are also instances where a genre, or a subgenre, has been nominated due to its specific audiovisual nature, hand in hand with description of its theme: ’First person shooter’ is a subgenre of digital ‘shooting’ games which articulates a specific point of perception awarded to the player, with a noun stating how the action in the game has been implemented, i.e. affording the player with particular shooting game mechanics as means to operate virtual weapons. Or, a specific solution regarding the game interface has become the nominator of a subgenre, as the once popular (from late 1980s to mid-90s) mouse-controlled ’point-and-click adventure game’ genre of computer games demonstrates.

Game genres in popular discourse

The above examples present examples of common, non-academic genre discourse. In everyday discourse, different types of games are discussed according to their historically established titles, such as sports games, board games, leisure games, children’s games, role-playing games, and so on. Without doubt, these terms are the result of complex intersections between marketing, journalism, and consumption practices, and their respective discourses. I will separate these from genre discourses evident in game production and research, and discuss them under the notion ’popular genre discourse’. Next, let us look at two examples of popular discourse.

An example of the present labelings for digital game genres is found at a popular online game site Gamespot (www.gamespot.com). Gamespot distinguishes (in Spring 2006) the following genres: Action, Adventure, Driving, Puzzle, RPGs, Simulations, Sports, and Strategy. Similar labelings are frequently used in video game journalism and popular video game histories (see, e.g., Kent 2001 and DeMaria 2002).[11]

Games in a specific genre have common traits, but what is the common, nominating element, is ambivalent in popular discourse. Generally genre labels found in popular genre discourse emphasise the theme element and/or a very generic description of the nature of game system behaviour or gaming encounter, or a specific nature of the game environment (such as 'platform games', referring to Super Mario Bros. and similar games, or 'tile-placing' games due to the popularity of Carcassonne and others). Therefore, labels such as 'adventure' or 'strategy' are widely used. The logic of this thinking is that games of the adventure genre are supposed to afford 'adventurousness' in some manner, and strategy games are associated with certain kind of game system behaviour and goals in particular that require strategic thinking to overcome the challenges that the game system presents to the players.

Boardgamegeek.com, a popular online board game community and database, does not mention genres but presents (at the time of writing, in spring 2006) 74 game categories, with a similar function of classifying the field. These categories run from theme-based (e.g., 'Vietnam War', 'Secret Agents') to technology-based ('Electronic'), and onwards to ones that are labelled with name tags that describe their mechanics and/or dynamics ('Territory building'), or informal aspects arising from gaming encounters, distribution of game information and related player strategies (e.g. the category 'Bluffing'). There is no effort to utilise the categories introduced by board game historians and theoreticians, such as the categories of war, hunt, race, and Mancala games by H.J.R. Murray (1951) or Parlett's (1999) four-fold typology: race, space, chase, and displace games. Essentially these two are highly generic categorisations based on either game system behaviour and/or goals ('race', 'hunt', 'chase', 'displace' that require corresponding mechanics), or a prominent game element ('space', i.e. game environment), theme ('war'), or specific ruleset with standardized embodiments into game elements ('Mancala').

All in all, these examples serve to illustrate the fact that in popular discourse the genre criteria are arbitrary and not commensurable. The label of genre A is based on its thematic traits, genre B's name tag refers to traits of the interface used in playing the game, while genre C has a label that describes on a general level what the player(s) do during the game. Still, labels A, B, and C are often presented as belonging to the same hierarchical level. Next, we'll see if this is the case regarding industry and academic efforts in defining game genres.

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[11] *Steven Poole, in his semi-academic book* Trigger Happy*, describes the 'inner life' of popular video games and their different 'species', but the discussion remains descriptive and no commensurable categorisations emerge as result (Poole 2000, 29–58). In his treatise of computer game genres, David Myers (1990, 293) cites a set of popular genres from the magazine* Computer Gaming World *in 1989. They are largely similar to the ones of Gamespot.com almost 20 years later.*

Game genres in design discourse

In the following, I will review game design literature and produce a synthesis of its relevant points for the discussion on genres. I will not cite each set of genre categorisations found in the design literature reviewed in detail. Instead, the characteristics will be synthesized into an overall categorization presented in the end of this subchapter.

The first reference is Chris Crawford's The Art of Computer Game Design, as in many other cases when discussing the origins of digital game design criticism. Crawford produces a taxonomy, which he himself considers flawed. Still, Crawford's contribution does not differ significantly from present-day genre taxonomies. The essential distinction in the taxonomy is between 'skill and action games' and 'strategy games'. The first includes the subgenres combat, maze, sports, paddle, race, and miscellaneous. Strategy games, on the other hand, are divided into adventures, Dungeons & dragons games, wargames, games of chance, educational and children's games and interpersonal games. (Crawford 1982, 25–35.) As Crawford (ibid. 34–5) notes, the basis of division is not constant but varies from a historically specific control technology (the paddles of early Pong variants) to specific role-playing game rulesets (D&D) as the defining criterium. However, the basic division is drawn between games that a) require physical skills based on reaction time and dexterity with immediate outcomes, and games that b) require strategic thinking with long-term outcomes. This is a division that persists in future discussions, as we'll see later.

In several more recent game design books (see Saltzman 2000, Rouse 2001, Rollings & Morris 2000) genre categorizations are discussed in passing and with the purpose of affirming the genres of popular discourse. There are slight variations between the genres, just as there are in game journalism, but 'Action', 'Strategy', 'Adventure', 'Puzzle' and 'Simulation' persist throughout. In the referred literature, genre is understood primarily as a production formula for the purposes of the game industry. This is especially evident in the game designer interviews in Richard Rouse's Game Design: Theory and Practice (Rouse 2001, 23–). Andrew Rollings and Dave Morris (2000, 8) go as far as to state that genre equals the goal of the game designer, thus ignoring especially the contractual nature of genre and its audience (unless the design is pursued with a player-centred approach). To varying degrees, there are efforts to crystallize the particular 'feel' or nature of each genre, such as defining 'Action' as 'Lots of button bashing' or Strategy as 'Nontrivial choices' (Rollings & Morris 2000, 8–9, see also discussion on 'adventure' in Rouse 2001, 354).

There is, however, game design literature where genre is discussed in more detail. Laramee (2002, 195–207) and Rollings & Adams (2003) both provide taxonomies. Laramee (2002, 195) acknowledges the shifting nature of genre definition tasks, and genre as both 'blessing and a curse' for game developers, as it both establishes conventions but possibly stifles creativity. Laramee's definitions deviate somewhat from popular genre discourse, as there is a handful of defining characteristics discussed in association with each genre. These characteristics are essentially similar to competing definitions, i.e. assigning ’immediate responsiveness’ and ’fast pacing’ to Action games, and ’linearity’ and ’characters’ to ’Story-driven games’ – the latter characteristics are usually assigned to ’Adventure’ games (for instance, in Crawford 1982 and Rollings & Adams 2003).

Game designers Andrew Rollings and Ernest Adams (2003, 287–532) discuss genres and what they call design elements (rules, challenges, perspectives, user interfaces, player roles) characteristic to each in detail. Thus, their approach, also, is basically to provide recipes for genre blueprints, but with more emphasis on the structural aspect of genres. This is articulated in the following:

> What we are attempting to do when we are extracting design elements from games on a genre-by-genre basis is to form the basis of genre-describing ”meta-game”. What we mean by meta-game is a description of an archetypal […] game. (Rollings & Adams 2003, 299.)

In principle, defining the ’meta-game’ is a similar undertaking that will be conducted in the end of this chapter. The one presented here will, however, be interwoven to the theories of game elements and player experience.

If we relate the genre discourse found in game design literature to the four uses of genre as argued by Rick Altman, most of the literature sees genre as a blueprint for game production, and then goes on to the structure, i.e. how to produce games into a genre, while the commercial nature of genre is acknowledged to varying degrees. The contractual nature of genre is by and large ignored, or it is essentially discussed in relation to marketing. This leads to the overall impression that game design literature serves to affirm the existing genre definitions and the industry practices seen to support them. Even though the contractual nature is not under specific focus here either, I argue that more detailed analysis into the defining characteristics of games that follows provides another dimension to notion of genre: genre as certain kind of informal player experience emerging from the gaming encounter that serves to support the genre contract, or renew it.

Game genres in academic discourse

Whereas authors writing generally on games have produced high-level game taxonomies and frameworks for analysis (e.g., Caillois 1961, Klabbers 2003, Aarseth et. al 2003), those writing on one particular type of games, especially historians, have interpreted the history of a particular game type with the help of establishing genres. The board game genres of H.J.R. Murray (1951) and David Parlett (1999) were already mentioned. In addition, there are treatises on dice games, such as game designer Reiner Knizia’s (1999) classifications of dice games.

The genre question has been addressed by scholars focusing on digital games, but the results have not been without their problems. Ludological efforts in genre theory are few. Arguably Mark J.P. Wolf's (2001) premise is well-founded, if obvious, as he suggests that the specific interactive nature of video games has to be addressed when reviewing existing film and literature genre theory in the hope of applying it into games. Wolf refers to the 'activity' by which a player succeeds in a game and its objectives, and elevates this as the focal point of his list of genres, which:

> […] take into consideration the dominant characteristics of the interactive experience and the games' goals and objectives as well as the nature of each game's player-character and player controls. (Ibid., 116.)

This is a valid starting point, and Wolf acknowledges the inherent elusiveness that faces genre definition tasks. Nevertheless, the 42 genres introduced are supposed to offer a complete picture of the field of digital games (in Wolf's terms, games played via a personal computer or game console). The problem with the genres is that they, once again, pursue completeness. This leads to the fact that the descriptive nature of their labels do not remain in the same register, so to speak: the categories 'Pinball' and 'Text adventure' point to a specific set of games with recognizable, particular types of game elements, while 'Educational' and 'Adaptation' function on another rhetoric level in their descriptiveness. One genre is labelled with a noun, while another is labelled, or the noun complemented, by an adjective.

Where the theory also fails is in distinguishing and conceptualising the 'interactive' trait, thus resulting in the incommensurable nature of the categories introduced. There is also an inherent suggestion that the 'interactivity' of board games is somehow fundamentally different than the one in video games: in Wolf's theory, digital adaptations of abstract board games are not classified under 'Abstract' but 'Board games', even though their game mechanics and dynamics – which Wolf aims at with the vague term 'interactivity' – remain unchanged, and it is the interface element that goes through change in the adaptation process through different game technologies. In other words, in Wolf's genre model, interactivity is anchored to its most visible and technological element: interface.

William Huber refers to both Wolf's and Rick Altman's genre theories, and the problems of popular genre definitions, in his detailed analysis of the digital game Ka (Zoom games, 2002). Huber argues for a thematic approach, as '[i]nteractive (syntactic) genres are less stable over time than thematic genres', and 'thematic genres are more stable over time, to the extent that they can constitute a history that may last over generations' (Huber 2003, 2).

Huber sums up the popular genre definitions' problems, and grounds his suggestion of thematic approach into inter-textual and cultural aspects of game themes:

> In practice, the game audience builds genre from interactive/syntactical, thematic/semantic, visual aesthetic, and technological/platform considerations.
>
> Thematic genres are inter-textual, and it is my claim that they are meaningful by their origins in the historical anxieties and cultural discourses which background the practice of their production. (Ibid., 3.)

Huber goes on to illustrate his premise by an analysis of Ka's decidedly Japanese traits and themes. He privileges the contractual, and contextual nature of genre. Huber's arguments are sound and his method of analysis useful. However, I disagree with the argument which he builds upon the suggestion that present digital games consist of various mini-games: 'As games themselves are constituted by other games, the specific interactive structure diminishes as a determinate element of genre'. (Ibid., 2.)

What is this 'specific interactive structure'? Huber analyses the particular one in Ka in detail, but it can not be generalised to a large degree. The point of the theory presented in the work at hand is that the general structure of games has not been studied or theorised in a manner detailed enough. Only once it has been studied, we can name and dissect the vague 'interactive structure' and go on to demonstrate that it is indeed sets of mechanics and particular dynamics, alongside intersecting with thematic traits, that both differentiate genres from one another and construct them.

The point is that a detailed understanding of game structures, anchored into concepts, is needed in order to find out if it is possible to achieve commensurable categorisations at all. The theory of game elements provides a framework that helps in categorising games on the basis of their interactive traits, i.e. mechanics, or alternatively, on their thematic traits.

This is essentially a standpoint that has not been explored enough. There are a couple of dispersed efforts: First, David Myers' essay on computer game genres presents the effort closest to the one promoted here. Myers discusses the 'object-event probabilities' characteristic to each genre, i.e. what kinds of objects and events the player interacts with during the game, and the probabilities concerning the game's progression in relation to how the player deals with the object-events. He, too, argues that genre determinant is found in a pattern of interactivity between player and game (Myers 1990, 298) and distinguishes a set of player interactions specific to popular genre definitions. For example, strategy games produce a 'discover/learn/manipulate/test' pattern of player activity, which is essentially similar to what has been discussed here as the meta-behaviour of a genre, or the 'meta-games' described by Adams & Rollings. We will refine and develop this line of theory further towards the end of the chapter.

Salen & Zimmerman's (2004) 'core mechanic' conceptualises essentially the same phenomenon, and it presents the basis for the other effort from similar standpoint: Greg Costikyan (2005) discusses combinations of game mechanics (or elements) that have established genres throughout the history of games. His approach is similar in spirit to the one pursued here, but in his brief discussion, Costikyan does not analyse other existing genre theories or processes in detail.

Thus I see this chapter as complementing this ludological line of genre thinking and documenting an overview of its development.

Game Genres in the Context of Genre Theory

Now that we have established an overview of game genre discourse in popular, design and academic gaming discourse, it is time to question the implicit logic of those discourses. In order to validate a discussion on game genres, this study has to address work on previous genre theory, both regarding games and various aesthetic objects.

Rick Altman's (1999) discussion on the origins and rhetoric of genre thinking, and theories on the evolution of film genres is a useful starting point when thinking about where game genres come from. Even though Altman focuses on film, the theory is general enough to warrant adaptation to the realm of games. His so-called semantic/syntactic/pragmatic approach to genre analysis also demonstrates a multi-faceted approach to genres that is at the heart of the discussion at hand. Obviously there would have been a number of other works on genres available for adaptation, such as Stephen Neale's Genre (1980) and Tzvetan Todorov's Fantastic (1975), but in my review, Altman's theory serves as the most useful basis for ludological inquiry. I will focus on three aspects of Altman's theory that are particularly relevant regarding genres and games: the substantification of adjective genre labels, the 'genrification' process, and the semantic/syntactic/pragmatic approach.

According to Altman, genre is a moving target. Genre definitions cannot be fixed from one perspective, as genre is a 'complex situation', constituted by the different uses/functions of the notion and their organisation into cyclical periods of time (Altman 1999, 84). As was already mentioned, Altman sees different uses for 'genre': genre as production formula, genre as label, genre as contract, and genre as structure. (Ibid., 14.) The structural perspective gets the most attention in the study at hand, as it can be likened to the systemic perspective of applied ludology. However, the syntactic and pragmatic approaches relate to game rhetoric in particular wyas, and thus to important aspects in the theory of player experience. The relevant questions are: Does the 'blueprint' of a genre require specific game elements or their combinations? Are there aspects to the design and implementation of a specific game element, especially theme as a metaphor for the game system, that enforces the genre contract between the game and its players? Answers to these questions will be sought in the following pages.

The genre process regarding games

Altman (1999, 50-51) explains the origins of genres by outlining a historical process where genre labelings go through a transformation process from adjective to noun: In the history of film, 'musical comedy' became musical, 'romantic comedy' became romance, 'musical drama' transformed into melodrama, 'documentary drama' into docudrama, and so on. This 'substantification' is demonstrated also by the process that 'Western' has gone through: Altman writes that before Western became a separate genre, there were Western chase films, Western scenics, Western melodramas, Western romances, Western comedies, etc., which all were produced with 'settings, plots, characters, and props corresponding to current notions of the West' (ibid., 52).

The following passage is relevant to the discrepancies of game genre discourse to such a degree that it is worth quoting at length:

> The genres formed when adjectives become nouns in the process of genrification (for example, comedy, melodrama, and epic) are themselves subject to replacement when they are in turn modified by other terms that then may graduate from adjective to substantive (for example, burlesque, musical and Western). Yet even the latter terms never achieve security, because they too can be displaced according to the same process that brought them to the fore. Thus at any given time we find an unselfconscious mixture of terminology. With no way to distinguish among the terms, we regurarly intermingle current and former genres, either in adjectival or substantival state. (Ibid., 54.)

This passage basically explains the current situation with game genres as well. Altman attributes the genrification process to the need for product differentation, i.e. the need to release new films/games/etc. into the market (ibid., 64). In practice, it takes the form of cycles where 'adjectival genre labels are substantified' (ibid., 61). Due to commercial production interests, the cyclical process never ceases:

> a fresh cycle may be initiated by attaching a new adjective to an existing noun genre, with the adjective standing for some recognizable location, plot type, or other differentation factor.

Under certain conditions, so much attention may be attracted to the tacked-on adjective that it changes parts of speech and inaugurates its own noun genre, only to remain constantly subject to eventual reconfiguration through the constitution of yet another adjectival cycle. (Ibid., 65–66.)

If we substitute the film and narrative qualities, such as plot type, with game elements and gaming encounters, the above passage is a suitable starting point to understand genrification processes in relation to games. Concerning digital games, the 'action' genre has been attached with adjectives such as 'story-driven' or 'stealth', and thus, a fresh cycle of genrification has started. Moreover, as with films, 'the genre constitution process is not limited to a cycle's or genre's first appearance' (ibid., 77) – in other words, the genre categorisations do not remain stationary. (This argument puts Huber's claim of more stable thematic genres into doubt.)

The question is: has this kind of substantification caught on regarding games, which supposedly enforce a stronger adjectival emphasis in comparison to film narrative, due to game system and player co-behaviour? As the nouns ('adventure', 'strategy') are derived from general description of game system behaviour, the very essence of games as they are being played, this would suggest that the nature of the activity carries stronger importance than with film, literature, etc.

Still, the need for product differentation is, without doubt, on the agenda of the game industry as well. This can be read from the game design literature: numerous design advices similar to 'When you design your role-playing game, try not to use the "save the world" storyline' (Rollings & Adams 2003, 351) are at once advices for creating 'better games', but at the same time, advices to bring about the necessary product differentation – in the form of an original, let us imagine a 'nihilistic' RPG ("No one needs to be saved"), to give a wild example – that the game industry needs to keep the genrification process going.

From substantification to acronymization and verbification

If substantification in game genres would operate with an exactly same logic as with film, we would have seen transformations such as 'stealth action game' becoming 'stealthie', or 'real-time strategy' becoming 'real-timie', etc. Instead, real-time stategy is commonly discussed under the acronym RTS, as are role-playing games under RPG.

Moreover, there are more variables to give birth to the novelty regarding a set of games: technology, such as 'mobile' or 'online', or environment, such as 'water (sports)', or components. An imaginary example would be 'multiplayer online water sports', or 'MOWS'. As these adjectival elements become common and standardized, they are possibly dropped out: MMORPGs become MMRPGs or MMOGs, as features get domesticated and taken for granted. This kind of need for multiple adjectives amounts to a particular type of substantification process in game genres which I call acronymization. It is due to the fact that often more than one adjective needs to be used to differentiate a game genre, or especially a subgenre from another.

However, in order for an acronymization to happen, it has to have source material. Therefore there is a more meaningful underlying structure to it. This follows as a result of the interactive nature of games: adjectives are based on descriptions of doing, which comes down to the co-behaviour of game system and players, as with 'real-time' which implies the synchronous, real time nature of players performing game mechanics and the game system responding with ruleset procedures. Alternatively, adjective is substituted with a verb altogether:

’role-playing’, ’driving’. These verbs are, however, often substantified, as an activity of managing resources in a game-simulation becomes a genre called ’management simulation’, or exploring and seeking combine into becoming ’adventure’. In any case, this process highlights the substantial role of game mechanics as particular means to afford player actions in the genrification process of games. I have chosen to call it verbification.

In conclusion: I would argue that even though there exists with games rather similar process as substantification regarding films and literature, with games it takes the slightly different form of 1) verbification, and possibly following that, 2) acronymization.

Ludological genre theory: bridging theme and behaviour

Before indulging into how genre theory is translated for ludological purposes, we need to understand that the nature of genre evolution is fundamentally cross-fertile. Altman discusses the relationship between the evolution of genres and the Darwinian theory of evolution. The basic premise of the latter is that no genus is interfertile with another genus, i.e. there is no fertility between genera which keeps them in separate categories. Instead, genres are interfertile and may be crossed even with extinct genres – for instance the epic seems to resurface regularly in connection with different genres. (Altman 1999, 68; 70.) The conclusion is that

> [t]he ’evolution’ of genres is thus far broader in scope than the evolution of species […] the process of genre offers us not a single synchronic chart, but an always incomplete series of superimposed generic maps. (Ibid.)

The latter part of this chapter will be spent on defining how to draw these superimposed maps of game genres. It presents the foundation of at least one instance of ludological genre theory, the one presented here.

Rick Altman’s semantic/syntactic approach to film genres provides a useful springboard. The essence of having the two facets to the approach is the following: ‘the semantic approach stresses the genre’s building blocks’, while the syntactic view ‘privileges the structures into which they are arranged’. In other words, generic terminology is invoked either because a number of objects share the same building blocks, or generic affiliation is recognized because the blocks are organized in similar manner. (Altman 1999, 89, 219.)

This can be translated for ludological purposes in the following way: the semantic approach focuses on the recognisable representations and objects of simulation in games, i.e. metaphors for game systems and their rhetoric figures. Meanwhile, the syntax fundamental to games equals the structure that the game system is organised into, and the behaviour that emerges from the correspondence between player and the system in the gaming encounter. In the terms of the overall theory, genre relates either to a ‘meta-behaviour’ a set of games share, or common thematic traits: the thematic manifestations of the dynamics via audio-visual or material forms.

Basically your author aligns, as does Myers and Costikyan in the discussions referenced above, with the tradition of genre theorists arguing that the thematic (semantic) approach is shallow in the face of the system behaviour (syntactic) approach (see Altman 1999, 89). This is essentially because of the fact that with film, semantic approach has enabled the recognition of generic affiliations through semantic traits -– one does not have to see the whole film in order to recognize it as a Western. However, with games, this would mean that watching somebody play a game would be able to invoke understanding of its nature, even though it is questionable whether this can happen without taking part in the gaming encounter, i.e. playing the game in person.

It is because of this that game journalism, production, marketing, and audiences have come up with genre labels to bridge the gap between first-hand experience and adjectival descriptions of that experience: adventure, puzzle, strategy, and other genre labels try to explain the common nature of game system behaviour and the corresponding player experience in a set of games. This has lead to the fact that game genres are more verb-based and adjectival in nature. It highlights the fact that, in the end, genres are about communicating something essential about player experience of a certain game to the world.

However, Altman speaks for a co-ordinated approach to get to the bottom of the dual correspondence of semantic and syntactic traits:

> [T]he term genre takes on its full force only when semantic and syntactic similarities are simultaneously operative. In other words, instead of seeing these as alternative treatments, we need semantic and syntactic approaches as co-ordinated. It is not by chance that the film genres attracting the most popular and critical attention – the Western, the musical, the horror film -– have been those that feature both a high degree of semantic recognizability and a high level of syntactic consistency. What is most fascinating about these genres is the way in which they retain a certain coherence over multiple decades in spite of constant variation in semantics and syntax alike. Only a co-ordinated semantic/syntactic analysis can facilitate understanding of this interaction. At its most forceful, then, genre is located neither in common semantics nor in a common syntax, but in the intersection of a common semantics and common syntax, in the combined power of a dual correspondence. (Ibid., 90.)

This approach is adapted and complemented here for studying game genres. As a result, Altman's approach is transformed into thematic/system behaviour/pragmatic approach. Here, the focus is on the two first aspects, but the pragmatic approach becomes evident in the detailed case studies. The key point is that three facets can be approached with the help of the theory of game elements, as I will demonstrate.

Systems behaviour meets Theme

Thereby, Altman's definition of semantic/syntactic approach is modified accordingly: thematic approach focuses on the function of the game theme, while system behaviour privileges the cumulative effect of game mechanic(s) common to a number of games. For instance, if there is a genre that can be labelled on grounds of highly social in-game nature, it is probably because the mechanics support co-operation or other means of directing the players to interact which each other (such as the 'drawing/guessing' core mechanics of Pictionary). However, often it is indeed the intersection, and 'dual correspondence' (as Altman writes above) of the two that gives the genre its character. In addition, the theory on game rhetoric introduced provides another practical, complementary method of analysing these kinds of correspondences in games.

The degree to which system behaviour and theme can be separated from each other in an actual game, even for analytical purposes, depends on the degree to which theme is embodied into game elements, e.g., whether game mechanics employ specific game rhetoric in order to create other than 'endogenous' meanings in relation to the game system (see Costikyan 2002). For instance, in card, board, dice, and digital puzzle games, the analysis of theme and dynamics is easier to keep separate, but with complex, thematized games, such as many digital games of the Adventure genre, the intersections are what matter.

This brings us to the methods of combining theme and system behaviour. Altman argues that 'numerous films innovate by combining the syntax of one genre with the semantics of another' (Altman 1999, 221). With games, this would equal combining dynamics of one genre with the theme of another. Indeed, numerous games are designed – rather than innovated – by combining the theme of one genre with the dynamics of another. With games, innovation rises out of innovative set of mechanics made available and integrated with a theme. Examples of this include Grand Theft Auto III or Vice City, where crime theme has been integrated into multiple-mechanic behaviour (driving, fighting, shooting, etc.) that functions in relation to goals structured into various missions. The resulting mechanics encourage the birth of playful, emergent system behaviour, as the player has 'freedom' to influence the game states with more numerous ways than what was common in earlier digital games (i.e. solve the missions with multiple, alternative plans rather than only one possible solution).

Hybrids as drivers of genrification process

Still, there are examples of games that have been recognized innovative due to their cross-combination of dynamics and theme. In this light, The Sims' popularity could be explained through its combination of real-time-strategy dynamics and a 'doll house' theme. An accurate analysis would state that the game combines the dynamics of a digital game genre and the theme of a toy genre. Another example of innovation is the digital game Rez (United Game Artists, 2001), where the dynamics of an action subgenre, shooting, is combined with a theme about spiritual evolution, represented with recognizably abstract audio-visual style that places the game into inter-textual relations with abstract pictorial art (the game has been dedicated to Vassily Kandinsky).

In the realm of games, similar hybridizations can be seen elsewhere as well: Carcassonne can be interpreted as a hybrid of jigsaw puzzles and Monopoly. So-called extreme sports are often hybrids: Kitesurfing is a hybrid of wind surfing and hang-gliding, snowboarding is a hybrid of skateboarding and skiing, and so on. Hybrids may also emerge from games and toys: the dollhouse meets a management simulation in The Sims, creating a genre characterized by nurturing.

Although the intersection of theme and dynamics is what matters, often a certain game element has importance for one or the other. As popular game genre labels ’platform’, ’pen-and-paper’, ‘quiz’, or ’betting’ indicate, at times a certain game element gets elevated into the status of genre determinant. In case of the examples, it is environment element (platform), game mechanics (via pen-and-paper), information and game mechanics (answering or guessing in a quiz), and combination of game mechanics, information and component resources (betting).

Cross-pollinations of genre traits have become increasingly evident with more complex digital games, thereby giving birth to hybrid genres, or the cyclical process of genrification. Hit titles such as Halo (Bungie Software, 2002) and Grand Theft Auto III (Rockstar Games, 2001) combine shooting with various weapons and driving several different vehicles both on the ground and in the air. Whereas the two games combine high-level genre traits, such as adventure, fighting, and racing, they come into effect from the bottom up, i.e. via low-level traits: The adventurous, competetive, and conflict-inducing nature of these games emerge from the game dynamics, as particular game mechanics get executed a number of times or for a certain duration of time.

In practice, the combat mechanics of the above games (using several different weapons with different purposes) and movement mechanics (navigating in the game environment with different vehicles, each appropriate for succeeding in the goal at hand), and especially their combinations, explain the games’ hybrid nature when discussing their positions in the context of popular genre labels. Once again, it is through the game elements – especially game mechanics – that we can understand better what produces hybrid genres.

Genres as located in game elements

The focus of this chapter shifts next to analysing what are the formal game elements that support the different genre criteria and produce alternative perspectives to the ’genrification’ process. Is ’adventurousness’ the result of certain goals set to the player, or dependent of certain thematic aspects such as narrative sequences, game world and game characters? Or, are there particular game mechanics supporting the emergence of adventurousness? What are the game mechanics required to generate system behaviour that become associated with ’role-playing game’ genre?

Due to the verbification process, a game’s positioning into a genre begins once its mechanics get thematised, i.e. a generic class of game mechanics (see chapter 12) is transformed into a specific one within that category: movement becomes driving, manipulation first becomes combat and often evolves (during the design process) into a particular combat mechanic, such as shooting or hand to hand combat. Or, the theme dictates the mechanics with logic of a metaphorical concept, i.e. how they are rhetorically presented to the player, whether the theme is generic or specific.

This has to do with the function of metaphor – i.e. to which direction does the metaphor function: does it conceptualize the game system in terms of a theme, or the theme in terms of a game system. E.g. ’exploration’ presupposes movement and surveillance mechanics, but possibly so does a game with a more specific pirate theme with seafaring, where the need for movement by sea gets articulated through design into a form of sailing mechanics (as manouvering or route assignment, for instance). In these cases, the theme often defines the goals and the victory conditions and/or the criteria success. With abstract games, these take the form of mathematical and/or geometrical conditions in relation to game components – with gambling and lottery games, this is the case.

In addition there is the case of subgenres. It seems that the more ’sub’ the genre is, the more significance do formal aspects have in the genrification process. For instance, in the strategy genre there is a subgenre ’real-time strategy’, i.e an adjectival subgenre label that is due to a specific nature of the game system behaviour: players are employing game mechanics in synchronous, real time fashion instead of each taking actions in turns.

Game components as genre nominator

All dice and card games put varying emphasis on the component element. When we ascend to the level of genres, and we thus generally keep the analysis technology-independent, it becomes relevant to look at games that somehow emphasise the component element. There are at least two types: first, games where component resources are collected outside gaming encounters in order to take them into future encounters. Second, there are games where the game system behaviour centres around a specific component. In both cases this often means that goal rules are embodied into component elements and their ownership statuses.

The first includes games of collectible components: the card games Magic: the Gathering (Wizards of the Coast, 1993) and Pokemon (Wizards of the Coast & Nintendo, 1999), and marble games, present the most popular examples. In these games, the players’ personal possession of game components is an important incentive to play the game and excel in it. Similar role for components is found in numerous so-called Fantasy League sports games (played nowadays mostly via Internet), where players collect a team of, e.g., soccer players, and their real-life achievements in soccer matches (goals, assists, fouls, etc.) are scored as overall points in the game (i.e. information from world outside the game is fed into the game system). The Games Workshop franchises, such as Warhammer, and HeroClix (Wizkids, 2004) are recent specimens of a 'component genre'. They consist of collectable (and in case of the first, customizable) figures instead of cards. Games played with money, such as casino games or sports betting, can also be seen to belong to this type, as the money involved becomes a component within the game system once the player participates in it by submitting a stake. The players are essentially trying to maximize the components invested by gaining ownership (a goal category) to components-of-system (Roulette, Black Jack, Lotteries), or components-of-others (Poker).

The amount of components in a game is linked to how its characteristics, and thus genre, are perceived. Games with few different types of components imply simplistic actions possibly with a constrained set of game mechanics, whereas games with various qualitatively different components imply more choices and resource management. Hence, soccer and other fast-paced team sports where there are multiple components in a team afford two characteristics that complement each other: a core mechanic of action related to lower order goals is complemened with a core mechanic of strategy, i.e. how to play, who plays what position, and so on, which relates to higher order and possibly continuous goals (in a set of gaming encounters in tournaments, leagues). Depending on whether the mechanics available are designed as tools for playing on the pitch versus coaching on the sidelines, we have either a soccer game or a soccer management game, respectively (or a shooting game vs. war strategy game).

The soccer example brings us to the final type of games which elevate a specific component into significant position: games with a ball, puck, or similar material component as the focus of attention (e.g. hockey, basketball). It would therefore be justified to call most of these kinds of sports games, at least, 'ball games' (as they actually are called in some languages, at least in Finnish). They are an example of cases where an individual component has been assigned strategic significance in the rules, and thus it may become a genre nominator.

We can also ask whether the three component categories outlined earlier: components-of-self, components-of-other, and components-of-system has relevance in light of the genre question. It seems so at least in the special case of component-of-self being a character-of-self. In popular genre discourse on digital games, the label 'character-action' is used to categorize games where there is attempt at strong characterization of component(s)-of-self and a certain 'action' dynamic, referring to what is known as action films, i.e. usually mechanics such as shooting and fighting, or whatever is needed to model and simulate shootouts, car chases, and the like.

The case of individual sports, where the primary component becomes the self, presents an example of a genre similar to 'single-player'.

If there is a ‘components-of-other genre’, it has to be the so-called massively multiplayer digital genres due to the sheer number of component-of-others in the game system. Otherwise any game besides single-player games would basically belong to the genre, making it useless. The same criteria can be used for a ‘components-of-system genre’, i.e. quantity. Thus, lottery and casino games and their organizers’ component treasuries, so to speak, would be archetypal games in such a genre.

Game environment as genre nominator

In all games where components are directly manageable resources under the player’s control (such as the thieves, soldiers, priests, and farmers in the board game Carcassonne), components are important, but not necessarily in such a primary role that the characteristics of the game would be attributed to its components.

In so-called ’construction & management simulations’, which Rollings & Adams (2003) define as a genre, whatever is constructed and managed is embodied into components. Often their function is to sum up into larger whole, e.g. a city or an amusement park, as in SimCity (Maxis, 1989) or Rollercoaster Tycoon (Atari Interactive, 1999). This larger whole is actually the game environment, which as in Carcassonne (Rio Grande Games, 1999) and many other board games (Zombies!, Sunda to Sahul, etc.), gets built out of components via a specific construction-type game mechanic (’tile-laying’ which belongs to the game mechanics class of placing). The point is that with a specific game mechanic that transforms components into game environment, the role of game environment usually gets emphasized. The random construction of game environment in these kinds of games comes closer to the ways digital games represent environments than in the more static environments of traditional board games. Jigsaw puzzles, a category of puzzle games based on arrangement of components, presents an environment-based genre that also embodies its ’victory condition’ into the game environment.

Whenever goal rules are embodied into an environment, the environment element raises its profile in the overall game system. Still, other elements might be more prominent and warrant functioning as the nominating factor. For instance, in games like Chess and World of Warcraft (Blizzard Entertainment, 2004) the environment – the board and grid, and a virtual fantasy world, respectively – have different roles. However, in both game systems the environment, although prominent, can be argued to be less important in characterizing the player experience than the components – an army, and a player-created character within the constraints of ready-made classes that World of Warcraft offers. Then again, in a game like Go, which does not have any characterization nor thematization but only black and white stones as components, the board becomes more prominent, also because the goal of Go is to displace components-of-other according to rules about the stones’ geometrical relationships on the board.

Among digital games, there is always an environment of some type being simulated. Simulation implies behaviour, and it may thus elevate the environment into a central role, as the dynamic nature of an environment broadens its potential for eliciting emotions (as became evident in chapter 11). It is because of this that game environment has found its ways into the name tags of subgenres: platform jumping games, or 'platformers' after substantification, is a name tag that has to do with the specific characteristic of the game environment, and a '3D shooter' with the particular means to represent the game environment in three dimensions. A pair of games are suitable for comparison here, when we discuss the environment element in the context of digital games, are Bejeweled and Zookeeper. They are basically the same game system with two different themes: jewels and zoo animals. The ruleset is the same, and the basic goal of matching jewels or animals into vertical or horizontal lines of three presents the same alignment goal. However, whereas Bejeweled privileges the environment element, regarding Zookeeper with its animal characters, with animated gestures, the issue is not quite as clear, as the rhetoric of the games differ: one emphasizes the attraction to diamonds as valuable and aesthetic objects, the other attraction to cuddly, exotic animals.

In sports games, especially team sports, the playing field as the game environment is often prominent: soccer, football, baseball, basketball, volleyball, etc. could easily be labelled as 'field' or 'arena' sports games instead of the more usual 'team sports' that is based on the organisation of players. 'Track & field' is often used as genre label, and it emphasizes the environment element quite literally. However, as the suffix 'ball' indicates, in the genre of sports games there are also instances where a specific game component is privileged.

Rule set as genre nominator

The strength that rules have is evident in the genre problematic as well. Definitions of board game genres such as 'chase' or 'displace' (Parlett 1999) are based on the type of goals a set of games present, possibly as the highest order goal (as a victory or an end condition). As such they use particular – and fundamental – rules of the ruleset in nominating a genre, but they also refer to game mechanics, as there needs to be some mechanics available to the players to chase with or displace with. This reminds us, once again, about the causal relationship between goals and game mechanics. Thus in the realm of card games, such genres as 'catch and collect', 'vying', and 'adding-up' not only describe their overall goals but also their core mechanics.

So, 'goal genre' would imply a set of game systems that have the ruleset element as a common feature, to the degree that it would be nominating the genre. This brings up the question of on what level of the goal hierachy – in case there are goals and subgoals – a goal has to recide in order to be qualified to function as a genre nominator. I.e. is it relevant to categorize Super Mario Bros. into 'jumping games' (low order goal as nominator), or into rescue games (high order goal of rescuing Princess Peach). As it is indeed the jumping that players do most of the time in the game, rather than rescuing, which takes place only once if one succeeds in completing the game, Super Mario Bros has become to be known as belonging into the ‘Platform jumping’ or ‘Platformer’ genre. The environment where the jumping takes place has become the genre nominator.

If we elevate the nominating factor concerning the goal element to the highest level, most games would belong to the ‘winning’ genre – which does not make sense if the purpose of genre is to categorize a phenomenon so that it becomes easier to fathom. Thus, in case of a goal rule appearing as genre nominator, it is likely that the goal has been chosen in relation to its position in the goal hierarchy, and possibly in relation to another prominent game element.

As was discussed in part II, ruleset states procedures that are carried out by the game system or delegated to players or referees. One category of games these are central to is games of chance. The nature of lottery games, traditional casino games (Roulette, Black Jack, slot machines, etc.) and sports betting is that the result of the game is displayed via a ruleset procedure, and according to a particular rhetoric: mostly some type of a draw, based on chance and probability or on an external event, as in sports betting. In casino games, the croupier functions as the operator of the game system, e.g., when spinning the Roulette wheel, or as a proxy for the game system, e.g., representing ’the house’ in Black Jack, etc. In any case, one instance of ruleset becoming a genre nominator is that a particular ruleset procedure becomes the genre nominator. Thus, lottery games might be discussed under the genre of ‘drawing games’, as they need a ruleset procedure based on mathematical algorithms to introduce randomness.

Because of the random aspect, procedures are also strong in dice games that rely purely on luck. Thus Reiner Knizia (1999, 11–59) has i.e. categorized dice games into genres such as ’Lucky scoring games’ and ’Lucky counter games’ which are based on ruleset procedures with which to calculate players’ progress in the game.

Goal rules and ruleset procedures may rise to nominate genres, but so do entire rulesets, yet on quite an abstract level. A case would be ‘Team sports’ where particular rules about the configuration of players in the duality of self (team) and other (opposing team) which results into asymmetric goals. However, there are rulesets such as the RPG ruleset Dungeons & Dragons which could well be defined as a subgenre within role-playing games.

Other rules that potentially take part in nominating a genre are temporal duration and player abilities. Genre of ‘persistent games’ would be based on its specific temporal organization through rules, i.e. that the gaming encounter is basically never-ending. ‘Mini games’ present an example from the other end of the spectrum, e.g. the five-second ‘quickies’ of Wario Ware. Player skills and abilities matter in genre cases like ‘Athletics’, implying athletic qualities in their players, but also in ‘startegy games’ which imply that the games require cognitive abilities for reasoning.

In conlusion, the most relevant case of basing the naming of a genre into ruleset is when it implies a certain type of goal structure. ‘Sports’ is such a genre.

Game information as genre nominator

In terms of the theory of game elements, as a compound game element information circulates through the game system and it is embodied into other game elements, e.g., as their attributes. However, if there are game systems that could be characterized as ‘games of information’, they would have to be games where information-of-system is of particular importance for the players. Every game where a score is important would not qualify, because information would account for an effect, i.e. a by-product of consequences to other game elements, rather than the information element being privileged as such. These observations would suggest that for the information element to be especially important, it’s ownership status would have to be of the information-of-system type, i.e. not in possession of the players but desired by them, for example as embodied into high-order goals. This would mean that the information would have to be significant either by its quality or quantity. E.g., it would enable winning the game, or as a result of winning, the player would receive a lot of information as a reward.

Games where the information element plays either part include puzzles in general, e.g. crossword puzzles, riddles, and the like (see Danesi 2002), but also quizzes and trivia games (Trivial Pursuit, television game shows) where knowledge or deduction of information is valued. In sports betting, information about the object of betting increases chances of succeeding. Sudoku is an information game in the sense that it is characterized by arithmetical relations between component values, and the player experience is characterized by being able to process this information through logical thinking. Crossword puzzles present an alphabetical and semantic variation of similar player experience, where a set of slightly different cognitive abilities are required. Dice games where adding to a numerical score is a central ruleset procedure would also belong to ‘games of information’, especially as even the game system would not ‘know’ information value until the chance-based rolling of the dice, a game mechanic belonging to the ‘operating’ class. Roulette is similar, although an argument for the prominence of the roulette table as an embodiment of rules into the environment can be made.

Game mechanics as genre nominator

According to Altman (1999, 25), ‘[f]ilms with weak generic ties usually depend heavily on their internal logic, whereas genre films make heavy use of intertextual references.’ This observation is useful when thinking about game mechanics’ role in determining its genre status.

Basically, with games that have few game mechanics, a particular type of mechanics can become the genre nominator. Puzzle games, driving games, and rhythm games with their respective component manipulation, vehicle manouvering, and timing mechanics serve as examples. In the case of games with multiple game mechanics, the genre nominator is most probably determined by other elements, such as theme or game system behaviour as a dynamic whole. Still, the library of game mechanics presented in chapter 12 can be applied into practical analysis as a tool for genre categorisations. In it, mechanics takes systematical and deliberate over-precedence. However, we will approach mechanics' relation to genres from another perspective: that of defining the underlying sets of mechanics, i.e. core mechanics, that popular genre name tags imply. This complies with searching for the 'meta-game' but by analysing game system behaviour with a holistic method, as suggested in the next chapter.

Game mechanics genres are always, more or less, goal genres. This is because the mechanics are designed, as we have established, to be available for the players to attain particular goals. Thus, the actual question becomes: Which matters more, the doing itself – i.e. performing game mechanics – or the goal – i.e. for what purpose actions are taken; the means or the ends. For instance, there are many games of chance where the game mechanics seem to be rather irrelevant, i.e. embodying trivial choices, and only there to arrive at a result through a ruleset procedure. Slot machines and lotteries are examples of these kinds of games at one extreme, i.e. as they are based entirely on luck, any secondary or modifier mechanics would only add to trivial choices and illusory causal relationships between the players actions and subsequent outcome regarding goals.

In conclusion, if we reflect the above observations with Altman's idea that genre films make heavy use of intertextual references, I would argue that genre games, if distinguished by their game mechanics, make heavy use of recycling and appropriating popular core mechanics.

Game system behaviour as genre nominator

If we accept the argument that genre name tags in popular discourse are highly general descriptions of particular form of game system behaviour, then we are able to deconstruct these name tags into smaller details with the temporally and quantifiable hierachical pairing of mechanics and system behaviour. To give an example: 'adventure' equals game system behaviour that give birth to 'adventuring' and uphold the contractual nature of the genre so that players associate the core mechanics and their thematization with 'adventureousness', or at least their interpretation of what adventureousness should, in a game-context, feel like – regardless of whether this association is the result of the theme or specific goals, or game mechanics.

Altman argues that genre films are not distinguished by their ending, and the causal chain leading to it, but rather, depending on the "cumulative effect of the film's often repeated situations, themes, and icons." (Altman 1999, 25.) This leads to ask whether the same could be true for genre games? In practice, this would mean that the temporal and often repetitive sequences of game mechanics, i.e. core mechanic that in sequence produces specific game system behaviour, or the persistent/cumulative effect of particular game states within the gaming encounter, would be the primary genre determinant. I referred to this counterpart of core mechanic as the ‘core behaviour pattern’ of a gaming encounter in chapter 12. Examples of genres characterised by it include sports games such as motor sports, where a lap around the circuit would equal its core behaviour pattern, consisting of repeated core mechanics where manoeuvring, accelerating and braking game mechanics follow each other in various order. A ‘round’ in any kind of game, e.g. a board game, represents a core behaviour pattern as well.

Game system behaviour define genres possibly more substantially in the case of board games, as sets of game mechanics in many board games essentially equal building blocks of what is considered ’strategy’. Therefore, the relationship of theme to system behaviour is less ‘organic’ than with digital games. This fact also helps in making board game mechanics more ’visible’ (as was suggested in chapter 12 on mechanics). A significant division regarding system behaviour in this sense is the one between turn-based and real-time mechanics. These two would qualify as two genres where games are categorized due to characteristics in their system behaviour.

Game theme as genre nominator

When the subject matter of the game, i.e. theme dictates the choice of core mechanics and its rhetoric nature (i.e. specific implementation as animations etc.), and there is thematic content (narrative, real-world context, etc.), the theme can be seen as the genre nominator (cf. Sports games).

As William Huber pointed out earlier, the fact that a theme is elevated into a genre nominator potentially makes the genre historically more stable, and the reason that theme gains genre-nominating status might be due to the ’historical anxieties and cultural discourses’ he mentions. (Huber 2003, 2–3.) Particular digital game subgenres, such as Horror adventure games with decidedly culture-specific themes, and action or strategy games set during World War II testify for the claim. Siren (Sony, 2003) and the Fatal Frame series (Tecmo, 2001, 2003) are two examples of digital horror games where the theme is a result of traits particular to Japanese folklore: spirits and the undead. Similar examples can be found when works of literature, film, or comic books are adapted into games.

The fact is that no game can be placed in a genre solely due to its theme element, because there will always and already be other criteria found beyond genre: at least game mechanics and goals. Thus, depending on one’s perspective the board game Buffy the Vampire Slayer (Hasbro, 2000) belongs either to the ‘Horror’ genre, or ‘Adaptation’, or ‘Collect & Combat’ genres, or numerous others. With the Buffy character being as prominent to the brand as it is, the game would warrant a place in the component or character genres, just as well.

Game interface as genre nominator

On digital games’ front, specialised interfaces have given birth to subgenres. Sony’s EyeToy: Play (Sony Computer Entertainment Europe, 2003) combined a camera peripheral to a set of simple games playable with Playstation 2 console. The camera registers the player's body movement, thus affording game mechanics requiring particular psychomotor abilities similar to Sega's maracas-playing game Samba de Amigo (Sonic Team, 2000) with its maracas controller.

The specialised interfaces have increasingly found their way from the game arcades to domestic market ever since late 1990s, with the guitar peripheral of Guitar Hero (Harmonix, 2006) being the latest success story at the time of writing. 'Dance mats' for rhythm and dance games have become common and they have supported the popularity of digital games which require physical activity through particular body mechanics, whether they are dance steps or waving one's arms in order to perform game mechanics as in Wishi-Washi, a window cleaning game in EyeToy: Play.

Interface is at its most visible in digital games, but on abstract level, it can be found in other games as well. It was suggested in Part II that in physical sports games, it is the player's body that functions as the interface to the game, and also the physical abilities that influence the skill that the player is able to possess and develop. This gets actualised via the fact that players position themselves within the game environment and use the available game mechanics to their best physical ability (e.g., in soccer, by shooting and passing as accurately as possible and running as fast and with utmost agility whenever necessary).

This leads us to games where the execution of important game mechanics has been amplified with a rule-specified, specialised aiding device: tennis, squash, badminton, baseball, golf, and ice hockey are all such 'racquet games'. Games that emphasize interface of any sort usually mean that psychomotor abilities, and consequently skills, are privileged instead of specifically cognitive ones.

Players as genre nominators

Considering players as genre nominators points to the contractual nature of genres, and thus the players always take part in the genre process. But are there gaming encounters that put the number of players in such a special role that we could talk about 'sets of games characterized by players'? The question is rhetorical in the sense that gaming encounters are always characterized by human participants. Therefore it would be relevant to point the criteria at player attributes, such as how the players are organized in the gaming encounter, which player abilities are crucial, and so on.

An example that was mentioned earlier, in connection with sports, is team games, i.e. the organisation of players into collectives that co-operate in reaching the game's goals. Basically this is a question of information, i.e. players carry an attribute that places them into a team. Online games, where the only option is to play among a number of players via the Internet, constitute one type of such games. An inverse example is Solitaire, but as a very high percentage of digital games allow similar single player game play, the distinction does not appear very useful, or at least it operates on a higher level than genres.

However, role-playing games, and especially live-action role-playing games which necessitate props, settings, and character costumes from the players, would fit the criteria. Moreover, as role-playing games (notwithstanding computer-mediated ones) privilege expressive and performative game mechanics, i.e. verbally describing character actions, or actually performing them in live-action role-playing games, they can justifiably be considered a ’player genre’.

Player ability sets can also be raised as a genre nominator: for example, so-called ‘rhythm games’, i.e. digital games such as Parappa the Rapper, Guitar Hero, and the like, require a certain ability set having to do with auditory and psychomotor abilities. In sports games, there are games based on strength, speed, body equilibrium, and other physical abilities, and so on.

Game contexts as genre nominators

Live-action role-playing games also privilege the game context, in their case actual physical locations as the game environment.

Another emerging game genre that lives from game play contexts are location-sensitive (mobile) games, and games where the game pervades everyday life. These so-called ’pervasive games’ or ’mixed-reality games’ privilege context by inversion: in theory, they make everything a game context, as opposed to the traditional characteristic of games being divorced from real-life context for the duration of the game. However, different forms of betting, with sports betting as the most popular example, can be viewed as ’mixed-reality games’ where the context of the event adds to the game experience. What happens from the perspective of game system behaviour in these cases is that information from the contexts is incorporated into the game system, rather than the game system upholding its world of closed information, confined into the metaphor for the system or its ruleset as such.

Game rhetoric or style as genre nominators

Closely related to the theme issue, it is necessary to take into account the fact that, especially with digital games, specific styles in the presentation of the game, or game rhetoric, can characterize, at least momentarily, a set of games: after the turn of the millennium, games such as Jet Set Radio (Smilebit, 2000) defined a caricaturistic style for graphics that became known as ’cel-shading’. However, in a couple of years this style expanded across genres: from the original game with a rollerskating/graffiti theme and consequent action mechanics, into adventures (Legend of Zelda: Wind Waker, Nintendo 2002), driving games (Auto Modellista, Capcom 2002), and ’first-person shooters’ (XIII, Ubisoft Entertainment 2003).

Case Example #1: Core mechanics as genre nominators

I will end the chapter on genre with two examples which are meant to demonstrate different vantage points to game genres and their definition, based on systematic analysis. In the table below, I have analysed, with the help of the library of game mechanics, and the concepts of primary, secondary, and modifier game mechanics, a set of games. They have been sorted according to the combination of game mechanics, which in practice equal their core mechanics. The analysis method is documented in detail, with complementary features, in the next chapter. Here the function of the result is to demonstrate how alternative genre categorizations can be produced with the help of ludological methods.

Table 22. *Core mechanics as genre nominator: 'Games of primary, secondary, and possible modifier game mechanics.'*

	CORE MECHANICS				LOCAL MECHANICS
Game	**Primary mechanics**		**Submechanic**		**Modifier mechanic**
Zuma	Aiming & Shooting	&	Brow sing		
Puzzle Bobble	Aiming & Shooting	&	Brow sing		
Space Invaders	Aiming & Shooting	&	Manoeuvring	&	Attacking / Defending
Halo	Aiming & Shooting	&	Manoeuvring	&	Taking
Doom	Aiming & shooting	&	Manoeuvring	&	Taking
Max Payne	Aiming & Shooting	&	Manoeuvring	&	Transforming
Asteroids	Aiming & Shooting	&	Manoeuvring		
Rez	Aiming & Shooting	&	Manoeuvring		
Billiards	Aiming & Shooting		Motion		Pow ering
Bow ling	Aiming & Shooting	&	Motion		
Darts	Aiming & Shooting	&	Motion		
Skeet	Aiming & Shooting	&	Motion		
Croquet	Aiming & shooting	&	Moving	&	Aiming & shooting
Paintball	Aiming & Shooting	&	Moving	&	Catching
Missile Command	Aiming & shooting				
Petanque	Aiming & Shooting				
Civilization	Allocating	&	Building	&	Buying / Selling
Slot machine	Allocating	&	Operating	&	Choosing
Roulette	Allocating	&	Placing		
Niagara	Allocating	&	Point-to-point Movement	&	Taking
Fantasy leagues	Allocating	&	Substituting	&	Buying / Selling
Mancala	Allocating	&	Taking		
Texas Hold'em Poker	Allocating			&	Taking
Bejeweled, Zoo Keeper	Arranging		Brow sing		
Pokemon	Arranging	&	Choosing	&	Attacking / Defending
Magic the Gathering	Arranging	&	Choosing	&	Attacking / Defending
Lost Cities	Arranging	&	Choosing	&	Taking
Rush Hour	Arranging	&	Choosing		
The Sims	Arranging	&	Operating	&	Buying / Selling
Scrabble	Arranging	&	Placing	&	Submitting
Bonnie's Bookstore	Arranging	&	Point-to-point Movement	&	Submitting
Mastermind	Arranging	&	Submitting		
Uno	Arranging	&	Discarding	&	Taking
Rubik's Cube	Arranging				
14/15 Puzzle	Arranging				
Sudoku	Arranging				
Tekken series	Attacking / Defending	&	Manoeuvring		
Boxing	Attacking / Defending	&	Moving	&	Pow ering
Modern Art	Bidding	&	Allocating	&	Buying / Selling
Ricochet Robot	Bidding	&	Choosing		
Bridge (Contract Bridge)	Bidding	&	Submitting	&	Contracting
SimCity	Building	&	Information-seeking	&	Allocating
Starcraft	Building	&	Point-to-point Movement	&	Attacking / Defending
Black Jack	Choosing	&	Allocating		
Cribbage	Choosing	&	Arranging	&	Submitting
Yenga	Choosing	&	Catching		
Da Vinci Code	Choosing	&	Information-seeking	&	Placing
Deal or No Deal	Choosing	&	Submitting	&	Buying / Selling
Who Wants to be a Millionair	Choosing	&	Submitting	&	Contracting
Lotto	Choosing	&	Submitting		
Manga Manga!	Choosing	&	Submitting		
Soccer	Controlling	&	Motion	&	Aiming & Shooting
Basketball	Controlling	&	Motion	&	Aiming & Shooting
Ice Hockey	Controlling	&	Motion	&	Aiming & Shooting
Nintendogs	Controlling	&	Performing	&	Buying / Selling
Animal Crossing	Conversing	&	Manoeuvring	&	Buying / Selling
Qix	Enclosing	&	Manoeuvring	&	Accelerating / Decelerating
Loop	Enclosing	&	Manoeuvring		
Tabletop RPGs	Expressing	&	Storytelling	&	Information-seeking
Pictionary	Expressing	&	Submitting	&	Point-to-point Movement
Alias	Expressing	&	Submitting	&	Point-to-point Movement
Singstar	Expressing				
SSX	Manoeuvring	&	Accelerating / Decelerating	&	Performing
Half-life	Manoeuvring	&	Aiming & Shooting	&	Taking
Grand Theft Auto III	Manoeuvring	&	Aiming & Shooting	&	Taking
World of Warcraft (MMORPGs	Manoeuvring	&	Attacking / Defending	&	Buying / Selling
Final Fantasy series	Manoeuvring	&	Attacking / Defending	&	Conversing
FallOut	Manoeuvring	&	Attacking / Defending	&	Conversing
Legend of Zelda series	Manoeuvring	&	Attacking / Defending	&	Conversing
ICO	Manoeuvring	&	Attacking / Defending	&	Herding
Snake	Manoeuvring	&	Brow sing		
Arkanoid	Manoeuvring	&	Catching	&	Aiming & shooting
Flow	Manoeuvring	&	Catching		
Breakout	Manoeuvring	&	Catching		
Pong	Manoeuvring	&	Catching		
Silent Hill	Manoeuvring	&	Operating	&	Attacking / Defending
MS Flight Simulator	Manoeuvring	&	Operating		
Mario Kart	Manoeuvring	&	Taking	&	Aiming & Shooting
Super Monkey Ball	Manoeuvring	&	Taking		
Track & Field	Manoeuvring			&	Aiming & shooting
Pac-Man	Manoeuvring			&	Attacking / Defending
Twister	Motion	&	Conquering		
Botfighters	Motion	&	Information-seeking	&	Submitting
Dance Dance Revolution	Motion	&	Sequencing		
Hopscotch	Motion	&	Sequencing		
Tug of War	Motion	&	Strength		
Tag	Motion			&	Catching
Labyrinth Wooden Maze	Motion				
Musical Chairs	Moving	&	Conquering		
Risk	Operating	&	Point-to-point Movement	&	Attacking / Defending
Scratch ticket	Operating		Submitting		
Figure Skating	Performing		Motion	&	Jumping
Bingo	Placing	&	Brow sing		
Chu-Chu Rocket	Placing		Brow sing		
Carcassonne	Placing	&	Choosing	&	Allocating
Jigsaw puzzles	Placing	&	Choosing		
Go	Placing	&	Choosing		
Dominoes	Placing	&	Choosing		
Hex	Placing	&	Choosing		
Bomberman	Placing	&	Manoeuvring		
Tic-Tac-Toe	Placing				
Connect-4	Placing				
Zork	Point to point movement	&	Operating	&	Conversing
Myst	Point to point movement	&	Operating		
Lord of the Rings: Boardgam	Point-to-point Movement	&	Attacking / Defending	&	Allocating
Diner Dash	Point-to-point Movement	&	Brow sing	&	Placing
Fox & Geese	Point-to-point Movement	&	Discarding		
Tetris	Point-to-point Movement		Controlling	&	Placing
Monopoly	Point-to-point Movement	&	Operating	&	Allocating
Trivial Pursuit	Point-to-point Movement	&	Operating	&	Submitting
Backgammon	Point-to-point Movement	&	Operating		
Snakes & Ladders	Point-to-point Movement	&	Operating		
Frequency	Point-to-point Movement	&	Submitting		
Chess	Point-to-point Movement			&	Conquering
Draughts / Checkers	Point-to-point Movement				
Hundred meter sprint	Sprinting / Slow ing				
Rock Paper Scissors	Submitting	&	Choosing		
Ticket to Ride	Taking	&	Arranging	&	Placing
Rummy games: Gin, Canasta	Taking	&	Collecting	&	Discarding
Solitaire (Window s)	Taking			&	Placing
Werewolf / Mafia	Voting			&	Contracting

Case Example #2: Ludological genre frameworks

Before taking another, final perspective to game genres, I will establish a synthesis of the genre categorizations discussed. As has become evident, it does not aim to solidify the field of games once and for all. Instead, the categories established function as a tool for analysing different types of pleasures potentially associated with particular genres. The framework will also be used in the case study chapter. Therefore, the point of the framework is to present a view of different genres of games across different game technologies.

The genres and subgenres will take advantage of existing genre lables introduced in both popular, industry, and academic discourses. The genre labels and hierachies are a synthesis of classifications presented in various references: digital game genres (Rollings & Adams 2003, Crawford 1982, Laramee 2002, Myers 1990, Wolf 2001), puzzle games (Danesi 2002), board games (Murray 1951, Parlett 1999), dice games (Knizia 1999), and card games (Parlett 2000, McLeod 2003). The genres are presented in the following table, in alphabetical order, with examples:

GENRE	Subgenre	System behaviour relations	Common themes	Game technologies	Game examples
ACTION GAMES	combat	Sports/displace, Strategy/displace	Crime, War, Sci-Fi, Fantasy, Etc.	physical, digital	Tag, Paintball, *Space Invaders*, *Street Fighter* series, *Doom*, *Halo*
	space	Strategy/chase, Puzzle/mov.& arr.	Fantasy, Sci-fi, etc.	physical, digital	*Pitfall*, *Super Mario Bros.*, *Pac-Man*, *Super Monkey Ball*
	adventure	Puzzle/adventure	Sci-fi, Fantasy, Crime, etc.	digital	*Metroid* series, *Tomb Raider* series
	rhythm	Sports/race&comparison	Sports, Entertainment	digital+physical	*Dance Dance Revolution*, *Parappa the Rapper*, *EyeToy: Play*
GAME-SIMULATIONS	management	Strategy/displace & space	Economy, Nature, Urban planning, Sports	digital	*SimCity* series, *Animal Crossing*
	transport	Sports/race	Sports, Transport	digital	*MS Flight Simulator*, *Densha de Go!*
	social	RPG/tabletop & larp	Social relations, Politics	board, cards, dice, digital	*SIMSOC*, *The Sims* series, Dating sims
	sports	Sports/race & comparison	Sports	board, cards, dice, digital	*Formula Dé*, *Gran Turismo* series, *Track & Field*, *Madden* series, *Championship Manager* series, *Pro Evolution Soccer* series
GAMES OF CHANCE	draw	Strategy/race & comparison	Numerology, Casino	pen & paper, tickets	*Lotto*, *Keno*, *Bingo*, *Roulette*, Slot machines, Scratch tickets
	betting	Strategy/comparison	Sports, Entertainment	pen & paper	Sports, elections, contests
PUZZLE GAMES	movement & arrangement	Strategy/space, Action/adventure	Abstract, symbols, mathematics	digital, toys, pen & paper	*Rush Hour*, *14/15 Puzzle*, *Tetris*, *Chu-Chu Rocket*, *Puyo Puyo*
	mechanical & assembly	Strategy/space	Mechanical toys, play	toys, props	*Rubik's Cube*, *Hex*, jigsaw puzzles, polyminoes
	adventure	Action/space & adventure, Puzzle/mov. & arr., RPG/computerized	Mystery, Quest	digital	*Zork*, *Myst*, *Broken Sword* series, *Grim Fandango*, *ICO*
ROLE-PLAYING GAMES	tabletop	Puzzle/adventure, Game-simulations/social, Strategy/race & displace	Fantasy, Sci-Fi, War, History, etc.	pen & paper, dice	*Dungeons & Dragons*, *White Wolf*
	live-action (larp)	Puzzle/adventure, Game-simulations/social, Strategy/race & displace	Fantasy, Sci-Fi, War, History, etc.	physical	*White Wolf: Mind's Eye Theatre*
	digital	Puzzle/adventure, Action/adv.	Fantasy, Sci-Fi, War, History, etc.	digital	*Ultima* series, *Final Fantasy* series, *Baldur's Gate*
SPORTS GAMES	race	Action/ space, Strategy/race	Battle, performance	physical	Athletics, Tennis, Soccer, Basketball, Motor sports, Billiards, Golf, Boxing
	comparison	Action/ space, Strategy/comparison	performance	physical	Figure Skating, Gymnastics
STRATEGY GAMES	race	Sports, Game-simulations/vehicles, Games of chance	Economy, Nature, Sports	board, dice	*Backgammon*, *Snakes & ladders*, *Monopoly*, Fantasy leagues
	space	Puzzle/movement&arrangement	Abstract, symbols	board, cards, pen & paper	*Solitaire/Patience*, *Tic-tac-toe*, *Connect-4*, *Go*, *Scrabble*
	chase	Action/space	Hunt, War	board	*Fox & Geese*, *The Three Musketeers*, *Lord of the Rings: Sauron*
	displace	Action/combat	War, Colonization, Diplomacy,	board, cards, digital	*Draughts*, *Chess*, War games, *Risk*, *Civilization*, *Starcraft*
	outplay	Game-simulations/management	Abstract, symbols	cards, props	*Cribbage*, *Casino*, *Uno*, *Dominoes*, *Lost Cities*
	exchange	Sports/race & comparison	Abstract, symbols	cards	*Rummy* games: *Gin*, *Canasta*, *Magic the Gathering*, *Pokemon*
	comparison	Puzzle, mov. & arr, Games of Chance	Abstract, symbols, trivia Fantasy, Sci-Fi, etc.	cards, questionnaires	*Poker*, *Black Jack*, Quiz shows, *Magic the Gathering*, *Pokemon*,

Table 23. *Ludological genre framework.*

The premise of the framework is to relegate game technology into a minor role. The relations between subgenres that run across genres can be used to explain historical developments within genres, i.e. the genrification process discussed earlier. For example, action-adventure games have grown out of puzzle games that have been thematized with characters and stories and complemented with mechanics typical to action games (combat, movement, etc.).

The categories are not exclusive, but inclusive: the cross-linkages that particular games draw within the table are evidence of how game-systems borrow dynamics and themes across genre borders. The table also helps to understand how game systems are scaled from one game technology to another, and the historical relations between the transformations: For instance, we see how Tag is transformed within the Action-combat games into a digital version, namely into the deathmatches of first-person shooters. In the same 'cross-ludic' transformation, Paintball, and Capture the Flag in particular, are adapted for a digital game technology.

The Hybridity of games such as GTA:Vice City or the Tom Clancy's Rainbow Six series (Red Storm Entertainment, 1998-) can be explained (from a formal perspective) with the help of the table: Vice City brings together the subgenres combat and adventure within the action genre, and complements them with the Game-simulation subgenres and race subgenre in Sports games. Rainbow Six brings the adventure subgenre of puzzle games and chase and displace in strategy games to 'traditional' combat in the action genre. So-called mixed reality games bring elements from puzzle/adventure, RPG/larps, and action/space together.

Conclusions: Where did we find game genres?

The analysis that the case examples present are also instances of the pragmatic approach to genre that Rick Altman has proposed. The dual correspondence of thematic and systemic traits is considered in relation to each other, and thus genres as 'complex situations' are highlighted in a concrete manner. It has not been my intention to dismiss with the popular genre labels altogether, but rather provide insight beyond their general descriptiveness. Therefore the 'beef' of the framework is actually in the relations and themes, not in the genre or subgenre labels themselves. Game genres are found in the junction of game themes, system behaviour, and emotions and moods, where they are articulated both by game developers, marketing, journalists, audiences – and theorist-designers, as in here.

PART V: RAPID ANALYSIS METHODS AND THE 100+ GAMES PROJECT

In this part of the thesis, I will put the theories and methods into practice by documenting a number of analyses of games – *sans frontiers*, so to speak –, i.e. of games played with cards, boards, computers or video game consoles, or in television studios, or outdoors.

I have chosen to call the contents of this toolbox as 'Rapid analysis methods', or RAM for short. RAM presents an analysis-centred equivalent to so-called 'rapid prototyping' methods used in software development, also known as 'first playable' in game development. Rapid analysis methods are tools for carrying out Design Research into existing designs, based on ludological premises. The functions of RAM can be summarised into the following:

- To encourage exploration & experimentation with theory by providing 'quick & dirty' analysis results for iterative, more detailed studies
- To enable the formulation of research and design questions
- To inform early game concept design with the help of either or both of the above approaches.

What follows is both an introduction to conceptual and practical analysis and design tools. *Games without Frontiers* has set out to prove two theses: First, that any kind of game can be identified through a limited number of structural features called game elements. Second, the experience of playing a game can be analysed with a set of 'psycho-ludogical' concepts, i.e. psychological principles adapted for the specific purpose of analysing play.

In proving these theses, I have employed a number of key concepts. The theory of game elements is based on the notion of games as systems, i.e. dynamic wholes with interacting parts. I have defined nine game elements, which represent the different parts found in game systems across various media and techonologies.

However, my aim has been to incorporate such a formal model of games into another model that is more sensitive to players and the contexts of play. To achieve this, I have employed sociologist Erwin Goffman's (1961) concept of focused gathering: 'social arrangements that occur when persons are in one another's immediate physical presence', which involve, e.g., 'a single visual and cognitive focus of attention'. For Goffman, playing a game presents a specific instance of focused gatherings he calls gaming encounter.

I have embraced this concept in conceptualising the interactions between players and games. Gaming encounter is a concept that emphasizes the behaviour of players, and the contexts that the game takes place, rather than the inner workings of the system. Based on this set of concepts, I have pursued to formulate a theory which aims to conceptualise player behaviour, especially as an emotional and socio-psychological experience. In my review, present theories and models of games and players tend to separate the two, i.e. either theories and studies focus on the game as a formal structure, or the focus is single-handedly on players, and the 'systemic' qualities are ignored. I argue that there is a way to produce analysis tools that bridge aspects of both.

Towards Applied Ludology

This is one of the challenges of applied ludology, and it will be tackled with baby steps, such as the arguments, methodological tools, and examples presented here. One function of the tools is to explore research and design spaces, i.e. help in formulating research questions and design challenges. For example, the tools introduced might not suit a large-scale study of game communities as such, yet I argue that they might enable a student or a scholar to identify the key emotional constituents of a gaming community and continue the analysis on from there.

My methods do suggest a particular way with which to walk the road of game studies, by seemingly excluding others. The methods and tools build on a disposition which became known as 'ludology'. The key point here is that ludology is not a clear-cut, systematic method. Rather, it has been an attitude or disposition to studying and designing games (Järvinen & Holopainen 2005).

The result is, in my opinion, that game studies still largely remain a scattered effort. The degree of systematic application is at its best in areas of study where existing methods, e.g., from social sciences or economics, can be applied, as is the case in a number of empirical studies on online multiplayer games (see, e.g., Yee 2001, Castronova 2005, Taylor 2006).

My goal is to create tools for practical game analysis and design tasks, which could be carried out even without getting familiar with the very intricacies of the theory – i.e. by reading this paper instead of the dissertation behind it. The result would be what I call, paraphrasing the methods of 'rapid prototyping' from software design and development, 'Rapid analysis methods' (RAM). Their audience would be teachers and students of game design, but also game designers who wish to bring systematic processes to the early 'fuzzy' phase of game concept design.

Rapid analysis methods as a toolbox for applied ludology

RAM consists of seven tools, each providing a method for identifying particular aspects of gaming encounters:

- Method for identifying and analysing game elements
- Method for identifying game mechanics and the goals they relate to
- Method for identifying player ability sets
- Method for identifying eliciting conditions for emotions in gaming encounters
- Method for analysing game rhetoric
- GameGame as an education and brainstorming method, based on an interpretation of the theory of game elements

The following chapters will provide a brief introduction to each method, its premises and application. I will pick out examples from the ‘100+ games project’ throughout the chapters to illustrate how the tools can be applied into practice.

CHAPTER 15: A Method for Identifying Game Elements

Games are systems, i.e. dynamic wholes, made out of parts that interact. In *Games without Frontiers*, those parts have been conceptualised as game elements. Their interaction, then again, has been conceptualised through the process of how rules are embodied into the elements and their behaviour, including players and contexts. This interaction has been discussed under game system behaviour.

In order to explore the behaviour of a particular game system, I therefore suggest that the analysis has to start from identifying the elements and their most significant attributes, such as who owns them in the game: self, other(s), or the system. This kind of analysis enables us to gradually proceed towards the details of the behaviour, and the subsequent analysis methods concerning game mechanics and goals, and player abilities, help in these tasks.

This chapter summarises and streamlines the analysis method that was already referred to at the end of chapter 4, when the game elements of three different games – the outdoors game Petanque, board game Pingwin, and computer game Alchemy were analysed. Here the analysis template is documented and its premises summarised.

The nine elements

The theory of game elements defines nine possible element categories that are found throughout the universe of games. The categories are explained below, proceeding from simpler elements to the more complex:

- Components
- Environment
- Rule set
- Game mechanics
- Theme
- Information
- Interface
- Players
- Contexts

All elements are not necessarily found in every game, yet Components, Environment, and at least one Game Mechanic needs to be identified. When the relationships of these three elements are defined and implemented, it means that a Ruleset emerges, as does Information. Then we need Players, and any gaming encounter brings about various Contexts, that may vary from one encounter to the next one.

When embarking on a thorough analysis of a game or a genre of games, the focus of study – or design – can be defined by the same set of concepts: e.g., the study of player cultures in multiplayer online games would focus on the Player and Contexts elements rather than the Rule set in particular. However, as games are systems which afford experiences that are more than the sums of their parts, it is difficult to omit individual elements from the analysis completely. For instance, the interface might have considerable consequences for how the players communicate with each other.

Common instances of game elements

The first step in trying to understand how a game as a system works is to find out what are the parts of the system. The first method introduced is created for the purpose of identifying the parts, i.e. game elements. It is based on a theory which defines nine possible element categories that are found throughout the universe of games. The categories are explained below, proceeding from simpler elements to the more complex:

- Components: The resources for play; what is being moved or modified – physically, virtually, in transactions – in the game, between players and the system. Tokens, tiles, balls, characters, points, vehicles are common examples of game components.
- Environment: The space for play – boards, grids, mazes, levels, worlds.
- Rule set: The procedures with which the game system constrains and moderates play, with goal hierarchy as an especially important subset.
- Game mechanics: What actions the players take as means to attain goals when playing. Placing, shooting, manoeuvring are examples of what players are put to perform in many games.
- Theme: The subject matter of the game which functions as a metaphor for the system and the ruleset.
- Information: What the players need to know and what the game system stores and presents in game states: Points, clues, time limits, etc.
- Interface: In case there are no direct, physical means for the player to access game elements, interface provides a tool to do that.
- Players: Those who play, in various formations and with various motivations, by performing game mechanics in order to attain goals.
- Contexts: Where, when, and why the gaming encounter takes place.

Ruleset, Game mechanics, Theme, Interface, and Information are compound game elements, which seldom exist as such, but they exist as embodied into other elements. Their compound nature means that they keep the dynamic whole together. For instance, component elements may carry information in the form of their attributes, as the image below illustrates:

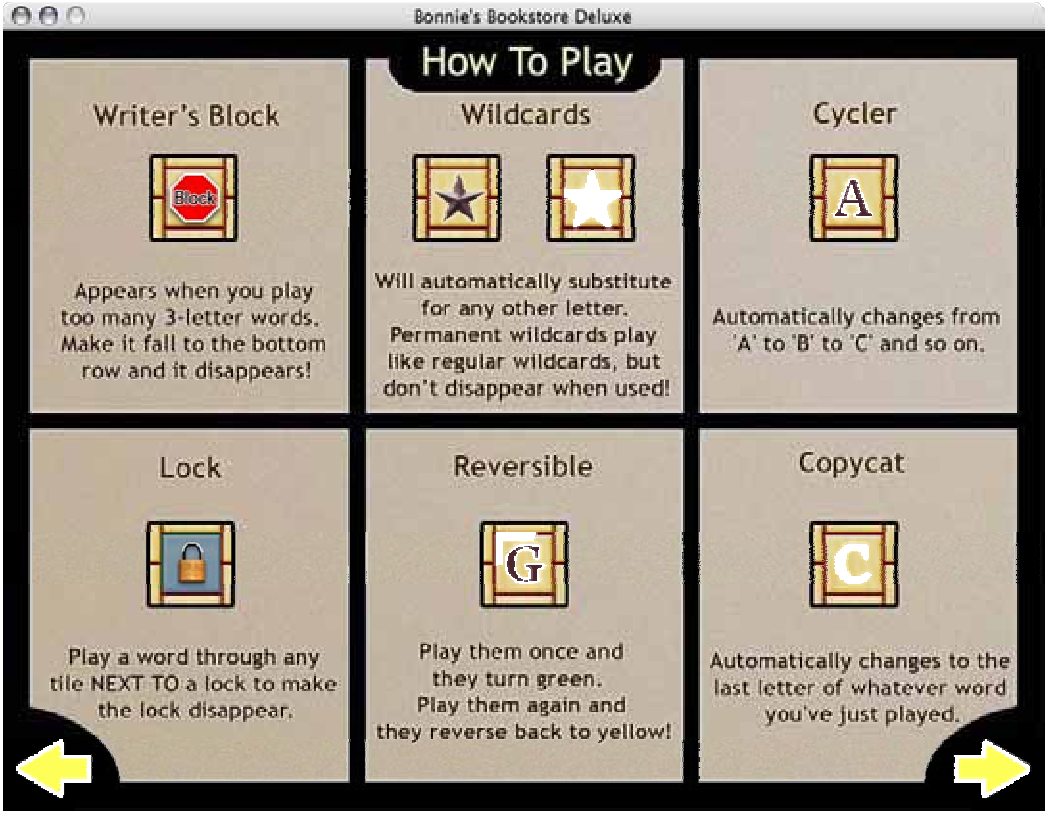


Image 16. *Different attributes of the component game element in Bonnie's Bookstore (New Crayon Games / PopCap Games, 2005), a game with a literary them of combining alphabets into words.*

An important principle of the theory is that rules are embodied into game elements: goal rules of **Diner Dash** (Gamelab, 2004, see image below), for instance, are embodied both into its component elements (waiter, customers, orders, and dishes), environment elements (tables, counter, kitchen, etc.) and information elements (cash earned).

Image 17. *Goal rules as embodied into component and environment game elements in Diner Dash.*

Identifying game element ownership attributes

Besides identifying the game elements from a game, the next step towards conceptualising their interaction is to identify who they belong to in the gaming encounter. This is important because often in games, due to conflicting goals between participants, and scarcity of objects in play, ownerships create inherent tensions, and thus prospects for emotions.

The ‘who’ can be divided into three possible ownership attributes: owned by *self*, *other(s)*, or *system*. This three-fold division articulates the basic relations in a gaming encounter: Oneself as a player, the other players (in case of multiplayer games), and the system as a facilitator and/or player (the latter in case there are AI opponents). The gaming encounter is always dualistic in the sense that just as you are an other to me when we begin play, I become an other to you – unless we play as a team.

Any game element may belong to one of the three parties, and thus an element in any category can be assigned an ownership status: there can be goals-of-self, game mechanics-of-others, an environment-of-self, information-of-system, and so on. For an analysis task, the consequence is that once a game element is identified, the next step is to identify its ownership attribute.

Case Example: Chu Chu Rocket

Let us use an analysis of the game elements in the game **Chu Chu Rocket** (Sega Enterprises, 1999) as an example. In the game, players try to capture the most mice by leading them into a home base. This happens by placing arrowed tiles on the grid that the mice move on. Cats appear on the grid, eating the mice.

First, we will identify the component elements: What are the resources that each player has, and what objects does the system produce into the game – what basically is being moved in the game?

Mice, Cats, Arrow tiles, and Cursors are being moved, and the points for each player are being added or substracted. Thus we have five different types of component elements in the game. Of these, the player can directly manipulate only her Arrow cursor. To start with, the Mice and the Cats are controlled by the game system. The initial analysis result can be presented as the three-fold ownership attribute division:

- Components-of-self: Cursor, Arrow tiles, points
- Components-of-other: Cursors, Arrow tiles, points
- Components-of-system: The Mice, The Cats

However, once we begin to consider the ruleset element, and its most important subset – the goals of the game – we see that the ownership attributes are subject to change. The goal is to have the most points once time runs out, and points are being scored by capturing mice into one's home base, i.e. a specific location on the game environment in the form of a grid. This leads to an observation that the game revolves around players trying, by placing arrow tiles, to change the ownership attributes of components-of-system into components-of-self, and thus gain points-of-self over points-of-others.

Study of game elements as a step towards studying game system behaviour

In this way, starting from the lone component element, we have already addressed a number of other elements in the system: ruleset as goals and point scoring procedures, environment as grid with particular locations embodying goal rules, what players do in the game, i.e. game mechanics, and how information is embodied into components as player representations (arrow tiles, points, and cursors with particular colour attributes). This illustrates how the parts of a system interact, i.e. how a game system displays behaviour, which has been argued to be the essence of games as entertainment (Hunicke et al., 2004).

To summarise, the 'recipe' for the analysis method is simple:

1. Identify, one at a time, what represents each of the game element categories in a given game.

2. Move on to analyse the ownership attributes of the elements identified.
3. Analyse whether the elements have other significant attributes.

The point of this brief exercise was to illustrate how the analysis methods of applied ludology snowball onwards; from an analysis of individual game elements to the behaviour of a game system, and over to dynamics of a gaming encounter, where the focus shifts to the behaviour of players in particular contexts.

The Method template

In order to produce systematic and commensurable analysis results, the available game element types within the categories need to be restricted to a number of possible options, when possible. With the component element, there is the most variance, as the component might be a character in a science fiction world as well as a geometrical block, but regarding environments, interfaces, player constitutions, and the immediate context, common categories can be established. In the method at hand, the categories have been deduced from a sample of more than hundred games and analyses of their elements (see Appendix A).

Common element types

From the nine elements, we will identify seven at this point. The two remaining, game mechanics and rule set, are not identified as such, even though the identification of other elements will shed light on the rule set especially. The most important individual rule type in the rule set are goals, and they will be analysed with another method, hand in hand with game mechanics, as players' performances through game mechanics are always related to specific goals.

- Components: various
- Environment: 2D board / 2D virtual space / 3D virtual space / Grid / Physical object / Physical space / Setup / Verbal description
- Theme: various
- Information: Component attributes / environment attributes / Time / Score / Distance Measures / Other: specify
- Interface: Direct (Hands/Feet/Full body) / Gamepad / Joystick / Keyboard / Mouse / Mouse & Keyboard / Pen & paper / Verbal expression / Other: specify
- Players: Single / Two / Multi / Single or Multi
- Contexts: Arcade / Board games / Card games / Casino games / Computer games / Computer simulations / Console games / Game

shows / Lottery games / Outdoor games / Parlour games / Mechanical Puzzles / Quizzes / Sports / Verbal puzzles / Visual puzzles

I will explain these subcategories shortly in the step-by-step introduction to the method. Please note that within an element class its implementations may be found as combinations, such as so-called ‘exergames’ which combine a dance mat interface and a virtual space on the display.

In the following, I will explain the points of analysis step by step, with examples:

Identifying components and their ownership attributes

Components are the resources for play; what is being moved or modified – physically, virtually, in transactions – in the game, between players and the system. Tokens, tiles, balls, characters, points, vehicles are common examples of game components.

Besides identifying the component, we will identify its owner. This ownership attribute is important, and takes us a small step towards understanding game play. The attribute is either Self, Others, or System. This means that components of each type have to be identified. There is not necessarily all types in the game: for example, single player games do not have components-of-others, as there are no other players in the game. In this case, ‘not available’ (n/a for short) is used in the analysis template.

	COMPONENTS		
GAME	**Self**	**Others**	**System**
Asteroids	Spaceship, points	n/a	Asteroids, Ufo
Doom	Character, Weapons, Health, Armor, Ammo	n/a	Characters
Paintball	Weapon	Weapon	n/a
Soccer	Ball, Self	Ball, Self	Ball
Basketball	Ball, Self	Ball, Self	Ball
Texas Hold'em Poker	Cards, Money	Cards, Money	Cards
Carcassonne	Tiles, figurines, points	Tiles, figurines, points	Tiles
Go	Stones	Stones	n/a
Jigsaw puzzles	Pieces	n/a	Pieces
Tetris	Blocks, Points	n/a	Blocks

Table 24. *Analysis of game elements and their ownership attributes across a sample of games.*

Identifying environments

Environment is the space for play – grids, mazes, levels, worlds. They are either embodied into material *boards*, *physical spaces* or *virtual spaces* of either two or three dimensions.

The environment might also become to exist through a *setup*, which does not necessitate a particular configuration for environment, yet the other elements need to be arranged so that players make sense of the game state at any moment. Card and parlour games often function like this, and in Casinos, the tables often define a specific environment for the game, with dedicated spaces for cards and stakes.

Identifying information

Information is what the players need to know in order to play and what the game system stores and presents in game states: Points, clues, time limits, etc. Often information is embodied into component or environment attributes: the value of a component, the status of a specific location on the environment (occupied vs. unoccupied), and so on.

Identifying theme

Theme is the subject matter of the game, and it functions as a metaphor for the system and the rule set.

The table below gives an example how the environment, information, and theme elements have been identified in a sample of games:

	ENVIRONMENT	INFORMATION	THEME
GAME			
Asteroids	2D virtual space	Component attributes	Space travel
Paintball	Physical space	Team score, time	War
Basketball	Physical space	Team score, time, fouls	Contest
Texas Hold'em Poker	Setup	Component attributes	Wealth
Carcassonne	2D board	Component & Environment attributes	Medieval colonies
Go	2D board	Component & Environment attributes	Abstract
Jigsaw puzzles	Setup	Component attributes i.e. Number left	Various
Tekken 4	3D virtual space	Component attributes	Martial arts
Civilization	2D virtual space	Component & Environment attributes	Society
Ticket to Ride	2D board	Component & Environment attributes	Travel
Da Vinci Code	Setup	Component attributes	Abstract
Ricochet Robot	2D board	Environment attributes: Distance measures	Sci-Fi
Monopoly	2D board	Environment & component attributes	Urban real estate
Snakes & Ladders	2D board	Component & Environment attributes	Contest
Pac-Man	2D virtual space	Component & Environment attributes	Cartoon
Pong	2D virtual space	Component attributes	Sports
Tic-Tac-Toe	Grid	Grid space attributes	Abstract
Trivial Pursuit	2D board	Answers, token distribution	Trivia
Pictionary	2D board	Illustrations, Component attributes	Drawing

Table 25. *Environment, Information, and Theme elements in a sample of games.*

Identifying interface

In case there are no direct, physical means for the player to access game elements, interface provides a tool to do that. Interfaces vary from gamepads to computer interface peripherals, such as a mouse.

GAME	INTERFACE
Tic-Tac-Toe	Pen & Paper
Trivial Pursuit	Verbal expression
Pictionary	Pen & paper
Alias	Verbal expression
Uno	Direct (Hands) & Verbal expression
Solitaire (Windows)	Mouse
Tag	Direct (Body, hands)
Space Invaders	Joystick
Dance Dance Revolution	Dancemat, Direct (Feet)
Animal Crossing	Gamepad

Table 26. *Interface type element identified in a sample of games.*

Identifying player constitution

Game systems assemble their players into various formations. Here it suffices to identify whether the game is for a *single* player, or for *two* or more, i.e. a *multiplayer* game.

Identifying immediate context

Generally contexts are about the where, when, and why the gaming encounter takes place. Here we are looking for the immediate context where the game is being played: Does the game belong to the context of a game arcade, or is it played with a personal computer, or is it a visual puzzle, or a card game.

In the table below, a sample of games and the constitution of their player and context elements are identified:

GAME	PLAYERS	CONTEXT
Bejeweled	Single	Visual puzzles
Breakout	Single	Arcade
Arkanoid	Single	Arcade
Skeet	Multi	Sports
Super Monkey Ball	Single/Multi	Console games
Tug of War	Multi	Outdoor games
Sudoku	Single	Puzzles
Niagara	Multi	Board games
Zuma	Single	Computer games
Musical Chairs	Multi	Parlour games
Yenga	Multi	Puzzles
Croquet	Multi	Outdoor games
Black Jack	Multi	Card games
Petanque	Multi	Outdoor games
Diner Dash	Single	Computer games

Table 27. *Player and Context elements in a sample of games.*

Summary

The analysis of attributes of particular elements could be expanded to cover all existing ones in a game. However, in my experience in developing the methods, the straightforward application introduced here fulfils the initial need for ‘rapid analysis’, which can be continued with the other methods, such as the next one focusing on goals and game mechanics.

CHAPTER 16: A Method for Identifying Game Mechanics and Goals

Game mechanics are essential game elements in that they are always about doing something in the game. In everyday experience, performing game mechanics is what playing a game is about. Game mechanics are best described with verbs: Choosing, guessing, moving, aiming, shooting, collecting, kicking, trading, performing, bidding, etc. Thus the nature of a mechanic, i.e. the action it at once allows but also puts the player to perform, might come to define the game experience for the player. For instance, submitting answers characterizes quiz games, and performing according to a role characterizes role-playing games. The basis of this method is found in chapter 12, and here it is briefly summarised.

Distinctions between game mechanics and goals

Besides such 'game-defining' individual mechanics, there are often other, less definitive game mechanics in a game – in a supporting role, so to speak. Manoeuvring to a certain location in the game environment in order to perform the game-defining placing or shooting mechanic presents an example. In this case, it is useful to identify the relationship of the said mechanics: shooting as the *primary game mechanic*, and manoeuvring as its *submechanic*.

A need for another distinction arises from the goal hierarchy of the game. Often in games, the high order goals persist as distal goals, but low order goals are more numerous and frequent; they are embodied in challenges players repeatedly struggle with. Thus goals are present either *globally* or *locally*. As game mechanics are the means to attain goals and, thus, by necessity directly related to goals, game mechanics are also available either globally or locally.

It would seem, then, that primary and submechanics are available globally, whereas a third type of game mechanic, a *modifier game mechanic*, may be available locally, i.e. for certain duration or only in certain location, or for a certain player with an attribute that allows using the modifier mechanic. A 'speed boost', a 'safe heaven', or a special component resource, e.g. a particular weapon or character ability, are examples of instances when modifier game mechanics might become available.

In their book *Rules of Play*, Katie Salen and Eric Zimmerman talk about 'core mechanic' which is defined as the actions that players repeatedly take in a game. In the context of our discussion, core mechanics consist of the possible combinations of primary game mechanics and submechanics, with the possible modifier mechanics. Therefore the analysis method we are proceeding towards will be essentially an analysis method for ‘deconstructing’ core mechanics.

However, there is one more distinction to be made. The goal of the core mechanics is not necessarily the same as the ultimate, highest order goal of the game. For instance, its goal might be a subgoal of accumulating points, whereas the highest order goal of the game might be to have the most points after a number of rounds, i.e. rounds of core mechanics between players. Thus, the goal of core mechanics is not necessarily always a global goal, but it is in instrumental relation to one. Therefore I will name these instrumental goals of core mechanics as *glocal goals*. Glocal goals are a nested goal hierarchy within higher order goals. As a consequence, it is the modifier mechanics that relate to local goals, which are nested into glocal goals.

Analysis template for studying core mechanics

Based on the premises summarised above, I have formulated an analysis template for the study of game mechanics and the goals they relate to. In the template, the student has to identify the 1) global goal, 2) the core mechanic consisting of a primary mechanic and its possible submechanics, 3) the glocal goal that the core mechanics relate to, 4) possible modifier mechanic(s) and 5) the local goal they relate to:

Availability in the Game as World		**Core (global) game mechanics**			**Local game mechanics**	
Status in relation game state & goal The above categories explained from the perspective of their relevance to player	**GLOBAL Goal**	**Primary mechanic**	**Submechanic(s)**	**GLOCAL Goal**	**Modifier mechanics**	**LOCAL goal**
	The overall, highest order goal of the game.	What the player does in relation to the game state during a standard turn or sequence.	What action(s) the player has available to her as a consequence of the primary mechanic, or as instrumental means to perform the primary game mechanic.	Goal of core mechanics.	What the player does in a specific game state which occurs on some condition (related to location, player role, time, etc) specified in the rules.	Goal related to modifier mechanic which may be instrumental to various order goals.

Image 18. *Analysis template for core mechanics and related goals.*

I have employed the analysis method in the 100+ Games Project, by analysing the game mechanics and goals of over a hundred games of various types. This process has also produced several iterations of the method before it has evolved into its present form. The process has also served another purpose: the harvesting of a so-called library of game mechanics. The library summarises the wide world of game mechanics into a concise collection. Different game mechanics can be interpreted as specific instances of 40 general categories in the library (see Appendix B).

Another typology employed in the analysis method is a set of goal categories, which can be referenced when defining the local, glocal, and global goals of a game. I have adapted the categories by game scholars Staffan Björk and Jussi Holopainen for this purpose, with minor revisions. A sample of the research is found below:

GOAL TYPE	CORE MECHANICS			GOAL TYPE		LOCAL MECHANICS	GOAL TYPE	
Global (highest order goal)	**Primary game mechanics**		**Submechanics**	**Glocal (goal of core mechanics)**		**Modifier game mechanic**	**Local**	**Game**
Discard	Aiming & Shooting	&	Browsing	Connection				**Zuma**
Accumulate	Arranging	&	Browsing	Alignment				**Bejeweled, Zoo Keeper**
Capture	Arranging	&	Point-to-point Movement	Configuration	&	Submitting	Match	**Bonnie's Bookstore**
Accumulate	Enclosing	&	Manoeuvring	Capture				**Loop**
Survive	Manoeuvring	&	Browsing	Connection				**Snake**
Survive	Manoeuvring	&	Browsing	Evade	&	Attacking / Defending	Capture	**Pac-Man**
Accumulate	Placing	&	Browsing	Capture				**Chu-Chu Rocket**
Accumulate	Point-to-point Movement	&	Browsing	Delivery	&	Placing	Match	**Diner Dash**
Outplay	Point-to-point Movement	&	Controlling	Configuration	&	Placing	Alignment	**Tetris**

Image 19. *Core mechanics and goals of a sample of casual games according to the analysis template.*

CHAPTER 17: A Method for Identifying Player Ability Sets

The next step is to move towards player experiences by modelling players' abilities. Games necessitate cognitive, physical, and psychomotor abilities in various combinations. In the context of gaming encounters, I have concepttualised these kinds of abilities as player abilities. For the purpose of identifying them, I have adapted the extensive work on human abilities by cognitive psychologist John B. Carroll (1993). This method is grounded on the theories discussed in chapters 6, 7, and 12. In addition, Appendix D documents my analysis of player abilities as a part of the 100+ Games Project.

Abilities are exercised in face of game mechanics and goals, which means that they are experientally closely integrated to the phenomena which were analysed in the previous chapter. Therefore the analysis has to focus on the combination of cognitive, psychomotor, and physical abilities that game mechanics require players to perform. If these abilities are somehow in contradiction to the goal, and the performance of game mechanic, it is relevant to ask whether there is a flaw in the game design – or study how players experience the contradiction. Therefore the analysis method aims to function also as a tool with which to explore and validate design solutions.

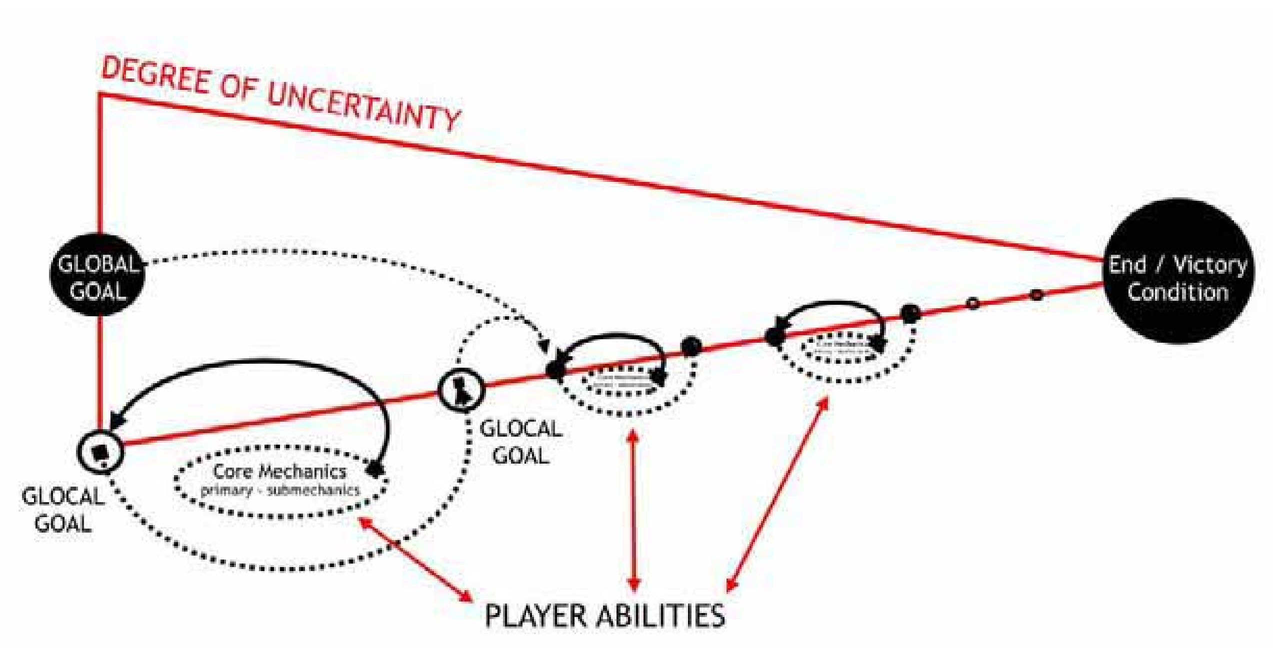


Image 20. *The dynamics of a gaming encounter visualised as a continuum starting from the introduction of a global goal, and proceeding through a number of glocal goals to the end or victory condition. In the process, players perform core mechanics according to their abilities, and degree of uncertainty concerning the outcome of the game decreases through successful play – yet, the abilities to perform game mechanics always leave room for uncertainty, and thus the lines illustrating advancement from one goal to another is conditional.*

The figure above visualises the process where game mechanics, goals, and player performances in relation to them combine into the dynamics of a gaming encounter. Player abilities constitute the underlying basis of player performances.

Uncertainty factors as cues of non-trivial player abilities

Any game that allows use of skill in attaining goals (instead of, e.g., pure chance) must offer opportunities for the skills to develop. However, it has been shown that after early development of abilities in practicing sports, the use of the abilities soon becomes routinised, as they require less cognitive processing (Bandura 1997, 370—5). The same can be assumed of any game, and therefore charting all the possible human abilities that are required in performing a particular game mechanic yields mostly trivial results – e.g., that abilities of visual perception are required in order to understand what goes on in the game.

In my interpretation, it is relevant to identify the abilities that make a successful performance of the mechanics uncertain, i.e. which player abilities contribute to the margin of error. This choice in focus enables us to identify which abilities are not high level prerequisite abilities (e.g.,. visual and auditory perception) and/or not rapidly routinised to the degree of triviality.

The table below illustrates, with the same set of games as earlier, how the analysis of game mechanics and goals can be complemented with such analysis of player abilities as uncertainty factors. The abilities referenced are derived from Carroll's overall model of human cognitive abilities.

GOAL TYPE		CORE MECHANICS				GOAL TYPE	
Global (highest order goal)	UNCERTAINTY FACTORS	Primary game mechanics		Submechanics	UNCERTAINTY FACTORS	Glocal (goal of core mechanics)	Game
Discard	Choice reaction time Wrist-finger speed	Aiming & Shooting	&	Browsing	Choice reaction time Wrist-finger speed	Connection	**Zuma**
Accumulate	Perceptual speed Wrist-finger speed Choice reaction time	Arranging	&	Browsing	Perceptual speed Wrist-finger speed Choice reaction time	Alignment	**Bejeweled, Zoo Keeper**
Capture	Lexical knowledge	Arranging	&	Point-to-point Movement	Lexical knowledge	Configuration	**Bonnie's Bookstore**
Accumulate	Spatial reasoning Wrist-finger speed Choice reaction time	Enclosing	&	Manoeuvring	Spatial reasoning Wrist-finger speed Choice reaction time	Capture	**Loop**
Survive	Spatial reasoning Wrist-finger speed Choice reaction time	Manoeuvring	&	Browsing	Spatial reasoning Wrist-finger speed Choice reaction time	Connection	**Snake**
Survive	Spatial reasoning Wrist-finger speed Choice reaction time	Manoeuvring	&	Browsing	Spatial reasoning Wrist-finger speed Choice reaction time	Evade	**Pac-Man**
Accumulate	Spatial reasoning Wrist-finger speed Choice reaction time	Placing	&	Browsing	Spatial reasoning Wrist-finger speed Choice reaction time	Capture	**Chu-Chu Rocket**
Accumulate	Spatial reasoning Wrist-finger speed Choice reaction time	Point-to-point Movement	&	Browsing	Spatial reasoning Wrist-finger speed Choice reaction time	Delivery	**Diner Dash**
Outplay	Spatial reasoning Wrist-finger speed Choice reaction time	Point-to-point Movement	&	Controlling	Spatial Reasoning Wrist-finger speed Choice reaction time	Configuration	**Tetris**

Image 21. *Figure 6: Analysis of player abilities as uncertainty factors related to game mechanics and their goals in a sample of casual games.*

Player Ability Sets

The abilities that are observed to be uncertainty factors constitute player ability sets: combinations of cognitive, psychomotor, and physical abilities. The analysis shows that the player ability set for playing **Zuma** (PopCap Games, 2003) would necessitate skills in abilities known as choice reaction time and wrist-finger speed. The key point is that different player ability sets cater for different tastes and preferences in games.

Besides the notion of player ability sets, two findings result from the above analysis: First, it seems apparent that the sample of games necessitates quite similar cognitive and psychomotor player abilities in the domains of visual perception and psychomotor abilities. Second, it is noteworthy that throughout the games, the uncertainty factors both regarding the core mechanics, and their succession in pursuing the global goal, are the same. This points, on one hand, to the fact that the games have few game mechanics available for players, which means that differentiation in player ability sets across the sample remains low. Yet, on the other hand, the finding indicates that the abilities that glocal and global goals necessitate are in harmony, so to speak: abilities to attain subgoals directly support the higher order goals – which would speak for the popularity and general conception of the analysed games as successful game designs.

The latter finding hints at the use of the method in more complex games with multiple goals and game mechanics: by identifying abilities throughout the goal hierarchy and set of game mechanics, it is possible to spot inconsistencies in the space of player abilities that the game design addresses.

Player abilities are also factors that differentiate players from one another, and thus relate to uncertainty concerning outcomes. Uncertainty is a useful concept to emphasize at this point also because it fuels most games, and motivates players to play, in order to reduce uncertainty – i.e. to find out the winner, or the success of one's performance, or in general how the gaming encounter turns out.

Thus, uncertainty is a fundamental source of emotions for players, and self-beliefs in one's abilities as a player affect it as an emotional constituent of gaming encounters. 'Performance-of-self' becomes one of the focus points of player experiences. These observations function as a segway to the next method.

CHAPTER 18: A Method for Identifying Eliciting Conditions for Emotions as Embodied into Game Elements

I have argued that the road to attaining game goals is beset by emotions. The next method is based on a conceptualisation of that road, and how its twists and turns can be analysed.

Emotions as valenced reactions to game elements

I have adapted the cognitive scientists Andrew Ortony, Gerald L. Clore and Allan Collins' theory about the cognitive structure of emotions for a theory of player experiences (see chapters 10 & 11). Their model of emotions – the OCC model for short – states that emotions are valenced reactions, i.e. positive or negative appraisals, to one of three aspects in the world: Agents, Events, or Objects. These three categories produce different types of emotions, i.e. they present different 'eliciting conditions': the conditions under which an emotional process can be triggered in an individual.

It is widely accepted among emotion theorists that emotions are phasic: first, there is a recognition of an agent, event, or object as significant, which produces plans to cope with the situation. In the next phase, these plans lead to a so-called *action readiness*, followed by the bodily and expressive effects of emotions, such as facial expressions and actions.

Emotion theorists have produced competing categorisations of emotion types, e.g., basic emotions and their subcategories, but it is generally accepted that certain emotions have tendencies to lead to similar kind of action readinesses. Thus common responses become habituated, and they can be predicted, to a certain extent. This has been argued to be especially true with responses to entertainment, as it creates worlds and fictions which offer prospects for emotional and mood-changing experiences outside the complexities of everyday life. I argue that this predictability, with due reservations, applies to games as well. Games are coercive in nature, i.e. they persuade their players with their goals and rewards, which presumably support the predictability of player behaviour (cf. Sutton-Smith 1972, 433).

The issue of predictability has lead emotion theorists talk about *action tendencies*, i.e. the likely courses of action triggered by a particular emotion in a particular situation, or 'tendencies to establish, maintain, or disrupt a relationship with the environment', as prominent emotion theorist Nico H. Frijda (1986, 71) has stated. For the study of games as a study of particular entertainment experiences, this opens up the challenge of analysing game-specific eliciting conditions, and the emotions they are likely to trigger. Furthermore, the consequent action tendencies can be analysed through identifying game mechanics.

Another important aspect of the OCC model is that there are a number of variables that affect the intensity of emotions. The reach of these variables, such as 'unexpectedness' or 'degree of likelihood', is either global or local across emotion types – and it is no coincidence that I have conceptualised the availability of game mechanics according to the same distinction. This conceptual pairing is a result of studying what are the points of appraisal, i.e. the points in games where valenced reactions are likely to occur in the minds of players. With games, valence has to do with general motivation to play, but in a more detailed level of the experience itself, it has to do with player abilities, such as skill and luck concerning the goals of the game.

For the purposes of applied ludology, the task is, then, to relate game elements into the three-fold model of agents, events, and objects, and identify subsequent emotion types that eliciting conditions in games privilege. I will use a particular compound emotion from the OCC model as an example. It is an emotion which I argue is fundamental to player experiences: *suspense*.

Suspense as modulation of hopes and fears through elements of uncertainty

Ortony et al list a number of emotion types, token examples of them, and variables affecting their intensity. However, as a result of detailed analysis of them in the light of games, I argue that for applied ludology there are two crucial points to take away from the OCC model: First, that games privilege so-called prospect-based emotions that are always focusing on events and their outcomes. Second, the emotion of suspense is a fundamental emotion of player experiences, because it is a compound emotion where the emotions of hope, fear, and uncertainty come together.

This premise goes hand in hand with the analysis of player abilities, as it emphasizes uncertainty and emotions focusing on uncertain events, such as whether a performance of a game mechanic will lead to a confirmation of a goal. The subsequent analysis method focuses on identifying what are the hopes and fears of a player in a given situation in a game, and how do the eliciting conditions for uncertainty emerge in that situation.

In order for a method to work, it has to have an object of analysis. The eliciting conditions for emotions always emerge in relation to a given moment of time in the gaming encounter, i.e. a particular situation. This would mean that eliciting conditions focus on the *game state* (see chapter 3), i.e. the state to which all game elements in play are configured at a specific moment, or during a defined period of time, such as a particular sequence of a game – e.g., a round, a mission, or a level.

The uncertainty of player experiences is uncertainty towards the prospect(s) that the game state(s) embodies. Yet some elements might be more central to the suspense-eliciting conditions than others, which means that we should identify the individual elements that are prospect to interact – desirably or undesirably – in the game state, or the sequence of game states under scrutiny. The states nevertheless contribute to the eliciting condition, as they embody prospects of hopes and fears. As such they suggest predictions of future emotions for the player.

These conditions can be seen through the concept of *proximity*, which, according to the OCC model, is one of the global variables affecting intensity of emotions. It refers to how close in psychological space one feels to the situation which potentially elicits emotions. In terms of the study of player experiences, I propose that proximity as a variable should be understood through the uncertainty concerning goals, i.e. as how close in psychological space the player feels to the confirmation or a disconfirmation of a goal.

The higher the goal resides in the goal hierarchy, the higher is presumably the emotional intensity. With this logic, the proximity to overall end or victory conditions would elicit the most intense emotions. This definition also means that the sense of proximity modulates player focus, i.e. what she will try to do next: the action readiness and tendency. It is a process that essentially equals the phasic process of emotions.

Case example: Modulation of suspense in casual games

The table below illustrates, with three examples, of how I have studied games, with the focus on their core mechanics and corresponding game states, according to the above premises. Basically the table outlines the method: first, the student has to identify the eliciting conditions for hope and fear. After that, by applying the theory of game elements, the next step is to identify how the eliciting conditions are embodied into the design of the elements:

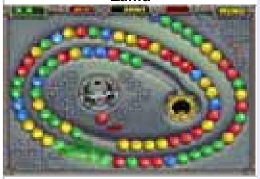
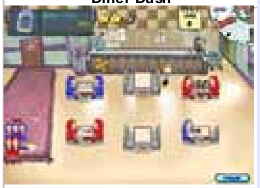
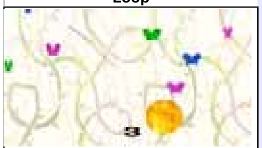
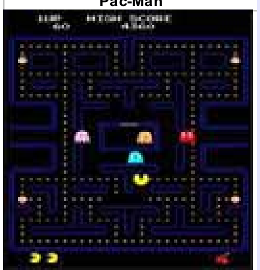
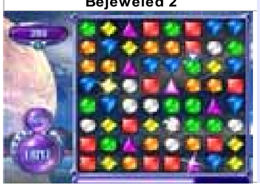
	EMOTION TYPE			ELICITING CONDITIONS FOR EMOTIONS		
GAME	**SUSPENSE (compound emotion of Hope + Fear + Uncertainty) modulated by:**			**How PROXIMITY TO END CONDITION is embodied into game in terms of *game elements*:**		**How PROXIMITY TO VICTORY CONDITION is embodied into**
Zuma 	**Hope** Proximity to hitting pairs of balls.	**Hope** Proximity of hitting coins or special balls.	**Fear** Proximity of first ball in chain to the skull.	As balls moving on the tube towards the skull, i.e. as spatial relations between *component* and *environment* elements.		As decrease in the number of balls in the tube through the prospect of performing Aiming & shooting *game mechanic*.
Diner Dash 	**Hope** Proximity to goal score.	**Hope** Proximity to achieving stars (through pleased customers).	**Fear** Proximity to running out of stars (by customers leaving).	As customer characters and their gestures and heart attributes, i.e. as *component* element *attributes*.		As point score display, i.e. as *information* element.
Bonnie's Bookstore 	**Hope** Proximity to completing a word.	**Hope** Proximity to grid being completed through using all alphabets.	**Fear** Proximity to end of turns.	As a turns left counter, i.e. as *information* element.		As change in the alphabets and environment grid attributes (i.e. *information* element) through the prospect of performing Arranging *game mechanic*
Loop 	**Hope** Proximity to two or more butterflies of same colour.	**Hope** Proximity to enclosing a loop on a number of butterflies.	**Fear** Proximity to the setting of the sun.	As animated sun figure moving towards left, i.e. as *information* embodied into *component-of-system* element.		As disappearance of butterflies through the prospect of performing Enclosing *game mechanic*.
Snake 	**Hope** Proximity to capturing food.	**Fear** Proximity of snake's 'head' to its body and boundaries of play space.		As the proportion of the snake in relation to surrounding space, i.e. as spatial relations between *component* and *environment* elements.		No victory condition.
Pac-Man 	**Hope** Proximity to food and power pellets remaining.	**Fear** Proximity to Ghosts.		As physical proximity of Pac-Man to food, i.e. as spatial relations between *character-of-self* and *component-of-system*.	As physical proximity of Pac-Man to Ghosts, i.e. as spatial relations between *character-of-self* and *characters-of-system*.	As disappearance of food through the prospect of performing Manoeuvring *game mechanic*.
Chu-Chu Rocket 	**Hope** Proximity to capturing mice.	**Fear** Proximity to leading position.	**Fear** Proximity to time limit.	As time counter displayijng time lef, i.e. as *information* element.		As point score display, i.e. as *information* element.
Tetris 	**Hope** Proximity to horizontal alignment of blocks.	**Fear** Proximity to top boundary.		As vertical accumulation of blocks upwards, i.e. as spatial relations between *component* and *environment* elements.	As horizontal alignment of blocks, i.e. as spatial relations between *component* and *environment* elements.	No victory condition.
Bejeweled 2 	**Hope** Proximity to pairs of aligned diamonds.	**Hope** Proximity to 'power gems' or 'hyper cubes'.	**Fear** Proximity to time limit.	As a progress bar displaying time limit, i.e. as *information* element.		As replacement of three aligned diamonds through the prospect of performing Arranging *game mechanic*.

Image 22. *The modulation of the emotion of suspense through eliciting conditions in three casual games.*

The analysis shows that suspense as an experience of hope, fear, and uncertainty through engaging with game elements may be elicited through similar conditions across games in similar genres.

However, once we consider different games, varieties in eliciting conditions begin to appear. In a game of Sudoku, it is the lack of information about the missing numbers in the grid that embodies uncertainty for the player. The information element is in central role in the game state that embodies the eliciting conditions of 'puzzlement'. The player of Sudoku will try to minimise uncertainty by using her abilities in quantitative reasoning to come up with the missing information, and then proceed to submit it as numbers to the grid, via the available game mechanic.

Then again, as the above table shows, in Zuma it is the balls and their distance from the skull that contributes to the degree of proximity the player feels towards the end condition. The balls moving irreversibly and quite literally towards the end condition at the end of the tube mean that it is the component and environment elements, and their spatial relations, which embody the eliciting conditions for suspense. The constantly fluctuating distance from the skull to the nearest ball is the focus of player attention, and thus it is the central source of emotions in Zuma. This also means that it motivates the player to act towards minimising fear by preventing the end condition, because it is emotions that help us in setting priorities to goals – emotions organise our 'ready repertoires of action' as emotion theorists have put it.

The suspense model of game entertainment

The results which the method yields can be used for a tentative model of suspense in games, at least in the casual ones analysed. In this light, it would seem that 'good' player experiences are emotional rollercoasters: they manage to produce an oscillation between realization of success and victory condition (hope) and preventation of end condition and failure (fear). It shoud be noted that the tempo of oscillation might become to characterize the experience, e.g., in a fast-paced digital game like **Asteroids**, the tempo is constant, while in turn-based games it is quite different, as is the experience. The elicitation and modulation of suspense is also very much due to the modalities the game system addresses: suspense under a theme of horror can be elicited with quite different techniques of using the semiotic modes of writing versus three-dimensional, visceral game environments.

Whatever the tempo and set of modalities, this oscillation persists in the behaviour of the system until uncertainty concerning outcome is resolved, but it is also in the nature of the osciallation to be unexpected – which points to a set of other relevant emotions (shock, surprise) to be studied.

Nevertheless, I will conclude this theory of suspense-elicitation with a model that generalises the modulation of suspense in gaming encounters:

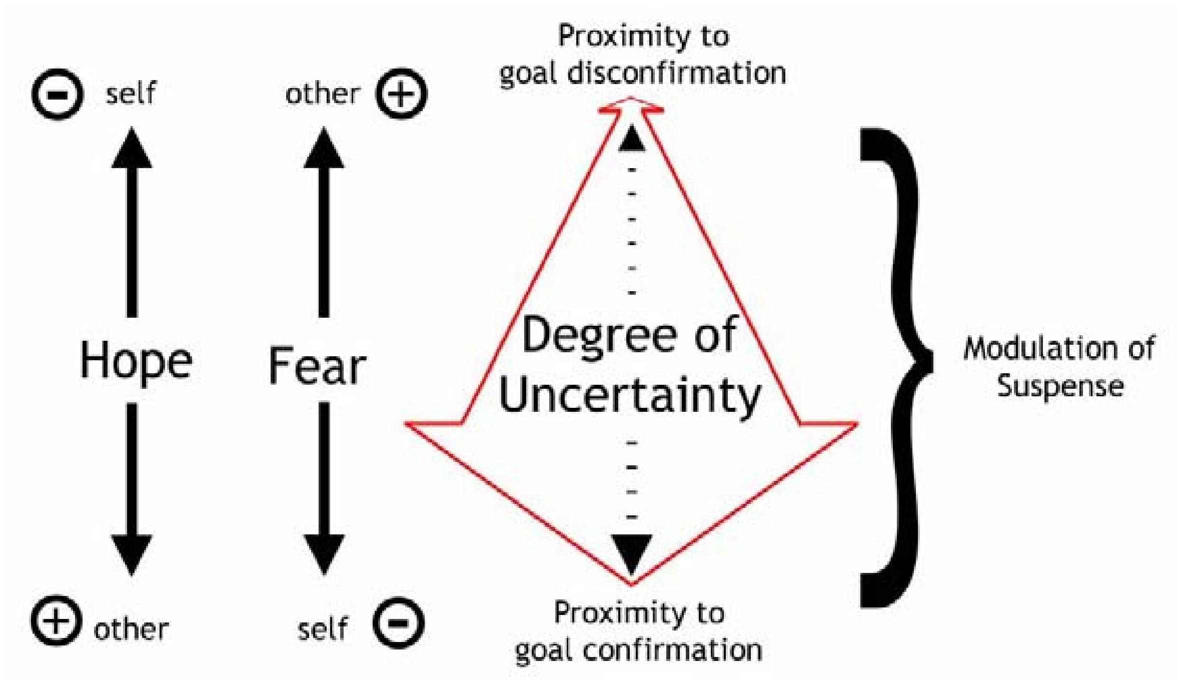


Image 23. *The model of suspense elicitation in games: Concerning goal confirmation, the hope for self is the fear for other (opponent) players, as degree of uncertainty about the outcome decreases.Suspense is modulated on the axis which visualises the degree of uncertainty towards goal confirmation or disconfirmation. Hope and fear are subordinate to this axis, i.e. as uncertainty concerning goal confirmation reaches towards zero, hope for self raches otwards maximum, and fear towards minmum.In case of goal disconfirmation starting to seem more probable, the process goes vice versa: fear peaks and hope fades.In either case, there is no more suspense as the goal is either confirmed or disconfirmed. The emotion of suspense is modulated through game states that achieve a dynamic similar to the model.*

Suspense elicitation through studying and designing Game State Scenarios

In Appendix F, results for analysing the eliciting conditions for suspense as a part of the 100+ Games Project are presented. This is still work in progress, yet tentative results confirm the prevalence of suspense, and its constituents of hope, fear, and uncertainty, as fundamental emotions in gaming encounters: Their embodiments seem to be found throughout the 100+ games.

CHAPTER 19: Method for Analysing Game Rhetoric

Game rhetoric is about the means that game systems communicate their goals and means, and success related to them, to players. This communication is by definition persuasive, as games try to use coercive measures to keep players playing. Across the universe of games, game rhetoric takes different material, visual, aural, and tangible forms. In terms of multimodal discourse (Kress & van Leuuwen, 2001), game rhetoric takes advantage of different semiotic resources and modes. Different games address different player modalities: perception, touch, hearing, and so on. Thus they also link to player abilities.

The method at hand is qualitative in nature, yet it is based on a systematic categorization of the five types of rhetoric that were established in chapter 13, based on an analysis of a number of games, and the overall theories established concerning game system behaviour. In the following, the method is briefly summarised with a case example of a digital game **Dying in Darfur**, a game of particular interest for studying game rhetoric, as it thematises a complex subject about a humanitarian crisis.

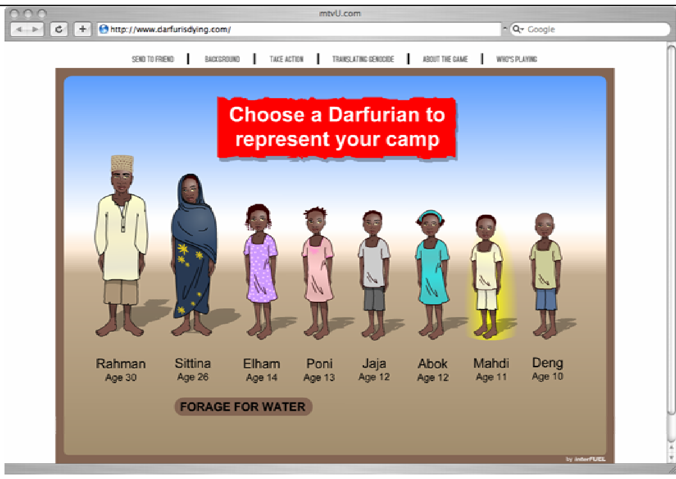
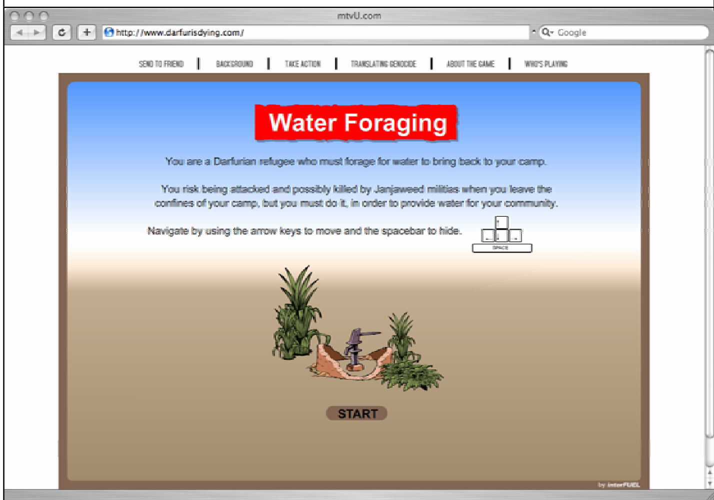
Six types of Game Rhetoric

The six types of game rhetoric are defined at the end of chapter 13 are briefly summarised here:

- Gratification rhetoric
- Motivation rhetoric
- Goal rhetoric
- Means rhetoric
- Feedback rhetoric: Valence rhetoric or Goal resolution rhetoric
- Outcome rhetoric: End rhetoric or Victory rhetoric

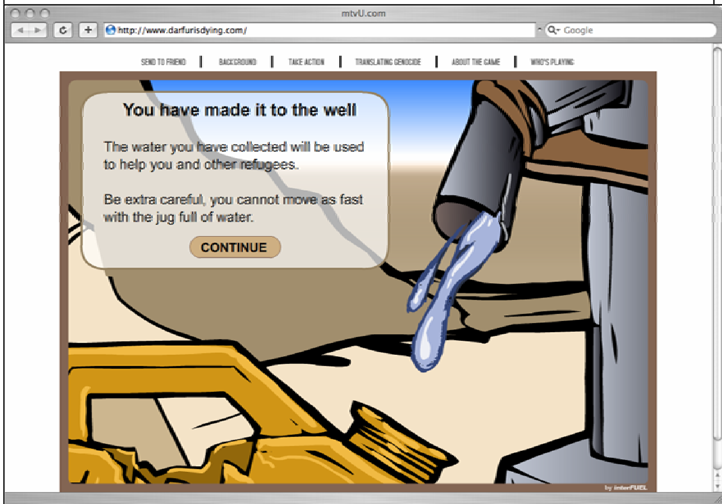
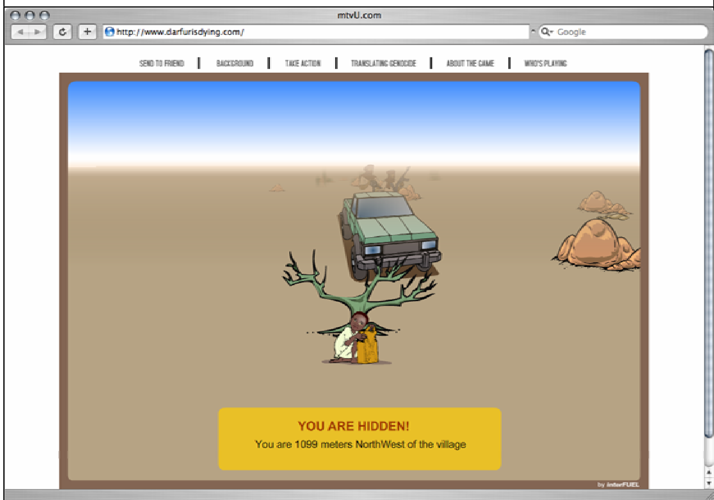
Case Study: Dying in Darfur

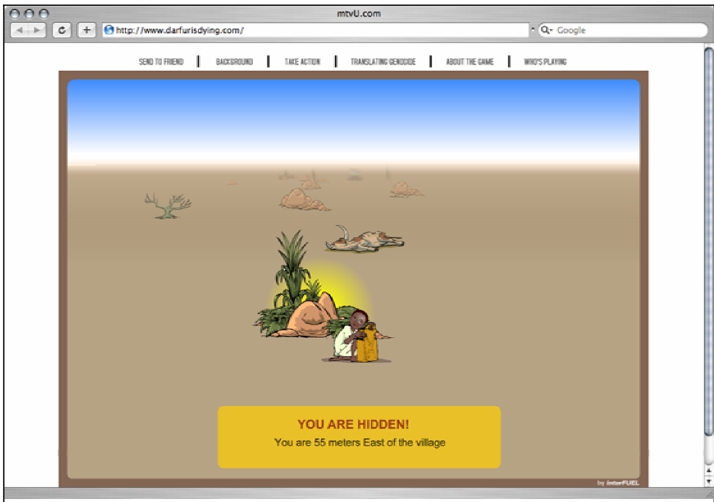
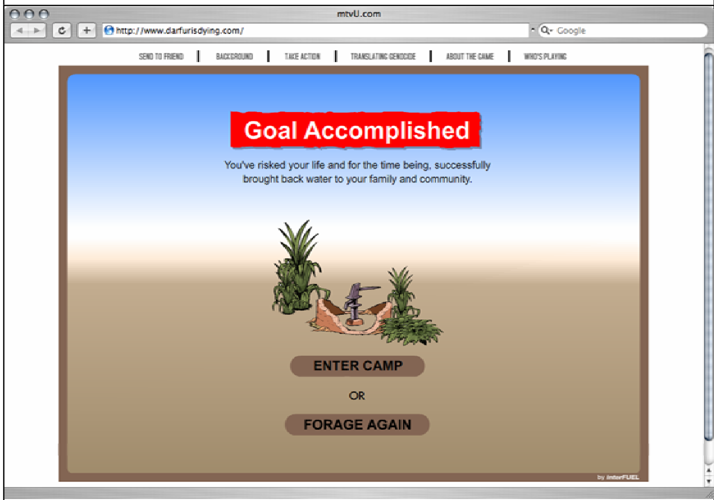
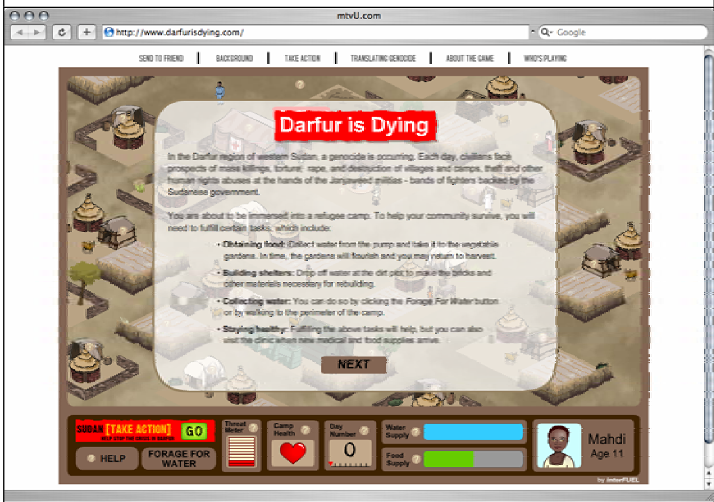
The following analysis illustrates when and how the five types of game rhetoric are employed in a game. The case example Dying in Darfur is interesting, because its gratification rhetoric is not about 'fun', but about learning about a humanitarian crisis. This could be pointed out as one of the definitions of so-called serious games, i.e. their theme and consequent rhetoric is not about fun but about persuasion as response-shaping and response-changing processes.

<table>
<tr><th>Illustration</th><th>Type of game rhetoric and its instance</th></tr>
<tr><td></td><td>Motivation rhetoric through role assignment.</td></tr>
<tr><td></td><td>Goal rhetoric for Water Foraging

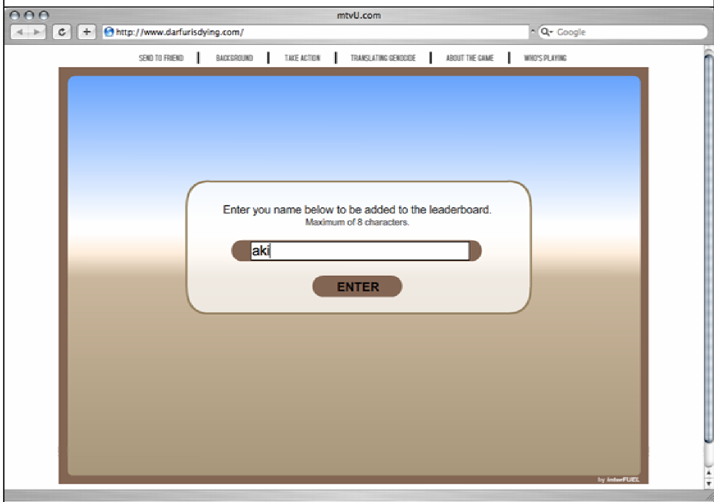
Means rhetoric: interface (keyboard) instructions</td></tr>
</table>

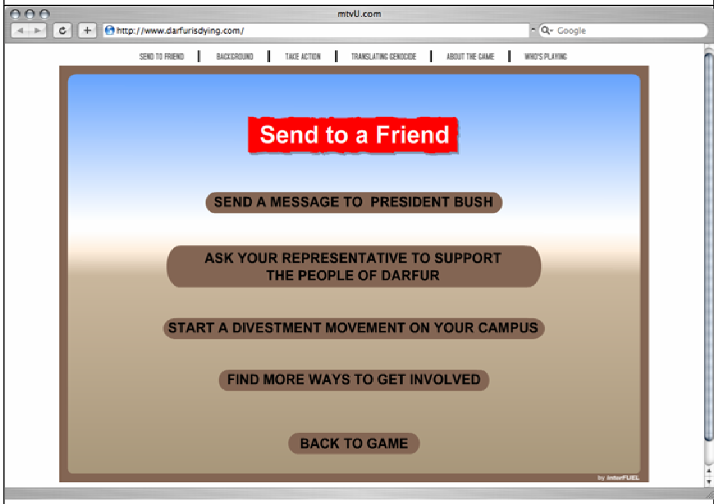
<table>
<tr><td></td><td>Means rhetoric: ‘Press “space” to hide

Feedback rhetoric: ‘You are 3000 meters from the well’</td></tr>
<tr><td>
</td><td>Feedback rhetoric as Goal resolution rhetoric: ‘You have made it ot the well!’</td></tr>
<tr><td>
</td><td>Feedback rhetoric as positive valence: ‘You are hidden!’</td></tr>
</table>

<table>
<tr><td>
</td><td>Feedback rhetoric: ‘You are 55 meters eats of the Village.’</td></tr>
<tr><td>
</td><td>Goal Resolution rhetoric: ‘Goal accomplished’</td></tr>
<tr><td>
</td><td>Motivation rhetoric: ‘Darfur is Dying’</td></tr>
</table>

	Goal rhetoric: 'Start your experience'
	Feedback rhetoric, Means rhetoric
	Feedback rhetoric, Means rhetoric in the Speech Bubble: 'New Medical Supplies have arrived. You can seek medical attention by visiting the clinic now.'

<table>
<tr>
<td></td>
<td>Valence rhetoric, negative: ‘Warning of imminent attack’</td>
</tr>
<tr>
<td></td>
<td>Feedback rhetoric, End rhetoric: ‘The camp has been attacked by a Janjaweed militia.’</td>
</tr>
<tr>
<td></td>
<td>Outcome rhetoric: end rhetoric as possibility to enter name into leaderboard</td>
</tr>
</table>

<table>
<tr>
<td>
</td>
<td>Outcome rhetoric: end rhetoric ‘You kept the camp safe for 1 days’ (negative valence)</td>
</tr>
<tr>
<td>
</td>
<td>Gratification rhetoric: ‘Find more ways to get involved’, etc.</td>
</tr>
</table>

Summary: Harvesting Figures of Game Rhetoric

I believe that systematic study of game rhetoric with the method introduced enables harvesting a library of game rhetoric figures, in the same manner as with the library of game mechanics (see chapter 12 and Appendix B) or collections of game design patterns (Björk & Holopainen 2005). This task was left out of the scope of *Games without Frontiers*, but it is my aim to embark on the study in the future.

CHAPTER 20: Conclusions – Beginnings for Game Design Research and Theory

The previous six chapters essentially conclude the central findings of the thesis. It set out to prove that the world of games can be analysed through a unified set of concepts, and the concepts harnessed into practice in the analysis methods, and the 100+ Games Project aims to testify that the thesis holds. Still, some compact summaries are in order.

Understanding games as systems

Structurally, games are made out of parts that interact. This structure can be conceptualised as a system, and the parts I have conceptualised as nine different elements. Their relationships have been discussed as rules, more specifically rule procedures, and the concept of embodiment has been introduced as the relation of rules and elements. The three-fold distinction to self (me as a player), other (you as a player), and system (the game design as agent) has strived to articulate the fundamental motivation and parties of interaction in games, in a general level. The concept of game state has been elaborated as both a formal, i.e. logical, and informal, i.e. experiential, concept in order to enable methods with which make detailed, close analyses of games and players' behaviours.

Understanding game play as emotional experience

Emotionally, games are made out of events, agents, and objects in a metaphoric world. I have argued for the nature of goals, and striving towards them in larger than life contexts, as privileged forms of rules which are fundamental to the motivation and enjoyment of players. These behavioural phenomena have been discussed through theories of mood management, selective exposure, emotion, pleasure, and pretence, in particular. In addition, I have taken advantage of categorizations of emotions in order to develop a theory of player experience, i.e. a detailed understanding of the phases and reactions that players go through when playing a game. This has also entailed discussions of aesthetic experiences, and the performative and communicative nature of games. The first has been explored through the various domains of human abilities, and the latter through the material basis of games as media, i.e. through different semiotic materials with which games and their modes of address can be designed. In the process, the possibilities and constraints of different game media – from wood to paper and onwards to computer technology – have been highlighted, with emphasis on their consequences for the emotional experience of players.

Mindmap of conclusions: All rules lead to players

I opened the thesis with a mindmap which illustrated how my thinking has developed in the process of producing the work at hand. I will close with another, which summarises key areas of focus and concepts of the study.

In the following image, players as an object of theory has been placed at the center of this 'solar system' of ludological concepts. This has been a deliberate choice in order to emphasize the overall agenda of emotion-centred game analysis and design.

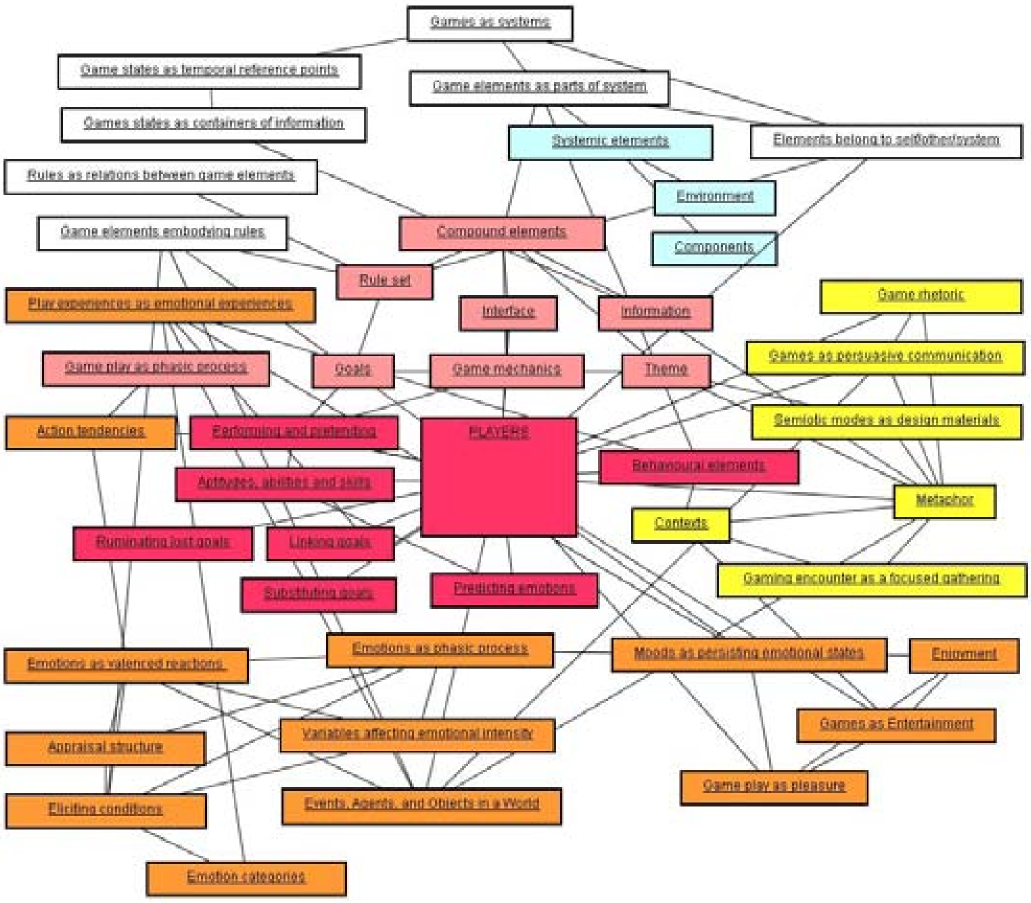


Image 24. *Mindmap of the key concepts and results for theories of game studies and design.*

Even though everything is connected to everything else in this web of association, the colour codings are meant to help the reader to identify the clusters of concepts most closely related to each other. The colourings also roughly mark specific parts and chapters of the work.

Methods and vocabulary for Game Design Research

I have tried, when possible, to go beyond pure descriptiveness of the phenomena summarised above by adapting concepts, and findings from empirical research in the disciplines of cognitive science and psychology. In addition, the 100+ games project has aimed at empirical validation, even if it is – thus far – a project of an individual theorist, with his schemas, idiosyncrasies, tastes, dispositions, and other traits; aptitudes as well as shortcomings.

Nevertheless, these choices in the research process as a creative process end up suggesting both a canon and a methodology of how game studies, or its particular application as *research into game designs* as objects of study, can and should be pursued in a multi-disciplinary context. Furthermore, I have strived to produce practical applications of the lengthy theoretical discussions in order to complement the theoretical emphasis and propel game studies forward through a unifying theory. Yet, the final result is not meant to be dogmatic – rather, it is meant to be generative, accessible and helpful.

In conclusion, *Games without Frontiers* is a toolbox of applied ludology. It is meant to provide systematic methods for practice-orientated game studies and design curricula. My aim has been to illustrate that methods such as these are able to explain the inner workings of both games and their players.

The work documented here is meant to continue with implementations of the method as online tools and databases. Their function is a design function, as my aim is to use the tools to facilitate a community of game design students.

Methods and vocabulary for Game Design

The consequences for *game design theory* I consider substantial as well: with the tools and vocabulary, I hope to see students, practitioners, and theorists of game design being able to discuss design premises and solutions; design successes and flaws, and in less ambiguous ways, as they relate their findings to same concepts and conceptual frameworks. The emotion categories, the variables affecting emotional intensity, the model of suspense, the psychology of goals, the six types of game rhetoric I see all as frameworks with which identify, analyse, create, and test features of game designs.

In this sense as well, at least for the author, the end of *Games without Frontiers* signals the beginning of work – communication, debate, application, production – in the field game analysis and design.

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Appendix A: 100+ Game Elements

COMPONENTS			ENVIRONMENT	INFORMATION	THEME	INTERFACE	PLAYERS	CONTEXT	
Self	Others	System							Game
Activator, Points	n/a	Tokens	3D virtual space	Music, Environment & component attributes	Music	Gamepad	Single	Console games	**Frequency**
Airplane	n/a	n/a	3D virtual space	Environment & component attributes	Travel	Joystick & keyboard	Single	Computer simulation	**MS Flight Simulator**
Alphabets, points	n/a	Points	2D virtual space	Environment & component attributes	Literature	Mouse	Single	Computer games	**Bonnie's Bookstore**
Ammo, Points	Ammo, Points	Clay targets	Physical space	Component attributes	Hunting	Shotgun	Multi	Sports	**Skeet**
Arrows, Points	Arrows, Points	Mice, Cats	2D virtual space	Environment & component attributes	Cartoon	Gamepad	Single/Multi	Console games	**Chu-Chu Rocket**
Ball	Ball	n/a	Physical space	Environment & component attributes	Contest	Direct (Body, bat)	Multi	Outdoor games	**Croquet**
Ball	Ball	n/a	Physical space	Distance measures	Contest	Direct (Hands)	Multi	Outdoor games	**Petanque**
Ball	n/a	n/a	Physical object	Environment & component attributes	Travel	Direct (Hands)	Single	Puzzles	**Labyrinth Wooden Maze**
Ball, points	Ball, points	Pins	Physical space	Environment & component attributes	Contest	Direct (Full body)	Multi	Sports	**Bowling**
Ball, Self	Ball, Self	Ball	Physical space	Team score, time	Contest	Direct (Body, feet)	Multi	Sports	**Soccer**
Ball, Self	Ball, Self	Ball	Physical space	Team score, time, fouls	Contest	Direct (Body, hands)	Multi	Sports	**Basketball**
Blocks	Blocks	Blocks	Physical object	Environment & component attributes	Physics	Direct (Hands)	Multi	Puzzles	**Yenga**
Blocks, Points	n/a	Blocks	2D virtual space	Component attributes	Abstract	Keyboard	Single	Puzzles	**Tetris**
Boats, diamonds, tokens	Boats, diamonds, tokens	Diamonds, rapid plates	2D board	Environment & component attributes	Treasure hunt	Direct (Hands)	Multi	Board games	**Niagara**
Briefcase, money	n/a	Briefcases, money	Setup	Component attributes	Wealth, chance	Direct (Hands) & Verbal expression	Single	Game shows	**Deal or No Deal**
Bubbles, Points	Bubbles, Points	Points, bubbles	2D virtual space	Environment & component attributes	Cartoon	Gamepad	Single/Multi	Console games	**Puzzle Bobble**
Cards	Cards	Cards	Setup	Component attributes, Points	Cartoon	Direct (Hands)	Multi	Card games	**Manga Manga!**
Cards	n/a	Cards	Setup	Component attributes	Abstract	Mouse	Single	Card games	**Solitaire (Windows)**
Cards, Chips	Cards, Chips	Cards, Chips	Setup	Component attributes	Abstract	Direct (Hands)	Multi	Card games	**Black Jack**
Cards, Money	Cards, Money	Cards	Setup	Component attributes	Wealth	Verbal expression / gestures	Multi	Card games	**Texas Hold'em Poker**
Cards, points	Cards, points	Cards	Setup	Component attributes	Abstract	Direct (Hands) & Verbal expression	Multi	Card games	**Uno**
Cards, Points	Cards, Points	Cards	Setup	Component attributes	Abstract	Direct (Hands)	Multi	Card games	**Rummy games: Gin, Canasta**
Cards, Points	Cards, Points	Cards	Setup	Component attributes	Abstract	Direct (Hands)	Multi	Card games	**Bridge (Contract Bridge)**
Cards, points	Cards, points	Cards, points	2D board	Environment & component attributes	Treasure hunt	Direct (Hands)	Two	Card games	**Lost Cities**
Cards, tokens	Cards, tokens	Cards	2D board	Component & Environment attributes	Abstract	Direct (Hands)	Multi	Card games	**Cribbage**
Cards, tokens, points	Cards, tokens, points	Cards, time	2D board	Illustrations, Component attributes	Drawing	Pen & paper	Multi	Visual puzzles	**Pictionary**
Cards, tokens, points	Cards, tokens,points	Cards, time	2D board	Words	Verbal communication	Verbal expression	Multi	Verbal puzzles	**Alias**
Cards, Train cars, Points	Cards, Train cars, Points	Cards	2D board	Component & Environment attributes	Travel	Direct (Hands)	Multi	Board games	**Ticket to Ride**
Character	Character	n/a	Setup	Component attributes	Crime	Verbal expression & gestures	Multi	Parlour games	**Werewolf / Mafia**
Character	n/a	Characters	2D virtual space	Environment & component attributes	Nature	Mouse	Single	Computer games	**Flow**
Character, Bombs, Points	Character, Bombs, Points	n/a	2D virtual space	Environment & component attributes	Cartoon	Gamepad	Single/Multi	Console games	**Bomberman**
Character, cards, tokens	Character, cards, tokens	Cards, tokens	2D boards	Component & Environment attributes	Fantasy	Direct (Hands)	Multi	Popular Fiction	**Lord of the Rings: Boardgame**
Character, currency, equipment, clothes	Character, currency, equipment, clothes	Character, currency, equipment, clothes	3D virtual space	Environment & component attributes	Pets	Stylus, voice	Single/Multi	Computer simulation	**Nintendogs**
Character, currency, equipment, clothes	Character, currency, equipment, clothes	Characters, equipment, clothes	3D virtual space	Component & Environment attributes	Society, Cartoon	Gamepad	Single/Multi	Console games	**Animal Crossing**
Character, currency, equipment, clothes	n/a	Character, currency, equipment, clothes	3D virtual space	Component & Environment attributes	Society	Mouse & keyboard	Single	Computer simulation	**The Sims**
Character, equipment, clothes	Character, equipment, clothes	Character, equipment, clothes	3D virtual space	Component attributes	Winter sports	Gamepad	Single/Multi	Console games	**SSX**
Character, information	Character, information	Dice	Verbal description	Component attributes	Fantasy, Sci-fi, etc.	Verbal expression	Multi	Popular Fiction	**Vampire the Masquerade (Table**
Character, Points	Character, Points	Bananas	3D virtual space	Environment & component attributes	Cartoon	Gamepad	Single/Multi	Console games	**Super Monkey Ball**
Character, points	Character, points	Character, points	2D virtual space	Component attributes, distance measures	Athletics	Joystick	Single/Multi	Arcade	**Track & Field**
Character, Points	Character, Points	n/a	Physical space	Component attributes	War (Sci-Fi)	Mobile phone	Multi	Outdoor games	**Botfighters**
Character, Points	n/a	Characters	3D virtual space	Environment & component attributes	Sci-Fi	Gamepad	Single	Console games	**Rez**
Character, Points	n/a	Characters, pills, fruit	2D virtual space	Component & Environment attributes	Cartoon	Joystick	Single	Arcade	**Pac-Man**
Character, points, tools	n/a	Characters	2D virtual space	Environment & component attributes	Dining	Mouse	Single	Computer games	**Diner Dash**
Character, weapons	Character, weapons	Character, weapons	3D virtual space	Component attributes	Martial arts	Gamepad, Joystick	Single/Multi	Arcade, Console games	**Tekken 4**
Character, Weapons	n/a	Character, Weapons	3D virtual space	Environment & component attributes	Crime	Mouse & keyboard	Single	Computer games	**Max Payne**
Character, weapons, currency, tools, information	Character, weapons, currency, tools, information	Character, weapons, currency, tools, information	3D virtual space	Environment & component attributes	Fantasy	Mouse & keyboard	Multi	Computer games	**World of Warcraft (MMORPGs)**
Character, weapons, currency, tools, information	n/a	Character, weapons, currency, tools, information	2D virtual space	Environment & component attributes	Sci-Fi	Mouse & keyboard	Single	Computer games	**FallOut**
Character, weapons, currency, tools, information	n/a	Character, weapons, currency, tools, information	3D virtual space	Environment & component attributes	Crime	Gamepad	Single	Computer games	**Grand Theft Auto III**
Character, Weapons, Health, Armor, Ammo	n/a	Characters	3D virtual space	Component attributes	Horror	Mouse & keyboard	Single	Computer games	**Doom**
Character, weapons, tools	Character, weapons, tools	Character, weapons, tools	3D virtual space	Environment & component attributes	War (Sci-Fi)	Gamepad	Single/Multi	Computer games	**Halo**
Character, weapons, tools	Characters, weapons, tools	Characters, weapons, tools	3D virtual space	Component attributes	Fantasy	Gamepad	Single	Console games	**Legend of Zelda: Ocarina of Tim**
Character, weapons, tools	n/a	Characters, weapons, tools	3D virtual space	Environment & component attributes	Horror	Gamepad	Single	Console games	**Silent Hill**
Character, weapons, tools, information	n/a	Character, weapons, tools, information	Verbal description	Character, component & environment attributes	Fantasy	Keyboard	Single	Computer games	**Zork**
Character, weapons, tools, information	n/a	Character, weapons, tools, information	3D virtual space	Character, component & environment attributes	Fantasy	Mouse & keyboard	Single	Computer games	**Final Fantasy VII**
Character, weapons, tools, information	n/a	Character, weapons, tools, information	3D virtual space	Environment & component attributes	Sci-Fi	Mouse & keyboard	Single	Computer games	**Half-life**
Character, weapons, tools, information	n/a	Characters, weapons, tools, information	3D virtual space	Character, component & environment attributes	Fantasy	Mouse	Single	Computer games	**Myst**
Character, weapons, tools, information	n/a	Characters, weapons, tools, information	3D virtual space	Character, component & environment attributes	Fantasy	Gamepad	Single	Console games	**ICO**
Character, vehicle, weapons	Character, vehicle, weapons	Character, vehicle, weapons	3D virtual space	Environment & component attributes	Contest	Gamepad	Single/Multi	Console games	**Mario Kart**
Characters	Characters	Characters	Setup	Component attributes	Fantasy	Direct (Hands)	Two	Popular Fiction	**Magic the Gathering**
Characters	Characters	Characters	Setup	Component attributes	Cartoon	Direct (Hands)	Two	Card games	**Pokemon**
Characters, currency, points	Characters, currency, points	Points	Setup	Component attributes	Sports	Pen & paper / Mouse	Multi	Sports	**Fantasy leagues**

Chips	Chips	Chips	2D board	Component attributes, Draw results, odds	Wealth, chance	Direct (Hands)	Single/Multi	Casino	**Roulette**
Cities, ammo, points	n/a	Missiles	2D virtual space	Environment & component attributes	War	Joystick	Single	Console games	**Missile Command**
Cubes	n/a	n/a	Physical object	Component attributes	Abstract	Direct (Hands)	Single	Visual puzzles	**Rubik's Cube**
Cue, balls	Cue, balls	Balls	2D board	Component attributes: balls	Contest	Cue	Two	Parlour games	**Billiards**
Darts, points	Darts, points	Points	Physical space	Environment & component attributes	Contest	Direct (Hands)	Multi	Parlour games	**Darts**
Dominoes	Dominoes	n/a	Setup	Component attributes	Abstract	Direct (Hands)	Multi	Puzzles	**Dominoes**
Figurine	Figurine	Dice	2D board	Component & Environment attributes	Contest	Direct (Hands)	Multi	Board games	**Snakes & Ladders**
Figurine	Figurine	n/a	2D board	Environment attributes: Distance measures	Sci-Fi	Verbal expression	Multi	Puzzles	**Ricochet Robot**
Figurine, money, cards, tokens	Figurine, money, cards, tokens	Dice, cards, money, tokens	2D board	Environment & component attributes	Urban real estate	Direct (Hands)	Multi	Board games	**Monopoly**
Figurines	Figurines	n/a	2D board	Component & Environment attributes	War	Direct (Hands)	Two	Board games	**Chess**
Figurines, cards	Figurines, cards	Dice	2D board	Component & Environment attributes	Geopolitics	Direct (Hands)	Multi	Board games	**Risk**
Frog totem, Balls, Points	n/a	Balls	2D virtual space	Environment & component attributes	Abstract	Mouse	Single	Computer games	**Zuma**
Loop, butterflies, points	n/a	Butterflies	2D virtual space	Environment & component attributes	Hunting	Mouse	Single	Computer games	**Loop**
Money	n/a	Money	Setup	Component attributes	Trivia, wealth	Verbal expression	Single	Quizzes	**Who Wants to be a Millionaire**
Numbers	n/a	n/a	Grid	Environment & component attributes	Abstract	Pen & paper	Single	Puzzles	**Sudoku**
Numbers, money	Numbers, money	Numbers, money	Grid	Environment & component attributes	Wealth, chance	Direct (Hands), Verbal expression	Single/Multi	Lottery	**Bingo**
Numbers, Money	Numbers, Money	Numbers, Money	Setup	Component attributes: Draw values, odds	Wealth, chance	Pen & paper	Single/Multi	Lottery	**Lotto**
Paddle, points	n/a	Bricks, pellets	2D virtual space	Environment & component attributes	Abstract	Paddles	Single	Arcade	**Breakout**
Paddle, Points	Paddle, Points	Ball	2D virtual space	Component attributes	Sports	Paddles	Two	Arcade	**Pong**
Paintings, currency	Paintings, currency	Paintings, currency	Setup	Component attributes	Arts	Direct (Hands)	Multi	Card games	**Modern Art**
Pieces	n/a	n/a	Physical object	Environment & component attributes	Travel	Direct (Hands)	Single	Visual puzzles	**Rush Hour**
Pieces	n/a	n/a	Physical object	Component attributes	Abstract	Direct (Hands)	Single	Visual puzzles	**14/15 Puzzle**
Pieces	n/a	Pieces	Setup	Component attributes i.e. Number left	Various	Direct (Hands)	Single/Multi	Visual puzzles	**Jigsaw puzzles**
Points	n/a	Jewels	2D virtual space	Environment & component attributes	Abstract	Mouse	Single	Visual puzzles	**Bejeweled**
Puck, Self	Puck, Self	Puck	Physical space	Team score, time	Contest	Direct (Body, Stick)	Multi	Sports	**Ice Hockey**
Resources	n/a	Resources	2D virtual space	Component & Environment attributes	Society	Mouse & keyboard	Single	Computer games	**Civilization**
Resources	n/a	Resources	2D virtual space	Environment & component attributes	Urban planning	Mouse & keyboard	Single	Computer simulation	**SimCity**
Rock/paper/scissors	Rock/paper/scissors	n/a	Setup	Component attributes	Contest	Direct (Hands)	Two	Parlour games	**Rock Paper Scissors**
Self	Self	n/a	Physical space	Component attribute: Tag	Contest	Direct (Body, hands)	Multi	Outdoor	**Tag**
Self	Self	n/a	Physical space	Distance measure	Contest	Rope	Multi	Outdoor games	**Tug of War**
Self	Self	n/a	Physical space	Environment attributes	Contest	Direct (Full body)	Multi	Parlour games	**Twister**
Self	Self	n/a	Physical space	Environment attributes	Contest	Direct (Full body)	Multi	Outdoor games	**Hopscotch**
Self, Chair	Self, Chair	Chairs, music	Physical space	Component attributes	Music	Direct (Full body)	Multi	Parlour games	**Musical Chairs**
Self, points	Self, points	Arrow symbols	Physical space & 2D virtual space	Component attributes	Dance, music	Dancemat, Feet	Single/Multi	Arcade	**Dance Dance Revolution**
Self, Points	Self, Points	n/a	Physical space	Component attributes, time	Contest	Direct (Full Body)	Two	Sports	**Boxing**
Self, points	Self, points	Points	Physical space	Points	Contest	Direct (Full Body)	Multi	Sports	**Figure Skating**
Self, points	Self, points	Points	Setup	Component attributes	Music	Microphone	Single/Multi	Karaoke	**Singstar**
Self, time	Self, time	Time	Physical space	Environment & component attributes	Contest	Direct (Full body)	Multi	Sports	**Hundred meter sprint**
Snake, Points	n/a	Food	2D virtual space	Environment & component attributes	Abstract	Mobile phone	Single	Computer games	**Snake**
Spaceship, points	n/a	Asteroids, Ufo	2D virtual space	Component attributes	Space travel	Joystick	Single	Arcade	**Asteroids**
Spaceship, points, ammo	n/a	Bricks, pellets	2D virtual space	Environment & component attributes	Sci-Fi	Paddles	Single	Arcade	**Arkanoid**
Spaceship, points, lives	n/a	Spaceships	2D virtual space	Component attributes	War (Sci-Fi)	Joystick	Single	Arcade	**Space Invaders**
Stones	Stones	n/a	2D board	Component & Environment attributes	Abstract	Direct (Hands)	Two	Board games	**Go**
Stones	Stones	Stones	2D board	Environment & component attributes	Abstract	Direct (Hands)	Two	Board games	**Mancala**
Symbols	Symbols	n/a	Grid	Grid space attributes	Abstract	Pen & Paper	Two	Pen & paper	**Tic-Tac-Toe**
Symbols / Sums	n/a	Money	Physical object	Environment & component attributes	Wealth, chance	Direct (Hands)	Single	Lottery	**Scratch ticket**
Tiles, figurines, points	Tiles, figurines, points	Tiles	2D board	Component & Environment attributes	Medieval colonies	Direct (Hands)	Multi	Board games	**Carcassonne**
Token(s)	Token(s)	n/a	2D board	Environment & component attributes	Nature	Direct (Hands)	Two	Board games	**Fox & Geese**
Tokens	Tokens	n/a	Setup	Component attributes	Abstract	Direct (Hands)	Multi	Puzzles	**Da Vinci Code**
Tokens	Tokens	n/a	2D board	Environment & component attributes	Abstract	Direct (Hands)	Two	Board games	**Hex**
Tokens	Tokens	n/a	Physical object	Environment & component attributes	Abstract	Direct (Hands)	Two	Visual puzzles	**Connect-4**
Tokens	Tokens	n/a	2D board	Environment & component attributes	Abstract	Direct (Hands)	Two	Board games	**Draughts / Checkers**
Tokens	Tokens	n/a	Physical object	Environment & component attributes	Abstract	Direct (Hands)	Two	Puzzles	**Mastermind**
Tokens	Tokens	Tokens	2D board	Answers, token distribution	Trivia	Verbal expression	Multi	Quizzes	**Trivial Pursuit**
Tokens, Points	Tokens, Points	Dice	2D board	Environment & component attributes	Abstract	Direct (Hands)	Two	Board games	**Backgammon**
Tokens, Points	Tokens, Points	Tokens	2D board	Component & Environment attributes	Words	Direct (Hands)	Multi	Verbal puzzles	**Scrabble**
Tokens/coins	n/a	Tokens/coins	Physical object	Component attributes, Draw results, odds	Wealth, chance	Handle/buttons, hands	Single	Casino	**Slot machine**
Weapon	Weapon	n/a	Physical space	Team score, time	War	Direct (Full Body)	Multi	Outdoors	**Paintball**
Vehicle, Points	n/a	Vehicles	2D virtual space	Environment & component attributes	Conquest	Joystick	Single	Arcade	**Qix**
Vehicles, troops	Vehicles, troops	Resources	2D virtual space	Environment & component attributes	War (Sci-Fi)	Mouse & keyboard	Single/Multi	Computer games	**Starcraft**

Appendix B: Library of Game Mechanics

The library is meant to be used as a design and analysis tool: in identifying mechanics from a game under analysis, or in trying to design mechanics for specific kind of player experiences where the aim is, e.g., to support certain moods and emotions. An earlier version of the library was integrated into the GameGame case study as the game's components (see chapter 21 for details).

Game Mechanics vs. Design Patterns

Those familiar with the 'design pattern' method (see Kreimeier 2002 & Kreimeier, Holopainen & Björk 2005) may wonder what is the difference between game mechanics and design patterns. Design patterns are tools for describing, analyzing, comparing, and creating games. Although there are many similarities in approach throughout this work and theirs, the difference with game mechanics is essentially a difference in point of view and scope. Whereas in the design patterns thinking games are analysed with the purpose of detecting patterns within the game dynamics, and formalising them in order to create tools for designing certain kind of gameplay (i.e. dynamics), analysing mechanics focuses on detecting specific combinations of game elements and the combinations' consequences during game dynamics. In this light, rock-paper-scissors is a design pattern that provides a designer with a triangular method for comparing components or their attributes. In the context of mechanics, rock-paper-scissors is not as such available to the players, i.e. it can not be operated via a mechanics directly, and therefore it is a ruleset procedure governing a 'choosing' mechanic, and its consequences.

In conclusion: game mechanics present particular means in a particular game that bring to realisation the implementation of a particular design pattern. For example: By having to choose between rock, scissors and paper, the player deploys a choosing mechanic, and therefore the rock-scissors-paper pattern is realised. In identical fashion, taking a turn is an implementation of 'turn-based action' pattern, but the available means to play the game within that turn constitute the game's set of game mechanics. This illustrates mechanics' direct dependence on rules: particular mechanics always contains rules, and therefore they can operate as an implementation of a design pattern. This does not make studying and introducing generic mechanics types and categories irrelevant, but vice versa, it can help in applying design patterns to a game under development. So we see that overall the methods are not that different, but they employ different (not necessarily contesting) structural framework as their basis (see Björk & Holopainen 2005 for comparison), and proceed on a different pursuit of knowledge: the design patterns approach is a design-orientated problem-solving method, whereas the mechanics approach introduced here is analysis-orientated – with design consequences if one so desires. I believe the methods can complement each other in actual practices of game studies and design, and that is why I have adapted the patterns for the purposes of my theory in a number of instances.

Categories of Game mechanics

The mechanics library consists of six categories: component, environment, theme, interface, physical, and player mechanics. The categories relate to a specific game element that is at the heart of the category. In addition, mechanics which require specific physical effort are separated into their own subgroup.

The categories are generic in the same way as genres are. Just as many games combine genres and subgenres across their frontiers, in many games there also exist combinations of mechanics, and across the categories. Therefore the library is not exhaustive, yet I argue that quite a number of mechanics can be recognized either as particular tokens of a certain mechanics class, or as combinations of two or more classes.

Mechanics library cards

The mechanics classes are presented in the following alphabetically with descriptions that include:

- the mechanic title
- its category
- definition of the use and function of the mechanic
- examples from games that have employed the mechanic
- possible additional notes, such as common submechanics.

Mechanic: Accelerating / Decelerating

Definition: The players are allowed to change the speed of the game element (often component-of-self) they are manoeuvring.

Examples: Mario Kart, SSX.

Notes: Often a submechanic to **Manoeuvring**.

Mechanic: Aiming & Shooting

Definition: Taking an aim towards a target and trying to hit it with a a component (ball, dart, ammunition, etc.).

Examples: Throwing darts, kicking a football, shooting bubbles in Puzzle Bobble, shooting with firearms in Halo.

Mechanic: Allocating

Definition: Allocating component(s) in possession as quantifiable resource.

Examples: Upping the ante in Poker, allocating resources to building hotels in Monopoly.

Mechanic: Arranging

Definition: Arranging the order, assembly, or location of game elements, typically components, into sets.

Examples: Arranging jewels of Bejeweled into sequences of three, combining Tetris blocks, arranging a Magic the Gathering deck.

Mechanic: Attacking / Defending

Definition: Attacking opponent component(s) or defending one's own from them.

Examples: Shooting in Max Payne, fighting in the Tekken series or Halo. Taking cover in Gears of War.

Notes: Various submechanics (techniques, actions) are possible for combat, such as shielding actions as a defending mechanic.

Mechanic: Bidding

Definition: Making an offer on a game component or an area of game environment which is possessed by the game system or another player.

Examples: Bidding for paintings in Modern Art the card game.

Mechanic: Browsing

Definition: Browsing or moving through possible choices or instances of game elements. Only exists as a submechanic (to, e.g., choosing or manoeuvring).

Examples: Browsing inventory in various digital games, manoeuvring around the grid looking for diamond cofigurations in Bejeweled.

Mechanic: Building

Definition: Assembling constructions to the game environment, often with the help of components and patterns that emerge from components' combinations.

Examples: Building a city in SimCity, interior design in The Sims, building channels in board game Ta Yu.

Notes: Combination of **Placing** and **Arranging**.

Mechanic: Buying / Selling

Definition: Buying or selling component, environment location, or information from or to the game system or another player.

Examples: Buying a real estate in Monopoly, buying accessories in Nintendogs, buying furniture in The Sims.

Mechanic: Catching

Definition: Catching a game component, thus gaining possession of it, or returning it to play. Often leads to a **Controlling** mechanic.

Examples: Catching a baseball or a basketball, hitting the ball back to play in Breakout.

Mechanic: Choosing

Definition: The player is presented with making a choice between a number of options.

Examples: Playing Rock-Paper-Scissors, choosing weapons and items for a mission in Tom Clancy's Rainbow Six series, choosing a player role if there are different ones available (e.g, character classes and abilities in role-playing games, etc.).

Mechanic: Composing

Definition: The players are afforded means to create images and sounds.

Examples: Sound effects in Rez, 'Viewtiful' mechanics in Viewtiful Joe, drawing in Pictionary.

Mechanic: Conquering

Definition: Conquering a game environment, thus gaining possession of it.

Examples: Conquering a planet via exploration of space in Galactic Civilizations, stealing possession of ball in soccer/basketball/football

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Mechanic: Contracting

Definition: A contract by two or more players is made through an agreement that is acknowledged by the game system. I.e. informal cooperation is formalised into a mechanic that makes the contract known to the game system.

Examples: Assembling a team in sports games, becoming the Shogun player's samurai in the card game Honor of the Samurai.

Mechanic: Controlling

Definition: Keeping possession of a component and/or handling/controlling it.

Examples: Keeping possession of the ball and dribbling with it in basketball or football, playing Croquet, keeping possession of the baton in a relay race in athletics, etc.

Mechanic: Conversing

Definition: Players are able to enter into dialogue with game system or other players, and this dialogue has formal consequences to the game state (unlike casual table-talk).

Examples: Engagin into conversation with non-player characters, chatting in MMORPGS etc.

Mechanic: Discarding

Definition: Discarding a component or using one to displace another.

Examples: Discarding cards in a card game such as Gin Rummy or Uno, displacing opponent's token in Checkers.

Mechanic: Enclosing

Definition: Enclosing part of the game environment and/or components in order to gain its control.

Examples: Enclosing an area in Qix, completing a castle in Carcassonne, Catching butterflies in Loop.

Mechanic: Expressing

Definition: Expressing oneself verbally with the means that the game system and technology affords.

Examples: Verbally performing a character in a table-top/live action RPG, or expressing oneself by written language in MMORPGS, explaining a word in Alias, singing in Singstar etc.

Mechanic: Herding

Definition: Means to control indirectly a component's movement in the game environment and guide it to a certain location.

Examples: Herding cattle in Sheep or Harvest Moon, encouraging Yorda character in Ico to jump etc.

Notes: The indirect nature of herding means that in some cases its effect is achieved by another mechanic, and there is no particular herding mechanic (in the fashion that there is in Ico). This is the case in Sheep where the sheep components behave in relation to the shepherd’s movement, i.e. the manoeuvring mechanic with which the player controls her character takes the function of herding.

Mechanic: Information-seeking

Definition: Gathering information or making inquiries about surroundings, challenges, or other players.

Examples: Scanning in Metroid Prime, asking the Game Master hints/elaborations in a table-top RPG, establishing diplomatic relations in Civilization, contacting team-mates.

Mechanic: Jumping

Definition: The players are allowed to jump in order to gain best possible result.

Examples: Basketball, pole vault, rope jumping.

Notes: In e.g. Basketball and Volleyball, this mechanic makes using the **Aiming & shooting** mechanic much more effective.

Mechanic: Manoeuvring

Definition: Manoeuvring a game element in a game environment, including possible chances to jump, fly, etc.

Examples: Steering component(s)-of-self or character(s)-of-self through game environments, e.g. downhill in Alpine skiing or along a road in Cycling, or in digital environments, such as the game environments of Pac-Man, Super Mario Bros, SSX, Super Monkey Ball etc.

Notes: Often this mechanic has **Speeding / Braking** submechanics, or the design of the game environment forces/enables change in speed (the labyrinth in Labyrinth Wooden Maze game, the levels in Super Monkey Ball, mountains in snowboarding games etc.).

Mechanic: Motion

Definition: The players' bodily stances (postures, gestures, etc.) produce input to the game system or benefit in dealing with its challenges.

Examples: Playing Eyetoy games, jumping rope, dancing games, playing Twister.

Mechanic: Moving

Definition: Players are allowed to physically move within the game environment.

Examples: Football, Basketball, Paintball, most outdoor games.

Note: Often combines with **Sprinting / Slowing** submechanic.

Mechanic: Operating

Definition: Taking an action where an object belonging to the game system (a component, environment) is operated. Usually the operation executes a game system procedure that produces information or change in other game element.

Examples: Rolling a dice, spinning a wheel of fortune, opening a door in an adventure game.

Mechanic: Performing

Definition: Display of physical skill or physical performance, including simulations of physical performance, which is evaluated by the game system.

Examples: Gymnastics, Ice skating, Snowboarding, LARPs, digital skateboarding and snowboarding games.

Mechanic: Placing

Definition: Placing a component or a marker on the game environment.

Examples: Laying tiles in Carcassonne, playing Dominoes, jigsaw puzzles, drawing a symbol in Tic-Tac-Toe, placing directions in Chu-chu Rocket or waypoint markers in strategy games.

Notes: In the case of games like Carcassonne or Ta Yu, this mechanic is used in constructing the game environment, i.e. components transform into another game elements via game dynamics.

Mechanic: Point-to-point Movement

Definition: Moving a component or oneself in sequences or turns, e.g., from point to point.

Examples: Moving a piece in Chess or Monopoly, moving troops in Starcraft or Heroes of Might & Magic etc.

Notes: Possibly includes a submechanic that gives the direction or length of movement. It could also be an operation mechanic in the form of a die roll.

Mechanic: Powering

Definition: Players are allowed to use maximum physical power to gain the best result.

Examples: Boxing, Wrestling, Weightlifting, Athletics

Notes: Strength is a submechanic in many games that use **Attacking / Defending** mechanics as their primary player actions, emphasizing their effect.

Mechanic: Sequencing

Definition: Producing input to the game system in a sequence within a time limit or specific tempo.

Examples: Playing Hopscotch, matching the note sequences in Frequency or beats in Dance Dance Revolution, 'Quick-Timer Events' in Shenmue or Dragon's Lair.

Mechanic: Sprinting / Slowing

Definition: The players are allowed change their speed of movement in order to gain best possible result.

Examples: 100 meter sprint, Swimming, Cycling, Athletics, getting rid of chasing opponents and creating better scoring situations in Football/Basketball/Soccer.

Notes: Often a submechanic for **Moving**. For instance, the mechanics of Long jump in athletics is a combination of **Moving** + **Sprinting** + **Jumping** + **Strength** + **Motion** mechanics.

Mechanic: Storytelling

Definition: Telling or creating a story with the means that the game system affords (and within its rules).

Examples: Continuing a story in Once Upon a Time card game, pitching in GameGame.

Mechanic: Submitting

Definition: Submitting information (in a format specified in the rules) for evaluation by the game system or other players.

Examples: Answering a question in a trivia game or a quiz, submitting a code in Mastermind.

Mechanic: Substituting

Definition: Substituting an element in possession, and in play, with another.

Examples: Substituting a player into pitch in football or basketball, Sports fantasy leagues, substituting a superhero on a mission with another in Marvel Heroes.

Mechanic: Taking

Definition: Taking a game element or a number of them (components, environment locations, information) into possession.

Examples: Drawing a card from the deck or another player in various card games, picking up a fish tile in Pingwin, looting items into an inventory in digital role-playing games, collecting items in Animal Crossing, collecting cards by purchasing sets in Magic The Gathering or Pokemon, accumulating cards into hand in Uno, building a game design in GameGame.

Notes: Often combined with **Choosing** game mechanic.

Mechanic: Trading

Definition: Exchanging a game element (component, environment-of-self, or information) with another player or the game system.

Examples: Changing cards in Poker, or in card game Go Fish.

Mechanic: Transforming

Definition: The players are given an ability to transform the flow of time or space to better their chances of overcoming a challenge, or to find out an outcome of their actions.

Examples: 'Bullet time' in Max Payne, speed boost in Mario Kart etc., speeding up time in digital strategy games, such as The Sims.

Mechanic: Upgrading / Downgrading

Definition: Changing the attributes of a game element, including player role or player contract.

Examples: Transforming a pawn into a queen in Chess, gaining a level in character ability in RPGs.

Mechanic: Voting

Definition: Casting a vote for one candidate out of a set of game elements.

Examples: Naming and voting a resident for eviction in Big Brother television show, voting for the suspect in Werewolf/Mafia parlour game.

Notes: Combination of **Choosing** and **Submitting**.

Appendix C: 100+ Game Mechanics and Goals

GOAL TYPE	CORE MECHANICS			GOAL TYPE		LOCAL MECHANICS	GOAL TYPE		GAME TYPE
Global (highest order goal)	Primary mechanics		Submechanic	Glocal (goal of core mechanics)		Modifier mechanic	Local	**Game**	
Accumulate	Aiming & Shooting	&	Browsing	Discard				**Zuma**	Digital
Accumulate	Aiming & Shooting	&	Browsing	Discard				**Puzzle Bobble**	Digital
Outplay	Aiming & Shooting	&	Manoeuvring	Eliminate	&	Attacking / Defending	Evade	**Space Invaders**	Digital
Traverse	Aiming & Shooting	&	Manoeuvring	Eliminate	&	Taking	Gain Competence	**Halo**	Digital
Traverse	Aiming & shooting	&	Manoeuvring	Eliminate	&	Taking	Gain Competence	**Doom**	Digital
Traverse	Aiming & Shooting	&	Manoeuvring	Eliminate	&	Transforming	Eliminate	**Max Payne**	Digital
Survive	Aiming & Shooting	&	Manoeuvring	Eliminate				**Asteroids**	Digital
Traverse	Aiming & Shooting	&	Manoeuvring	Survive				**Rez**	Digital
Discard	Aiming & Shooting		Motion	Connection		Powering	Connection	**Billiards**	Sports
Accumulate	Aiming & Shooting	&	Motion	Contact				**Bowling**	Sports
Accumulate	Aiming & Shooting	&	Motion	Delivery				**Darts**	Parlour/outdoors
Accumulate	Aiming & Shooting	&	Motion	Eliminate				**Skeet**	Sports
Delivery	Aiming & shooting	&	Moving	Traverse	&	Aiming & shooting	Eliminate	**Croquet**	Parlour/outdoors
Overcome	Aiming & Shooting	&	Moving	Eliminate	&	Catching	Capture	**Paintball**	Parlour/outdoors
Outplay	Aiming & shooting			Eliminate				**Missile Command**	Digital
Accumulate	Aiming & Shooting			Delivery				**Petanque**	Parlour/outdoors
Nurture	Allocating	&	Building	Accomplish	&	Buying / Selling	Gain Ownership	**Civilization**	Digital
Accumulate	Allocating	&	Operating	Match	&	Choosing	Configuration	**Slot machine**	Games of chance
Accumulate	Allocating	&	Placing	Match				**Roulette**	Games of chance
Delivery	Allocating	&	Point-to-point Movement	Traverse	&	Taking	Capture	**Niagara**	Board/Card
Accumulate	Allocating	&	Substituting	Match	&	Buying / Selling	Gain Ownership	**Fantasy leagues**	Other
Accumulate	Allocating	&	Taking	Capture				**Mancala**	Board/Card
Accumulate	Allocating			Outplay	&	Taking	Configuration	**Texas Hold'em Poker**	Board/Card
Accumulate	Arranging		Browsing	Alignment				**Bejeweled, Zoo Keeper**	Digital
Overcome	Arranging	&	Choosing	Outplay	&	Attacking / Defending	Eliminate	**Pokemon**	Board/Card
Overcome	Arranging	&	Choosing	Outplay	&	Attacking / Defending	Eliminate	**Magic the Gathering**	Board/Card
Accumulate	Arranging	&	Choosing	Configuration	&	Taking	Gain Ownership	**Lost Cities**	Board/Card
Accomplish	Arranging	&	Choosing	Configuration				**Rush Hour**	Puzzle
Accomplish	Arranging	&	Operating	Nurture	&	Buying / Selling	Gain Ownership	**The Sims**	Digital
Accumulate	Arranging	&	Placing	Alignment	&	Submitting	Configuration	**Scrabble**	Board/Card
Accumulate	Arranging	&	Point-to-point Movement	Configuration	&	Submitting	Match	**Bonnie's Bookstore**	Digital
Match	Arranging	&	Submitting	Configuration				**Mastermind**	Board/Card
Outplay	Arranging	&	Discarding	Match	&	Taking	Gain Ownership	**Uno**	Board/Card
Accomplish	Arranging			Configuration				**Rubik's Cube**	Puzzle
Accomplish	Arranging			Configuration				**14/15 Puzzle**	Puzzle
Accomplish	Arranging			Configuration				**Sudoku**	Puzzle
Overcome	Attacking / Defending	&	Manoeuvring	Eliminate				**Tekken series**	Digital
Overcome	Attacking / Defending	&	Moving	Evade	&	Powering	Eliminate	**Boxing**	Sports
Accumulate	Bidding	&	Allocating	Collection	&	Buying / Selling	Gain Ownership	**Modern Art**	Board/Card
Accumulate	Bidding	&	Choosing	Match				**Ricochet Robot**	Board/Card
Accumulate	Bidding	&	Submitting	Collection	&	Contracting	Overcome	**Bridge (Contract Bridge)**	Board/Card
Accomplish	Building	&	Information-seeking	Gain Information	&	Allocating	Gain Ownership	**SimCity**	Digital
Overcome	Building	&	Point-to-point Movement	Gain Competence	&	Attacking / Defending	Eliminate	**Starcraft**	Digital
Accumulate	Choosing	&	Allocating	Outplay				**Black Jack**	Board/Card
Accumulate	Choosing	&	Arranging	Collection	&	Submitting	Match	**Cribbage**	Board/Card
Outplay	Choosing	&	Catching	Discard				**Yenga**	Board/Card
Match	Choosing	&	Information-seeking	Gain Information	&	Placing	Configuration	**Da Vinci Code**	Board/Card
Gain Ownership	Choosing	&	Submitting	Discard	&	Buying / Selling	Gain Ownership	**Deal or No Deal**	Other
Gain Ownership	Choosing	&	Submitting	Match	&	Contracting	Gain Information	**Who Wants to be a Millionaire**	Other
Accumulate	Choosing	&	Submitting	Match				**Lotto**	Games of chance
Discard	Choosing	&	Submitting	Match				**Manga Manga!**	Board/Card
Overcome	Controlling	&	Motion	Capture	&	Aiming & Shooting	Delivery	**Soccer**	Sports
Overcome	Controlling	&	Motion	Capture	&	Aiming & Shooting	Delivery	**Basketball**	Sports
Overcome	Controlling	&	Motion	Capture	&	Aiming & Shooting	Delivery	**Ice Hockey**	Sports
Accomplish	Controlling	&	Performing	Nurture	&	Buying / Selling	Gain Ownership	**Nintendogs**	Digital
Accomplish	Conversing	&	Manoeuvring	Nurture	&	Buying / Selling	Gain Ownership	**Animal Crossing**	Digital
Accumulate	Enclosing	&	Manoeuvring	Enclosure	&	Accelerating / Decelerating	Evade	**Qix**	Digital

GOAL TYPE	CORE MECHANICS			GOAL TYPE		LOCAL MECHANICS	GOAL TYPE		GAME TYPE
Global (highest order goal)	Primary mechanics		Submechanic	Glocal (goal of core mechanics)		Modifier mechanic	Local	Game	
Traverse	Expressing	&	Storytelling	Exploration	&	Information-seeking	Gain Information	**Tabletop RPGs**	Parlour/outdoors
Traverse	Expressing	&	Submitting	Match	&	Point-to-point Movement	Race	**Pictionary**	Board/Card
Traverse	Expressing	&	Submitting	Match	&	Point-to-point Movement	Race	**Alias**	Board/Card
Accomplish	Expressing			Outplay				**Singstar**	Digital
Race	Manoeuvring	&	Accelerating / Decelerating	Traverse	&	Performing	Accomplish	**SSX**	Digital
Traverse	Manoeuvring	&	Aiming & Shooting	Survive	&	Taking	Gain Competence	**Half-life**	Digital
Traverse	Manoeuvring	&	Aiming & Shooting	Eliminate	&	Taking	Gain Ownership	**Grand Theft Auto III**	Digital
Accomplish	Manoeuvring	&	Attacking / Defending	Traverse	&	Buying / Selling	Gain Ownership	**World of Warcraft (MMORPGs)**	Digital
Traverse	Manoeuvring	&	Attacking / Defending	Eliminate	&	Conversing	Gain Information	**Final Fantasy series**	Digital
Accomplish	Manoeuvring	&	Attacking / Defending	Traverse	&	Conversing	Gain Information	**FallOut**	Digital
Traverse	Manoeuvring	&	Attacking / Defending	Eliminate	&	Conversing	Gain Information	**Legend of Zelda series**	Digital
Traverse	Manoeuvring	&	Attacking / Defending	Eliminate	&	Herding	Guard	**ICO**	Digital
Survive	Manoeuvring	&	Browsing	Connection				**Snake**	Digital
Eliminate	Manoeuvring	&	Catching	Eliminate	&	Aiming & shooting	Eliminate	**Arkanoid**	Digital
Traverse	Manoeuvring	&	Catching	Connection				**Flow**	Digital
Eliminate	Manoeuvring	&	Catching	Eliminate				**Breakout**	Digital
Overcome	Manoeuvring	&	Catching	Outplay				**Pong**	Digital
Accomplish	Manoeuvring	&	Operating	Traverse	&	Attacking / Defending	Eliminate	**Silent Hill**	Digital
Accomplish	Manoeuvring	&	Operating	Traverse				**MS Flight Simulator**	Digital
Race	Manoeuvring	&	Taking	Traverse	&	Aiming & Shooting	Eliminate	**Mario Kart**	Digital
Accumulate	Manoeuvring	&	Taking	Traverse				**Super Monkey Ball**	Digital
Overcome	Manoeuvring			Race	&	Aiming & shooting	Accomplish	**Track & Field**	Digital
Survive	Manoeuvring			Evade	&	Attacking / Defending	Capture	**Pac-Man**	Digital
Outplay	Motion	&	Conquering	Connection				**Twister**	Parlour/outdoors
Overcome	Motion	&	Information-seeking	Reconnaissance	&	Submitting	Eliminate	**Botfighters**	Digital
Accomplish	Motion	&	Sequencing	Outplay				**Dance Dance Revolution**	Digital
Accomplish	Motion	&	Sequencing	Traverse				**Hopscotch**	Parlour/outdoors
Delivery	Motion	&	Strength	Traverse				**Tug of War**	Parlour/outdoors
Outplay	Motion			Evade	&	Catching	Contact	**Tag**	Parlour/outdoors
Accomplish	Motion			Delivery				**Labyrinth Wooden Maze**	Puzzle
Outplay	Moving	&	Conquering	Capture				**Musical Chairs**	Parlour/outdoors
Accumulate	Operating	&	Point-to-point Movement	Eliminate	&	Attacking / Defending	Gain Ownership	**Risk**	Board/Card
Accumulate	Operating		Submitting	Match				**Scratch ticket**	Games of chance
Accumulate	Performing		Motion	Accomplish	&	Jumping	Accomplish	**Figure Skating**	Sports
Accumulate	Placing	&	Browsing	Match				**Bingo**	Games of chance
Accumulate	Placing		Browsing	Capture				**Chu-Chu Rocket**	Digital
Accumulate	Placing	&	Choosing	Connection	&	Allocating	Capture	**Carcassonne**	Board/Card
Configuration	Placing	&	Choosing	Connection				**Jigsaw puzzles**	Puzzle
Enclosure	Placing	&	Choosing	Capture				**Go**	Board/Card
Discard	Placing	&	Choosing	Connection				**Dominoes**	Board/Card
Accumulate	Placing	&	Choosing	Connection				**Hex**	Board/Card
Outplay	Placing	&	Manoeuvring	Eliminate				**Bomberman**	Digital
Configuration	Placing			Connection				**Tic-Tac-Toe**	Parlour/outdoors
Configuration	Placing			Connection				**Connect-4**	Board/Card
Traverse	Point to point movement	&	Operating	Accomplish	&	Conversing	Gain Information	**Zork**	Digital
Traverse	Point to point movement	&	Operating	Accomplish				**Myst**	Digital
Delivery	Point-to-point Movement	&	Attacking / Defending	Traverse	&	Allocating	Overcome	**Lord of the Rings: Boardgame**	Board/Card
Accomplish	Point-to-point Movement	&	Browsing	Delivery	&	Placing	Match	**Diner Dash**	Digital
Outplay	Point-to-point Movement	&	Discarding	Eliminate				**Fox & Geese**	Board/Card
Outplay	Point-to-point Movement		Controlling	Configuration	&	Placing	Alignment	**Tetris**	Digital
Accumulate	Point-to-point Movement	&	Operating	Capture	&	Allocating	Gain Ownership	**Monopoly**	Board/Card
Accomplish	Point-to-point Movement	&	Operating	Capture	&	Submitting	Match	**Trivial Pursuit**	Board/Card
Delivery	Point-to-point Movement	&	Operating	Delivery				**Backgammon**	Board/Card
Race	Point-to-point Movement	&	Operating	Traverse				**Snakes & Ladders**	Board/Card
Traverse	Point-to-point Movement	&	Submitting	Outplay				**Frequency**	Digital
Overcome	Point-to-point Movement			Capture	&	Conquering	Eliminate	**Chess**	Board/Card
Accumulate	Point-to-point Movement			Capture				**Draughts / Checkers**	Board/Card
Race	Sprinting / Slowing			Traverse				**Hundred meter sprint**	Sports
Outplay	Submitting	&	Choosing	Eliminate				**Rock Paper Scissors**	Parlour/outdoors

APPENDIX D: 100+ Player Abilities

Game	UNCERTAINTY FACTORS	Primary mechanics		Submechanic	UNCERTAINTY FACTORS	Glocal (goal of core mechanics)		Modifier mechanic	UNCERTAINTY FACTORS	Local
Tekken series	Finger Dexterity	Attacking / Defending	&	Manoeuvring	Manual Dexterity	Eliminate				
Halo	Finger Dexterity	Aiming & Shooting	&	Manoeuvring	Spatial Reasoning	Eliminate	&	Taking	Visualization	Gain Competence
Doom	Finger Dexterity	Aiming & shooting	&	Manoeuvring	Spatial Reasoning	Eliminate	&	Taking	Visualization	Gain Competence
Max Payne	Finger Dexterity	Aiming & Shooting	&	Manoeuvring	Spatial Reasoning	Eliminate	&	Transforming	Reaction Time	Eliminate
Snake	Finger Dexterity	Manoeuvring	&	Browsing	Spatial Reasoning	Connection				
Alias	Ideational Fluency	Expressing	&	Submitting	Expressional Fluency	Match	&	Point-to-point Movement	Quantitative Reasoning	Race
Pictionary	Ideational Fluency	Expressing	&	Submitting	Figural Fluency	Match	&	Point-to-point Movement	Quantitative Reasoning	Race
Bonnie's Bookstore	Lexical knowledge	Arranging	&	Point-to-point Movement	Visualization	Configuration	&	Submitting	Spelling ability	Match
Scrabble	Lexical knowledge	Arranging	&	Placing		Alignment	&	Submitting	Spelling ability	Configuration
Billiards	Manual Dexterity	Aiming & Shooting		Motion	Multilimb coordination	Connection		Powering	Static strength	Connection
Darts	Manual Dexterity	Aiming & Shooting	&	Motion	Multilimb coordination	Delivery				
Bowling	Manual Dexterity	Aiming & Shooting	&	Motion	Multilimb coordination	Contact				
Petanque	Manual Dexterity	Aiming & Shooting			Multilimb coordination	Delivery				
Labyrinth Wooden Maze	Manual Dexterity	Motion			Reaction Time	Delivery				
Skeet	Manual Dexterity	Aiming & Shooting	&	Motion	Reaction Time	Eliminate				
Croquet	Manual Dexterity	Aiming & shooting	&	Moving	Spatial Reasoning	Traverse	&	Aiming & shooting	Static strength	Eliminate
Pac-Man	Manual Dexterity	Manoeuvring			Spatial Reasoning	Evade	&	Attacking / Defending	Visualization	Capture
SSX	Manual Dexterity	Manoeuvring	&	Accelerating / Decelerating	Spatial Reasoning	Traverse	&	Performing	Finger Dexterity	Accomplish
Half-life	Manual Dexterity	Manoeuvring	&	Aiming & Shooting	Spatial Reasoning	Survive	&	Taking	Visualization	Gain Competence
Mario Kart	Manual Dexterity	Manoeuvring	&	Taking	Visualization	Traverse	&	Aiming & Shooting	Wrist-finger Speed	Eliminate
Super Monkey Ball	Manual Dexterity	Manoeuvring	&	Taking	Visualization	Traverse				
Track & Field	Manual Dexterity	Manoeuvring				Race	&	Aiming & shooting	Reaction Time	Accomplish
Musical Chairs	Multilimb coordination	Moving	&	Conquering	Choice Reaction Time	Capture				
Twister	Multilimb coordination	Motion	&	Conquering	Gross body Equilibrium	Connection				
Hopscotch	Multilimb coordination	Motion	&	Sequencing	Spatial Reasoning	Traverse				
Tug of War	Multilimb coordination	Motion	&	Strength	Static strength	Traverse				
Figure Skating	Multilimb coordination	Performing	&	Motion	Temporal Tracking	Accomplish	&	Jumping	Gross body Equilibrium	Accomplish
Dance Dance Revolution	Multilimb coordination	Motion	&	Sequencing	Temporal Tracking	Outplay				
Modern Art	Quantitative Reasoning	Bidding	&	Allocating	Induction	Collection	&	Buying / Selling	Quantitative Reasoning	Gain Ownership
Da Vinci Code	Quantitative Reasoning	Choosing	&	Information-seeking	Induction	Gain Information	&	Placing		Configuration
Fox & Geese	Quantitative Reasoning	Point-to-point Movement	&	Discarding	Induction	Eliminate				
Yenga	Quantitative Reasoning	Choosing	&	Catching	Manual Dexterity	Discard				
Lost Cities	Quantitative Reasoning	Arranging	&	Choosing	Quantitative Reasoning	Configuration	&	Taking	Sequential Reasoning	Gain Ownership
Monopoly	Quantitative Reasoning	Point-to-point Movement	&	Operating	Sequential Reasoning	Capture	&	Allocating	Quantitative Reasoning	Gain Ownership
Rummy games: Gin, Canast	Quantitative Reasoning	Taking	&	Collecting	Sequential Reasoning	Match	&	Discarding	Quantitative Reasoning	Gain Ownership
Trivial Pursuit	Quantitative Reasoning	Point-to-point Movement	&	Operating	Sequential Reasoning	Capture	&	Submitting	Meaningful Memory	Match
Chess	Quantitative Reasoning	Point-to-point Movement			Visualization	Capture	&	Conquering	Induction	Eliminate
Mancala	Quantitative Reasoning	Allocating	&	Taking	Visualization	Capture				
Sudoku	Quantitative Reasoning	Arranging			Visualization	Configuration				
Snakes & Ladders	Quantitative Reasoning	Point-to-point Movement	&	Operating	Visualization	Traverse				
Backgammon	Quantitative Reasoning	Point-to-point Movement	&	Operating	Visualization	Delivery				
Slot machine	Quantitative Reasoning	Allocating	&	Operating		Match	&	Choosing		Configuration
Bridge (Contract Bridge)	Quantitative Reasoning	Bidding	&	Submitting		Collection	&	Contracting	Sequential Reasoning	Overcome
Cribbage	Quantitative Reasoning	Choosing	&	Arranging		Collection	&	Submitting	Sequential Reasoning	Match
Texas Hold'em Poker	Quantitative Reasoning	Allocating				Outplay	&	Taking	Sequential Reasoning	Configuration
Black Jack	Quantitative Reasoning	Choosing	&	Allocating		Outplay				
Roulette	Quantitative Reasoning	Allocating	&	Placing		Match				
Ricochet Robot	Quantitative Reasoning	Bidding	&	Choosing		Match				
Scratch ticket	Quantitative Reasoning	Operating		Submitting		Match				
Arkanoid	Reaction Time	Manoeuvring	&	Catching	Spatial Reasoning	Eliminate	&	Aiming & shooting	Wrist-finger Speed	Eliminate
Breakout	Reaction Time	Manoeuvring	&	Catching	Spatial Reasoning	Eliminate				
Pong	Reaction Time	Manoeuvring	&	Catching	Spatial Reasoning	Outplay				
Space Invaders	Reaction Time	Aiming & Shooting	&	Manoeuvring	Wrist-finger Speed	Eliminate	&	Attacking / Defending	Spatial Reasoning	Evade
Missile Command	Reaction Time	Aiming & shooting			Wrist-finger Speed	Eliminate				
Zork	Reading Decoding	Point to point movement	&	Operating	Induction	Accomplish	&	Conversing		Gain Information
Pokemon	Sequential Reasoning	Arranging	&	Choosing	Induction	Outplay	&	Attacking / Defending	Sequential Reasoning	Eliminate
Magic the Gathering	Sequential Reasoning	Arranging	&	Choosing	Induction	Outplay	&	Attacking / Defending	Sequential Reasoning	Eliminate
Fantasy leagues	Sequential Reasoning	Allocating	&	Substituting	Induction	Match	&	Buying / Selling	Quantitative Reasoning	Gain Ownership
Animal Crossing	Sequential Reasoning	Conversing	&	Manoeuvring	Induction	Nurture	&	Buying / Selling	Quantitative Reasoning	Gain Ownership
Civilization	Sequential Reasoning	Allocating	&	Building	Induction	Accomplish	&	Buying / Selling	Quantitative Reasoning	Gain Ownership
The Sims	Sequential Reasoning	Arranging	&	Operating	Induction	Nurture	&	Buying / Selling	Quantitative Reasoning	Gain Ownership
Niagara	Sequential Reasoning	Allocating	&	Point-to-point Movement	Induction	Traverse	&	Taking	Spatial Reasoning	Capture
Mastermind	Sequential Reasoning	Arranging	&	Submitting	Induction	Configuration				
Risk	Sequential Reasoning	Operating	&	Point-to-point Movement	Spatial Reasoning	Eliminate	&	Attacking / Defending	Quantitative Reasoning	Gain Ownership
Loop	Spatial Reasoning	Enclosing	&	Manoeuvring	Manual Dexterity	Capture				
Botfighters	Spatial Reasoning	Motion	&	Information-seeking	Sequential Reasoning	Reconnaissance	&	Submitting		Eliminate
Qix	Spatial Reasoning	Enclosing	&	Manoeuvring	Wrist-finger Speed	Enclosure	&	Accelerating / Decelerating	Choice Reaction Time	Evade
Tetris	Spatial Reasoning	Point-to-point Movement		Controlling	Wrist-finger Speed	Configuration	&	Placing		Alignment
Bomberman	Spatial Reasoning	Placing	&	Manoeuvring	Wrist-finger Speed	Eliminate				
Chu-Chu Rocket	Spatial Reasoning	Placing		Browsing	Wrist-finger Speed	Capture				
Rush Hour	Spatial Reasoning	Arranging	&	Choosing		Configuration				
Ice Hockey	Speed of Limb Movement	Controlling	&	Motion	Gross body Equilibrium	Capture	&	Aiming & Shooting	Multilimb coordination	Delivery
Basketball	Speed of Limb Movement	Controlling	&	Motion	Gross body Equilibrium	Capture	&	Aiming & Shooting	Multilimb coordination	Delivery
Soccer	Speed of Limb Movement	Controlling	&	Motion	Gross body Equilibrium	Capture	&	Aiming & Shooting	Multilimb coordination	Delivery
Boxing	Speed of Limb Movement	Attacking / Defending	&	Moving	Multilimb coordination	Evade	&	Powering	Static strength	Eliminate
Tag	Speed of Limb Movement	Motion				Evade	&	Catching	Multilimb coordination	Contact
Hundred meter sprint	Speed of Limb Movement	Sprinting / Slowing				Traverse				
Go	Visualization	Placing	&	Choosing	Quantitative Reasoning	Capture				
Dominoes	Visualization	Placing	&	Choosing	Quantitative Reasoning	Connection				
Hex	Visualization	Placing	&	Choosing	Quantitative Reasoning	Connection				
Draughts / Checkers	Visualization	Point-to-point Movement			Quantitative Reasoning	Capture				
Bingo	Visualization	Placing	&	Browsing	Reaction Time	Match				
Carcassonne	Visualization	Placing	&	Choosing	Sequential Reasoning	Connection	&	Allocating	Quantitative Reasoning	Capture
Ticket to Ride	Visualization	Taking	&	Arranging	Sequential Reasoning	Collection	&	Placing	Quantitative Reasoning	Gain Ownership
Tic-Tac-Toe	Visualization	Placing			Sequential Reasoning	Connection				
Connect-4	Visualization	Placing			Sequential Reasoning	Connection				
Bejeweled, Zoo Keeper	Visualization	Arranging		Browsing	Spatial Reasoning	Alignment				
Diner Dash	Visualization	Point-to-point Movement	&	Browsing	Wrist-finger Speed	Delivery	&	Placing	Spatial Reasoning	Match
Rubik's Cube	Visualization	Arranging				Configuration				
14/15 Puzzle	Visualization	Arranging				Configuration				
Asteroids	Wrist-finger Speed	Aiming & Shooting	&	Manoeuvring	Spatial Reasoning	Eliminate				
Rez	Wrist-finger Speed	Aiming & Shooting	&	Manoeuvring	Spatial Reasoning	Survive				
Zuma	Wrist-finger Speed	Aiming & Shooting	&	Browsing	Visualization	Discard				

APPENDIX E: Human Cognitive, Psychomotor, and Physical Abilities

The following table summarises the different domains of human abilities as extracted by Carroll (1993, 145–628, and outlined and reviewed by Spearritt 1996, 139–167). The subsequent factors and examples of how to measure them are included as well. (The table is basically a concise reproduction of Spearritt's review without, e.g., the factor codings, and complemented with psychomotor abilities). The two right-most columns will give implications on how the abilities could become concretely evident in games as well: For example, how vocabulary tests could be translated into games about cognitive abilities in the domain of language through goals and game mechanics that embody them – however, we will focus on such extrapolations later.

This appendix presents a documentation of my review of existing categorizations of human cognitive, physical, and psychomotor abilities, and their particular relevance for gaming encounters. As a result, I have produced an interpretation of those abilities that are most relevant to be conceptualised as player abilities. In order to achieve this, I evaluated each factor in each ability domain as either:

- Not applicable (n/a) as an player ability: i.e. the ability does not, in my interpretation have relevance for player abilities.
- Trivial: a cognitive or psychomotor ability which can be found from gaming en-counters as a particular ability that is required from the players, but which can not be developed directly by performing the game mechanics the game allows, i.e. development of the ability is not directly embodied into the game's goals, but it may develop indirectly, as a by-product of playing the game.
- Non-trivial: a cognitive or psychomotor ability which can be found from gaming encounters as a particular ability that is required from the players, and which can be developed by playing the game through performing the game mechanics it allows.

It should be noted that any ability domain and individual factor may, at least in theory, be harnessed into a game design. The analysis presented below should therefore be understood as an overview of the predominant abilities and ability sets that have figured in games throughout history.

Ability domain	**Factor**	**Abilities measured; development or proficiency in**	**Examples of suitable measures**	**As a player ability**	**in a gaming encounter of**	**game element related to**
Language						
	Language development	Spoken native language skills not requiring reading ability	Vocabulary tests	**n/a**		
	Verbal (Printed) language comprehension	Native language development, requiring reading ability	Reading comprehension tests	**trivial**		
	Lexical knowledge	Knowledge of vocabulary	Vocabulary tests	**non-trivial**	**crossword puzzles, Bonnie's Bookstore, Alias**	**alphabets as game components**
	Reading comprehension	Reading comprehension & reasoning	Reading comprehension tests	**trivial**		
	Special Reading comprehension	Comprehension of semantic context	Reading comprehension tests of explicit/implicit meaning	**non-trivial**	**riddles, quizzes**	
	Reading Decoding	Word recognition and decoding	Letter recognition	**non-trivial**	**crossword puzzles, Bonnie's Bookstore, Alias**	**alphabets or words as game components**
	Reading Speed	Speed of reading	Speed of reading tests	**trivial**		**Sentences as game information**
	Cloze ability	"Cloze" reading ability, i.e. ability to fill in blank word spaces in a passage of prose	"Cloze" reading tests	**trivial**		
	Spelling ability	Ability to spell words correctly	Spelling target words, dictation tests	**non-trivial**	**crossword puzzles, Bonnie's Bookstore, Alias**	
	Foreign Language Proficency	Proficency in a foreign language	Reading & listening tests	**trivial**		

Ability domain	Factor	Abilities measured; development or proficiency in	Examples of suitable measures	As a player ability	in a gaming encounter of	game element related to
	Phonetic Coding	Coding of phonetic data into memory	“Hidden” words, see Carroll 1993, 171–3	**n/a**		
	Grammatical Sensitivity	Awareness & knowledge of grammatical features in one’s native language	Matching words’ grammatical roles in individual sentences	**n/a**		
	Foreign Language Aptitude	Aptitude for foreign languages	Language aptitude tests	**trivial**		
	Communication ability	General skills in oral communication	Speaking ability, measures of interactive communication	**non-trivial**	**Alias, Pictionary, Once Upon a Time, Table-top role-playing games**	**game mechanics that afford performative and expressive aspects**
	Listening Ability / Comprehension	Comprehension of passages presented auditorily	Listening comprehension tests	**trivial**		
	Oral Production	Aspects of speaking performance	Speaking tasks	**n/a**		
	Oral Style	Characteristic of language style	Samples of oral language	**non-trivial**	**Role-playing games**	**Character-of-self, i.e. performing in a role**
	Writing Ability	Ability to write coherently	Writing tasks	**non-trivial**	**digital ‘text adventures’**	**text parser as an interface for game mechanics**
Reasoning						
	Sequential Reasoning	Reasoning & drawing conclusions from given conditions or premises, with various kinds of simulus materials	Verbal reasoning	**non-trivial**	**various, e.g. murder mystery games**	

Ability domain	Factor	Abilities measured; development or proficiency in	Examples of suitable measures	As a player ability	in a gaming encounter of	game element related to
	Induction	Deducing rules or other common characteristics underlying a given set of stimulus materials	Letter series, verbal analogies	**non-trivial**	**various, e.g. puzzles in general**	
	Quantitative Reasoning	Reasoning with material based on mathematical properties and relations	Number series, Arithmetical reasoning	**non-trivial**	**various, e.g. Sudoku**	
Memory						
	Memory Span	Recalling series of items after visual or auditory presentation of the series	Repeating sentences	**trivial**		
	Associative Memory	Recalling one part of pair of items when the other pair is presented	Paired associate tests, e.g. First and last names	**non-trivial**	**Memory**	
	Meaningful Memory	Remembering meaningful relationships between stimulus materials	Reproducing substance of a second sentence after being given the first pair of sentences auditorily or visually	**non-trivial**		
	Visual Memory	Memorizing visual images and configurations, e.g. geometric designs	Studying a set of geometric figures for a limited period of time, then recognizing them from a larger set	**non-trivial**		
Visual Perception						
	Visualization	Apprehending and manipulating visual or spatial patterns, often involving rotation in two or three dimensions	Block rotation, paper folding tasks	**non-trivial**	**various, e.g: Tetris, Bejeweled**	

Ability domain	Factor	Abilities measured; development or proficiency in	Examples of suitable measures	As a player ability	in a gaming encounter of	game element related to
	Spatial Reasoning	Speed in manipulating simple visual patterns by transformation, mental rotation or other means	Card rotation	**non-trivial**		
	Closure Speed	Speed in calling up spatial representations in long-term memory when presented with incomplete, disguised or obscured forms of those representations	Concealed words, gestalt completion	**non-trivial**		
	Closure flexibility	Speed of detecting and disembedding a known stimulus array from a more complex array	Hidden figures, copying	**non-trivial**		
	Perceptual Speed	Speed of making correct comparisons of symbols or patterns in a visual field, sometimes with distracting stimuli	Finding as number checking	**non-trivial**		
Auditory Reception						
Hearing / speech threshold factors	Hearing Acuity	Threshold of detecting for tones over the range of audible frequency	Speech audiometry	**n/a**		
	Hearing Acuity (phonemic)	Threshold of detecting for phonemic materials	Speech audiometry	**n/a**		
	Speech Synthesis	Threshold of detecting for speech materials	Speech audiometry	**n/a**		
Speech and sound discrimination factors	Speech Sound Discrimination	Detecting differences between speech sounds		**n/a**		

Ability domain	**Factor**	**Abilities measured; development or profiency in**	**Examples of suitable measures**	**As a player ability**	**in a gaming encounter of**	**game element related to**
Musical sound discriminatio n/judgment factors	General Sound Discriminatio n	Discriminating tones or patterns of tones, given tonal attributes, such as pitch, duration, etc.		**trivial**		
	Sound Frequency Discriminatio n	Discriminating tones in terms of pitch, timbre		**trivial**		
	Sound Intensity/Dur ation Discriminatio n	Discriminating sound intensities		**trivial**		
	Musical sensitivity	Judging which of two musical passages sounds better in terms of tempo, rhythm, or their combination		**trivial**		
Other auditory factors	Resistance to Stimulus Distortion	Understanding speech which has been masked or distorted in some way		**trivial**		
	Temporal Tracking	Counting or rearranging temporal events such as note sequences		**trivial**		
Idea Production						
	Ideational Fluency	Speed in thinking of, or recalling ideas from common experiences in a culture, e.g., “things that are white”	Time, e.g. 4 minutes	**trivial**		
	Naming Facility	Speed in producing, orally or in writing, the names of objects or their attributes such as color, on presentation of the object or its picture		**trivial**		

Ability domain	**Factor**	**Abilities measured; development or profiency in**	**Examples of suitable measures**	**As a player ability**	**in a gaming encounter of**	**game element related to**
	Associational Fluency	Speed of thinking of and writing down responses fitting restricted classes, to a given verbal stimulus	As many synonyms as possible for "good" in 2 minutes	**trivial**		
	Expressional Fluency	Speed in thinking of and writing down phrases/sentences meeting restrictions such as the first letter of the words to be used, or specified words to be used		**trivial**		
	Word Fluency	Speed in thinking of and writing down word with specified alpahabetic, graphemic, or phonemic properties	As many words as possible beginning with con______ in 4 minutes	**trivial**		
	Sensitivity to Problems	Speed and success of thinking of and possibly writing solutions to practical problems	Suggested improvements to the telephone	**non-trivial**	**general problem-solving**	**creative use of game mechanics / game information**
	Originality / Creativity	Speed and success of thinking of and possibly writing down unusual/ original verbal responses	Different uses for a brick, consequences of a hypothetical event	**non-trivial**	**general problem-solving**	**creative use of game mechanics / game information**
	Figural Fluency	Producing variety of simple drawings or sketches in a limited time		**non-trivial**	**Pictionary**	
	Figural Flexibility	Changing mental sets in handling figural / spatial problems within a time limit	Removing matches from a pattern to leave a given number of triangles	**non-trivial**	**general problem-solving**	
Miscella-neous						
	Sensory Ability	Sensitivity to visual, olfactory and tactile/kinesthetic stimuli	Wine tasting	**non-trivial**		

Ability domain	**Factor**	**Abilities measured; development or proficency in**	**Examples of suitable measures**	**As a player ability**	**in a gaming encounter of**	**game element related to**
	Ability to attend	Concentrating on the task at hand; difficult to separate from other cognitive demands		**non-trivial**		
	Cognitive Style	Individual differences in performing cognitive tasks	E.g. reflectiveness vs. impulsivity, degree of susceptibility to distraction	**non-trivial**	**styles of play**	
Physical and psycho-motor						
	Static strength	Lifting, pushing, or pulling a heavy object		**non-trivial**	**Weight lifting**	
	Gross body Equilibrium	Maintaining body in upright position or regaining body balance		**non-trivial**	**Snowboardi ng, etc.**	
	Choice Reaction Time	Selecting and initiating appropriate responses relative to given stimulus where two or more stimuli are possible, and where the appropriate response is selected from two or more alternatives		**non-trivial**	**various**	
	Reaction Time	Speed with which a single motor response can be initiated after the onset of a single stimulus		**non-trivial**	**various: trivia games, digital shooting games, etc.**	
	Speed of Limb Movement	Speed with which discrete movements of the arms and legs can be made		**non-trivial**	**various: sports, Dance Dance Revolution**	

Ability domain	**Factor**	**Abilities measured; development or profiency in**	**Examples of suitable measures**	**As a player ability**	**in a gaming encounter of**	**game element related to**
	Wrist-finger Speed	Speed with which discrete movements of the fingers, hands, and wrists can be made		**non-trivial**	**various: digital games with interfaces**	
	Multilimb coordination	Coordinating movements of two or more limbs		**non-trivial**	**various: sports, Dance Dance Revolution**	
	Finger Dexterity	Making skillful, coordinated movements of the fingers where manipulations of objects may or may not be involved		**non-trivial**	**various: digital games with interfaces**	
	Manual Dexterity	Making skillful, coordinated movements of a hand or a hand together with its arm		**non-trivial**	**various: digital games with interfaces**	

APPENDIX F: Eliciting Conditions through Game Elements

In the table below, each game element from the theory of game elements is analysed according to

- its ownership status (self/other/system)
- a general description of its role in the gaming encounter
- examples of its embodiments in different games
- token examples of potential emotions identified towards the element from the perspective of self (according to the categories of the OCC model, see chapter 10)
- the subsequent emotion type that the token example belongs to
- the local variables affecting its intensity in game-related examples.

Game element & ownership (when applicable)	General description of possible implementation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Systemic elements					
Component-of-self	Something the player owns and/or manipulates	Own hand in Poker, ball in possession in sports team games (basketball, football, etc.), Briefcase in **Deal or no Deal**, cars & weapons in **Grand Theft Auto** series	affection, attraction-to	Attraction (to objects): Liking/Disliking	Degree of appealingness & familiarity: how good the Poker hand is considered to be, how valuable the briefcase is believed to be in Deal or No Deal
Component-of-other	Something another player owns and/or manipulates	Other player's hand in **Poker**, real estate and hotels in **Monopoly**, the ball when possession of opposing team/player in sports games	aversion, dislike / attraction-to	Attraction (to objects): Liking/Disliking	Degree of appealingness & familiarity: how good the Poker hand of the other player is, how considerable a threat are the other player's real estate in Monopoly

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Component-of-system	Something the game systems owns and/or manipulates	**Tetris** blocks, cars in **Grand Theft Auto** series, ball when in possession of neither team in sports games, other briefcases in **Deal or no Deal**, dealer's cards in **Blackjack**	As *objects*: aversion, dislike / affection, attraction-to As *agents*: admiration, appreciation, respect, contempt, thankful, anger, annoyance, irritation	Attraction (to objects): Liking/Disliking Attribution (agents) : Appreciation/Reproach, Gratitude/Anger, Gratification/Remorse	Degree of appealingness & familiarity: the perceived suitability of a new block into the player's plans in light of the game state in Tetris; assessment of the dealer's cards & prospects in light of win condition in Black Jack
Character-of-self	Component-of-self thematized into a character	One's figurine in **Lord of the Rings: the Boardgame**, one's avatar in MMORPGs, Pac-man in **Pac-man**	As *agent:* pride/embarrassment, feeling guilty, self-blame,	Attribution (agents) : Appreciation/Reproach, Gratitude/Anger, Gratification/Remorse Well-being/Attribution compounds (events-agents): Joy/Distress, Loss	Strength of cognitive unit, degree of judged praiseworthiness & role expectation-deviation: how strongly the player identifies with the character, or feels empathy towards it
Character-of-other	Component-of-other thematized into a character	Other players' figurines in board games or avatars in MMORPGs, ghosts in **Pac-man Vs.**	As *agent:* admiration, appreciation, respect, contempt, thankful, anger, annoyance, irritation	Attribution (agents) : Appreciation/Reproach, Gratitude/Anger, Gratification/Remorse	Strength of cognitive unit, degree of judged praiseworthiness & role expectation-deviation: how strongly the player feels empathy/counterempathy towards other players' characters
Character-of-system	Component-of-system thematized into a character	Non-player characters (NPCs) in online games, Ghosts in **Pac-man**, monsters in **Doom**	As *agent:* admiration, appreciation, respect, contempt, thankful, anger, annoyance, irritation	Attribution (agents) : Appreciation/Reproach, Gratitude/Anger, Gratification/Remorse	Strength of cognitive unit, degree of judged praiseworthiness & role expectation-deviation: how strongly the player feels empathy/counterempathy towards characters-of-system

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Environment-of-self	A space or place in the game the player possesses and/or plays in/from	Occupied castle, road, or field in **Carcassonne,** owned real estate in **Monopoly**, goal in football or basket in basketball	As *objects*: affection, attraction-to As *agent:* admiration, appreciation, respect, contempt, thankful, anger, annoyance, irritation	Attraction (to objects): Liking/Disliking Attribution (agents) : Appreciation/Reproach, Gratitude/Anger, Gratification/Remorse	Degree of appealingness & familiarity: affection to environment in possession Strength of cognitive unit, degree of judged praiseworthiness & role expectation-deviation: how strongly the player identifies with the environment in possession
Environment-of-others	A space or place in the game another player possesses and/or plays in/from	Castles, roads, or fields in opponent's poseesion in **Carcassonne**, real estate owned by others in **Monopoly**, goal of opposing team in football, or basket in basketball	aversion, dislike / attraction-to	Attraction (to objects): Liking/Disliking	Degree of appealingness & familiarity: affection or aversion towards environments in others' possession
Environment-of-system	A space or place in the game which is in the possession of the game system, or where components-of-system play from	Unoccupied castles, roads or fields in **Carcassonne**, or real estate in **Monopoly**, game world or level in digital games, e.g. the research compound in **Half-Life** or a 'world' in **Super Mario Bros.**	aversion, dislike / attraction-to	Attraction (to objects): Liking/Disliking	Degree of appealingness & familiarity: affection or aversion towards environments in system possession
Compound elements					
Ruleset	Collection of all the rules of a game	Rulebooks, manuals, help sections	various, depending on possible thematization and how the ruleset is embodied into other elements and system procedures	Attribution (ruleset as agent) : Appreciation/Reproach, Gratitude/Anger	degree of familiary as in understanding rules, degree of praiseworthiness regarding how 'well' the ruleset seems to work

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Ruleset: Goals-of-self	An objective that players have to complete	Protect the King, win a million dollars, score a goal, keep the game going	As *events prospect*: anticipation, excitement, expectancy, hope As *events confirmed*: hopes-realized, satisfaction, fears-confirmed, worst fears realized As *objects*: affection, attracted-to	Prospect-based (events): Hope, Fears-confirmed, Relief, Disappointment Attraction (to objects): Liking/Disliking	Degree of desirability & likelihood; intensity of hope; effort expended in attaining Degree of appealingness & familiarity
Ruleset: Goals-of-other; other as opponent	An objective that other players have to complete	Kill the King, win a million dollars, prevent a goal, stop the game	As *events*: worry, anxiety, scared As *objects*: aversion, dislike	Prospect-based (relevant for self): Fear, Fears-confirmed Attraction (to objects): Liking/Disliking	Degree of undesirability & likelihood; intensity of fear; effort expended in preventing Degree of unappealingness & familiarity
Ruleset: Goals-of-other; other as team-mate	An objective that other players, as fellow players or team-mates have to complete	Provide a correct answer in **Pictionary** or **Alias**, prevent/score a goal	As *events*: delighted-for, happy-for / sorry-for, compassion, pity, sympathy As *objects*: affection	Prospect-based (events): Hope, Fears-confirmed, Relief, Disappointment Fortunes-of-others: Happy-for, Sorry-for, Resentment	Degree of desirability & likelihood; intensity of hope; effort expended in attaining Deservedness/undeservedness, Liking/unliking of other
Ruleset Procedures	Events enacted by the game system (or its proxy) in order to govern rules	Rewarding players with winnings in **Roulette**, etc.; introducing new components in Tetris; calculating Score etc. in sports and various other games; dealing out cards or choices, scripted events in digital games such as **Half-life**	As events: anticipation, excitement, expectancy, hope, anxious, scared, worried	Prospect-based (events): Hope/Fear, Satisfaction/Fears-confirmed, Relief/Disappointment, Shock, Pleasant Surprise, Suspense, Resignation, Hopelessness	degree of desirability/undesirability

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Game mechanics of-self	A means afforded to the player for attaining goal(s)	Placing tiles in **Carcassonne**, betting and substituting cards in Poker, choosing in Deal or No Deal, shooting the ball in basketball/football	As events: anticipation, excitement, expectancy, hope, anxious, scared, worried	Prospect-based (events): Hope/Fear, Satisfaction/Fears-confirmed, Relief/Disappoint ment, Shock, Pleasant Surprise, Suspense, Resignation, Hopelessness	Degree of desirability & likelihood; intensity of hope; effort expended in attaining
Game mechanics of-other (as opponent)	A means afforded to another player for attaining goal(s), possibly different from the means of self	Capturing real estate in **Monopoly,** raising stake in Poker,	As events: delighted-for, happy-for, compassion, pity, sympathy, sorry-for, envy, jealousy, resentment, gloating, Schadenfreude	Fortunes-of-others (events): Happy-for/Sorry-for, Resentment/Gloati ng Prospect-based (events): Hope/Fear, Satisfaction/Fears-confirmed, Relief/Disappoint ment, Shock, Pleasant Surprise, Suspense, Resignation, Hopelessness	
Theme	The subject matter of the game; metaphor for the game as system	Real estate trade in **Monopoly**, murder mystery in **Cluedo**, supernatural horror in the **Silent Hill** series	various, depending on game rhetoric	various, even though the Theme itself can be seen as and object based on its genre or the subject matter itself: Liking/Disliking	Degree of appealingness/una ppealingness & familiarity: how appealing/unappea ling/familair/unfa miliar the genre or the subject matter is
Interface	Means to access game elements indirectly	Pinball cabins, slot machines, dance mats, guitar controller in **Guitar Hero**, racing wheel controllers	As objects: attracted-to/aversion	Attraction (to objects: liking/disliking	Degree of appealingness/una ppealingness & familiarity: how appealing/unappea ling using the interface is
Information-of-self	Information the player possesses about ruleset & other game elements, possibly different from information-of-other	Poker hand, i.e. component attribute values	As objects: attracted-to/aversion	Attraction (to objects: liking/disliking	Degree of appealingness/una ppealingness & familiarity: how useful or valuable the information is

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Information-of-other	Information other players possess about ruleset & other game elements, possibly different from information-of-self	The opponent's Poker hand, i.e. attribute values of components-of-other; answer to the question in **Trivial Pursuit**	As objects: attracted-to/aversion, curiosity	Attraction (to objects: liking/disliking	Degree of appealingness/unappealingness & familiarity: how useful or valuable the information is, i.e. how desirable it is to gain for oneself (prospect)
Information-of-system	Information the game system possesses about ruleset & other game elements, possibly different to information-of-self and information-of-other	Answers to questions in game shows, **Trivial Pursuit**, etc.; clues etc. in digital adventure games, information in possession of the game master in tabletop role-playing games	As objects: attracted-to/aversion, curiosity	Attraction (to objects: liking/disliking	Degree of appealingness/unappealingness & familiarity: how useful or valuable the information is, i.e. how desirable it is to gain for oneself (prospect)
Behavioural elements					
Players - self	Player him/herself	One's own performance and choices taken in a game	As agent: Pride/self-reproach, gratification/remorse	Well-being /Attribution compounds	Degree of judged praiseworthiness, strenght of cognitive unit, role expectation-deviation: how one judges one's performance, to what degree does one identify with the game's goals and other elements, does one deviate from one's expectations regarding the gaming encounter
Players - other	Other players	Others' performances and choices taken in a game	As agent: Appreciation/Reproach, Anger	Well-being /Attribution compounds	Degree of judged praiseworthiness, role expectation-deviation: how one judges others' performances, do they play according to their abilities and roles

Game element & ownership (when applicable)	General description of possible implemen-tation	Examples from games	Token examples of emotions	Emotion type	Local variables affecting intensity in game examples
Players - system	System as a player, e.g., a computer opponent	The behaviour of the system	As agent: Appreciation/Reproach, Anger As object: attracted-to/aversion	Well-being /Attribution compounds Attraction	Degree of judged praiseworthiness, role expectation-deviation: how one judges the behaviour of the game system, does it deviate from what one expects Degree of (un)appealingness & familiarity
Contexts-of-self	The personal context of the player him/herself	One's history with the game, one's familiriaty with the game, relationships with the other players	As event: anticipation, excitement, expectancy, hope, anxious, scared, worried	Prospect-based (events): Hope/Fear, Satisfaction/Fears-confirmed, Relief/Disappointment, Shock, Pleasant Surprise, Suspense, Resignation, Hopelessness	Degree of desirability & likelihood; intensity of hope; effort expended in attaining
Contexts-of-other	The personal contexts of other players	The others' history with the game, their familiriaty with the game, the others' relationship to oneself	As event: anticipation, excitement, expectancy, hope, anxious, scared, worried As agent: Appreciation/Reproach, Anger	Fortunes-of-others (events): Happy-for/Sorry-for, Resentment/Gloating Well-being /Attribution compounds	Degree of desirability for oneself / other, deservedness, liking of others; degree of undesirability for other / oneself, undeservedness, unliking of other
Contexts-of-system	The contexts of the gaming encounter	The place and time where the gaming encounter takes place, and various other possible factors that the context brings to the gaming encounter	jubilant, pleasantly surprised, happy, euphoric, delighted / depressed, dissatisfied, grief, regret, upset, unhappy	Well-being /Attribution compounds	degree of desirability / degree of undesirability

Appendix G: 100+ Embodiments of Suspense

Game	SUSPENSE: Hope	SUSPENSE: Fear	SUSPENSE: Uncertainty	Game element(s) EMBODIED INTO	CULMINATION POINTS
	What the player hopes to achieve?	What the player fears that will happen?	What are the factors that make hope and fear uncertain?	Identification of the game elements that take part in constituting the eliciting conditions	Is there a specific game state scenario in the game that introduces a crisis goal, or intensifies emotions?
Final Fantasy VII	Win battles, explore environment, get new abilities	Lose battles	Enemies, imperfect information about environment, narrative turns	Environment, Characters-of-system	Battles, narrative sequences
Billiards	Hit a ball and pot it	Mishitting a ball, shooting the white ball into a pocket	Performance-of-self, game state as the geometrical relations between the balls		One ball remaining on the table
Boxing	Punch the opponent, evade his punches	Being hit	Performance-of-self, performance-of-other	Self & Opponent	Final round, KO count
Backgammon	Remove her tokens from the board by moving the across it	Own tokens being blocked, opponent being able to remove her tokens	Performance-of-self, performance-of-other, dice rolls	Dice, environment, performance-of-other	Chances to remove tokens
Fantasy leagues	Points through athlete's real-world performances	The athletes perform badly	Performance-of-athletes, performance-of-self as choices made	Components-of-self (atheletes)	The sports events where athletes perform
Connect-4	A connected line of 4 tokens	Her lines being blocked, opponent creating line	Performance-of-self, performance-of-other	Components-of-self	Lines of three emerging
Scrabble	Combine her letters into words on the board	Unable to combine letters into words, opponents words	Performance-of-self, performance-of-others	Components-of-self, components-of-system on the board, environment	Combining a word, waiting for one's turn to act
Fox & Geese	As fox, eat geese; as geese, trap the fox	Lose one's tokens (fox/cheese)	Performance-of-self, performance-of-other	Components-of-self, components-of-other, environment	Number of Fox or Geese decreasing
Lord of the Rings: Boardgame	Advance, win battles	Losing battles, getting killed	Card attributes, dice rolls	Components-of-self, components-of-other	Battles, Sauron approaching
Draughts / Checkers	Capture opponent's pieces	Opponent capturing pieces	Opponent moves	Components-of-self, components-of-other, environment	Successive jumps in capturing pieces
Risk	Good dice results	Bad dice results	Chance	Components-of-self, components-of-others, Dice, environment(s)-of-self, environment(s)-of-others	A player about to be defeated
Starcraft	Build resources, win battles	Opponent attack, resources lost	Performance-of-other	Components-of-self,components-of-other, Information, environment-of-system	A player about to be defeated
Cribbage	Being able to play cards form hand as the last one, scoring points	Unable to play cards from hand, opponents scoring points	Cards played by opponents	Components-of-self: points and cards, components-of-others	
Dominoes	Connect a domino	Has to pick up a domino due to not being able to connect	Domino attributes played by other players	Components-of-self, components-of-system	One or more players having only one domino left
Rummy games: Gin, Canasta	Gain points by taking tricks	Other players gaining points by taking tricks	Other players decisions, chance	Components-of-self, components-of-other	
Magic the Gathering	Collect resources, Win battles	Lose battles, lose cards	Opponent decisions and resources	Characters-of-self, characters-of-other	Constructing the deck
Mastermind	Guessing/deducing correct code	Not guessing correct	Imperfect information about the code	Components-of-self, components-of-system	Final digit of the code missing
Frequency	Hit the rhythm	Losing rhythm, not keeping in pace	Music tempo	Environment-of-system	Modifiers, chains of hits
World of Warcraft (MMORPGs)	Various: gold, mounts, weapons and other resources, abilities, character levels, explore environment	Health decreasing, Character getting killed	Other	Character-of-self, characters-of-others, characters-of-system, environment, components	Raids
Modern Art	Sell paintings with profit	Other players getting more profit	Other players' decisions & paintings	Components-of-self, components-of-others	Hidden auctions
Missile Command	Protect cities by shooting down missiles	Missiles hitting the cities	Performance-of-self, increasing tempo of missiles	Components-of-self, components-of-system	One city left
FallOut	Explore, find resources, survive	Health decreasing, Getting killed	Performance-of-self, opponents, events	Character-of-self, characters-of-system, components, environment	Boss fights
Rez	Shoot enemies, gain points and health	Health decreasing, character getting gkilled	Performance-of-self, Enemies	Character-of-self, characters-of-system	Boss fights
Silent Hill	Explore, find resources, survive	Health decreasing, Getting killed	Performance-of-self, opponents, events	Character-of-self, characters-of-system, components, environment	Boss fights, scripted events
Chu-Chu Rocket	Catching mice	Other player catching mice	Other players actions, chance events	Components-of-self, Environment-of-self, Components-of-others, Environments-of-others,	"Mouse mania" and other events
Bomberman	Blow up the opponent	Getting blown up	Opponent actions	Character-of-self, character-of-other, components	

Game	SUSPENSE			Game element(s) EMBODIED INTO	CULMINATION POINTS
	Hope	Fear	Uncertainty		
	What the player hopes to achieve?	What the player fears that will happen?	What are the factors that make hope and fear uncertain?	Identification of the game elements that take part in constituting the eliciting conditions	Is there a specific game state scenario in the game that introduces a crisis goal, or intensifies emotions?
Half-life	Explore, find resources, survive	Health decreasing, Getting killed	Performance-of-self, opponents, events	Character-of-self, characters-of-system, components, environment	Scripted events
Grand Theft Auto III	Explore, find resources, survive	Health decreasing, Getting killed	Performance-of-self, opponents, events	Character-of-self, characters-of-system, components, environment	Mission goals
Scratch ticket	Scratch open similar symbols etc to win a prize	No combinations of symbols found	Draw from ticket database	Draw procedure	Finding pairs or other combinations which are one symbol away from a prize
Manga Manga!	Discarding cards of matching colour before opponents	Opponents discarding cards before self	Performance-of-self, Performance-of-others	Components-of-self, components-of-others	
Bejeweled	Finding jewels that potentially make combinations of three	Being unable to find combinations, time running out	Performance-of-self, Time	Components-of-system	Time nearing zero
Breakout	Manoeuvring to hit the ball, hitting the bricks with the ball	Missing the ball, missing the bricks	Performance-of-self	Component-of-self, components-of-system	Ball speeding up, final brick left
Arkanoid	Manoeuvring to hit the ball, hitting the bricks with the ball, shooting the bricks	Missing the ball, missing the bricks	Performance-of-self, system procedures	Component-of-self, components-of-system	Ball speeding up, final brick left
Skeet	Hitting the clay saucer	Mishitting	Performance-of-self	Components-of-system	Proportional to consecutive hits or misses
Super Monkey Ball	Staying on the course, collecting bananas	Falling off the course, missing the bananas	Performance-of-self, system procedures	Component-of-self, components-of-system, environment	
Tug of War	Pulling the opposing team towards oneself	Being pulled forward	Performance-of-self, Performance-of-others	Components-of-self (the team), the rope, environment-of-self, environment-of-others	The rope marker nearing the position on the ground that marks victory condition for either team
Sudoku	Deducing the correct numbers	Unable to figure the numbers out	Performance-of-self in relation to the difficulty of the puzzle	Components-of-self, components-of-system, environment	One number missing, completing a row
Niagara	Being able to move diamonds with boats to home base	Losing boats to rapid, opponents being able to move diamonds, opponents stealing diamonds	Performance-of-self, Performance-of-others, movement of rapid as rule procedure	Components-of-self, components-of-other, environment	Final diamond nearing home base, boats on the verge of the edge of the rapid
Zuma	Hitting balls of same colour with the ball shot	Mishitting balls of similar colour,, chain of balls reaching the skull	Performance-of-self, movement of chain as rule procedure	Components-of-self, components-of-system, environment	Ball chain nearing skull, balls decreasing towards none left
Musical Chairs	Find a vacant chair	Others occupying vacant chairs quicker	Performance-of-self, Performance-of-others	Components-of-system: the chairs, environment, music	Music stops
Yenga	Pull a block out of the tower	The tower collapsing	Performance-of-self, tower configuration	Components-of-system	Tower shaking
Croquet	Hitting own ball through gate, hitting opponent's ball	Other players proceeding through the gates, hitting one's ball	Performance-of-self, Performance-of-others, distance and angle to gate	Components-of-self, components-of-others, environment	Having a chance to hit through gate, having a chance to hit goal marker, having a chance to hit opponent's ball
Black Jack	Being dealt cards the sum of which is 21 or below	Hitting over 21	Performance-of-self, Performance-of-other (the house), chance in the draw of cards	Components-of-self: cards and stake, components-of-other	Making choice of being hit more cards or not, achieving 21 or close, revealing of dealer's hand
Petanque	Throwing the ball nearest to the marker	Other players throwing nearer, other players hitting one's ball	Performance-of-self, Performance-of-others	Components-of-self, components-of-others, environment	Each throw
Diner Dash	Seating customers, getting their orders, delivering food, billing customers	Making misdeliveries, not being able to do the tasks in time	Performance-of-self, system procedures	Character-of-self, characters-of-system, environment	Number of customers an task increasing, customers getting angry, customers leaving
Nintendogs	Teaching the dog tricks, keeping it happy	n/a	Dog behaviour	Character-of-self: the dog and its behaviour	meeting other dogs, playing with the dog, taking the dog out, teaching tricks
Bowling	Hitting the pins so that as many as possible fall	Mishitting the pins	Performance-of-self, pin configuration	Component-of-self: the ball, Components-of-system: the pins, environment	Seeing the ball roll towards the pins
Halo	Defeating enemies, exploring and traversing the world	Losing health, getting killed	Performance-of-self, system procedures	Character-of-self, characters-of-system, components-of-self, environment	Scripted events
Hundred meter sprint	Outsprinting opponents to the finishing line	Opponents being quicker, reaching the finishing line first	Performance-of-self, Performance-of-others	Oneself, finishing line	Ready-set-go start procedure

Game	SUSPENSE			Game element(s) EMBODIED INTO	CULMINATION POINTS
	Hope	Fear	Uncertainty		
	What the player hopes to achieve?	What the player fears that will happen?	What are the factors that make hope and fear uncertain?	Identification of the game elements that take part in constituting the eliciting conditions	Is there a specific game state scenario in the game that introduces a crisis goal, or intensifies emotions?
Max Payne	Shooting enemies, exploring environment, finding health packs, weapons and ammo	Losing health, getting killed, getting stuck, running out of ammo	Opponent actions, imperfect information about environment	Character-of-self, characters-of-system, components-of-self	Scripted events and narrative turns
Puzzle Bobble	Combining bubbles of same colour by shooting them	Misfiring, the bubbles falling downwards	Performance-of-self, system procedures	Components-of-self, components-of-system	Balls moving downwards
Werewolf / Mafia	As villager, to stay alive and defeat the mafia; as mafia, to assassinate all the villagers	Getting killed by assassins or nominated for vote	Imperfect information about players' identity	Players and their roles, the cycle of day and night	The night turn
Labyrinth Wooden Maze	Guide the ball through the maze without it falling through the holes	Losing control of the ball, the ball falling through a hole	Performance-of-self, ball movement	Component-of-self: ball, Environment	Constant; Nearing the finish
Qix	Enclose areas without getting hit by the enemies	Running into enemies in the process of enclosing	Performance-of-self, Enemy movement	Component-of-self: craft components-of-system: enemies, Environment	Constant: Enemies closing in, proximity to required percentage of enclosure
Loop	Enclosing similar butterflies	Enclosing different butterflies	Performance-of-self, butterfly movement	Environment-of-self: the loop created, components-of-system: the butterflies	
Twister	Being able to connect dots with two limbs	Inability to enact the required posture	The game state in the from of other players' posture	Self, others & postures	Bodily contact
Hopscotch	Traverse the grid with the correct sequence of jumps	Losing sense of sequence	Performance-of-self, grid formation	Environment	Final grids; progress towrds them
Bingo	Get a line of five on the grid on one's bingo ticket	Other players getting the five first on their ticket	Chance: draw procedures of numbers and bingo cards on the ticket	Components-of-self: the numbers on the ticket, Components-of-system: numbers drawn	Having a line of four numbers
Bonnie's Bookstore	Creating words from letters or hyphens available, thus using grid spaces	Unable to produce words, unable to use all grid spaces, running out of turns	Performance-of-self as lexical ability, Distribution of letters through system procedures	Components-of-system: letters, Components-of-self: words created, points, turns	Few unused grid spaces, uncommon letters or hyphens appearing
Snake	Guide and grow the snake by eating food	Hitting oneself or border	Performance-of-self, Snake and environment relation: As the snake grows, its space for manoeuvring decreases	Character-of-self: snake, points, component-of-system: food, Environment	Snake speed accelerating, own high score approaching
Flow	Evolve through eating other organisms	n/a	Performance-of-self: guiding the organism, movement and constitution of other organisms	Character-of-self, characters-of-system, Environment	
Asteroids	Hitting, Evading	Being hit	Performance	Physical Proximity to components-of-system	Constant
Doom	Hitting, Evading	Being hit	Performance-of-self, Performance-of-system, Imperfect information about environment	Physical Proximity/relation to character-of-system, Environment design	Boss monster
Paintball	Hitting, Evading, Capturing	Being hit, Flag captured	Performance-of-self, performance-of-others, imperfect information environment	Physical Proximity to Flag/Others, Environment design	Flag capture
Soccer	Possessing ball, Scoring a goal	Losing possession, Conceding a goal	Performance-of-self, Performance-of-others, Time	Ball ownership, Physical proximity to goal location	Penalty shot, Full time
Ice Hockey	Possessing puck, Scoring a goal	Losing possession, Conceding a goal	Performance-of-self, Performance-of-others, Time	Puck ownership, Physical proximity to goal location	Power play, full time
Basketball	Possessing ball, scoring a basket	Losing possession, Conceding a basket	Performance-of-self, Performance-of-others, Time	Ball ownership, Physical proximity to basket	
Figure Skating	Performance success	Performance failure	Performance-of-self, Performance-of-others	Choreography	Choreography, Music
Vampire the Masquerade (Tabletop RPG)	Performance success	Performance failure	Imperfect information about characters-of-system & environment, Performance-of-self, Performance-of-others, Dice	Game World	Dice throws, narrative turns
Texas Hold'em Poker	Good hand, accumulating chips	Bad hand, losing chips	Deal procedure, Performance-of-self, Performance-of-others	Card attributes, Chip totals	All in
Carcassonne	Gaining occupancy	Losing occupancy	Tiles, Perfomance-of-others	Tile & Farmer attributes (configuration, number), Points counter	Few tiles remaining, Hovering closu
Go	Enclosing & capturing stones	Being enclosed & captured	Performance-of-self, Performance-of-other	Environment grid	Hovering closures
Jigsaw puzzles	Finding suitable piece	n/a	Piece size / visual resolution / number	Piece attributes	Hovering closures
Tetris	Aligning a full row	Misplacing a block	Block form and movement tempo	Blocks and Environment	Space towards top diminishing, ten
Botfighters	Hitting, Evading	Being hit	Imperfect information about character-of-others: location, attributes	Mechanics,	Being found

Game	SUSPENSE			Game element(s) EMBODIED INTO	CULMINATION POINTS
	Hope	Fear	Uncertainty		
	What the player hopes to achieve?	**What the player fears that will happen?**	**What are the factors that make hope and fear uncertain?**	**Identification of the game elements that take part in constituting the eliciting conditions**	**Is there a specific game state scenario in the game that introduces a crisis goal, or intensifies emotions?**
Da Vinci Code	Guessing/deducing correctly, solving code	Guessing wrong, own code being solved	Imperfect infromation about components-of-others, Performance-of-others	Component bipolarity	Code information increasing
Ricochet Robot	Solving puzzle fastest	Incorrect solution, others being faster	Performance-of-self, Performance-of-others	Robot locations in the environment	Other player announcing a solution
Monopoly	Buying & building	Others buying & building	Dice, Imperfect information about Chance cards	Physical proximity to environment-of-self/other/system	Landing on environment-of-other
Snakes & Ladders	Taking lead, Finishing first	Losing lead & race	Dice	Environment attributes	Landing on a snake
Pac-Man	Evading, Eating	Being captured	Performance-of-self, Performance-of-system	Physical Proximity/relation to character-of-system & components-of-system, Environment design	Eating a power pellet
Pong	Hitting	Mishitting	Ball speed, Performance-of-self, Performance-of-oher	Component-of-system	Constant
Tic-Tac-Toe	Combination of three	Other's combination of three	Performance-of-other	Grid attributes	Other achieving a pair
Trivial Pursuit	Knowing the answer	Not knowing the answer, Others knowing	Dice, Performance-of-self, Performance-of-others	Questions, Environment attributes	A player achieving all theme tokens
Pictionary	Drawing / Understanding the drawing	Not understanding	Performance-of-self (oneself & pair)	Drawings	A Pair reaching probable distance to finish
Alias	Managing to explain / understanding the explanation	Not understanding	Performance-of-self (oneself & pair)	Words	A Pair reaching probable distance to finish
Chess	Eliminating opponent figurines	Losing own figurines	Performance-of-self, Performance-of-other	Physical Proximity/relation to components-of-other	Check stituation
Uno	Discarding cards	Not being able to discard	Imperfect information about deck & others hands, Performance-of-others	Card attributes, Points	"Uno!"
Solitaire (Windows)	Combining & discarding cards	Not succeeding in combining	Imperfect information about deck & cards-of-system	Card attributes	Deck running out
Tag	Catch / evade others	Being caught	Performance-of-self, Performance-of-other	Physical Proximity/relation to others	Near misses
Space Invaders	Hitting, Evading	Being hit	Performance-of-self, Performance-of-system	Physical Proximity to components-of-system	Constant: Shields crumbling, Invaders advancing downwards
Dance Dance Revolution	Hitting correct pad in time	Missing the beat & symbol	Performance-of-self, Music tempo	Music and the corresponding beats as symbols	Constant
Animal Crossing	various	Character-of-system moving out	Character-of-system behaviour, Component-of-system behaviour, System procedures	Characters-of-self/others/system, Components-of-self/others/system	Various: Encounters with characters, competitions, etc.
The Sims	Positive moods for Sims	Negative moods for Sims	Sims' erratic behaviour, random system procedures	Sims and their attributes, behavioural cues	Sims interaction with other characters & environment
MS Flight Simulator	Reach destination	Crash, technical problems	Performance-of-self, Weather (system procedure)	Environment	Waypoints, landing
Track & Field	Outplay others	Get outplayed	Performance-of-self, Performance-of-others	Character-of-self, chracter-of-others/system	Start/Finish/Third tries in jumping/throwing
Roulette	Match draw number/colour	Mismatch	Draw procedure	Chip, environment, ball & roulette wheel	Draw procedure, ball slowing down
Slot machine	Match symbols to prize tiers	Mismatch	Draw procedure	Components-of-self: symbols & stake	Draw procedure sequence

Game	SUSPENSE			Game element(s) EMBODIED INTO	CULMINATION POINTS
	Hope	Fear	Uncertainty		
	What the player hopes to achieve?	**What the player fears that will happen?**	**What are the factors that make hope and fear uncertain?**	**Identification of the game elements that take part in constituting the eliciting conditions**	**Is there a specific game state scenario in the game that introduces a crisis goal, or intensifies emotions?**
Rush Hour	Configure pieces	Misconfiguration	Performance-of-self	Components-of-self: Pieces	Hovering closures
14/15 Puzzle	Configure numbers	Misconfiguration	Performance-of-self	Components-of-self: numbers, Environment	Moving onto next combination
Rubik's Cube	Configure colours	Misconfiguration	Performance-of-self	Cube configuration	Spotting potential combinations
Hex	Connecting tokens across the edges	Opponent blocking with her tokens	Opponent choices	Components-of-self: tokens, Components-of-others, Environment	
Myst	Find clues, make deductions concerning puzzles	Inability to solve puzzles	Performance-of-self	Information, components, environment	Solving of puzzles
ICO	Guard Yorda & traverse ahead	Lose Yorda or get stuck	Performance-of-self, system procedures	Characters-of-system, environment	Enemy attacks, puzzles
Zork	Find treasures, survive	Get killed	Imperfect information about environment, creatures	Environment, Characters-of-self	Creatures attacking