

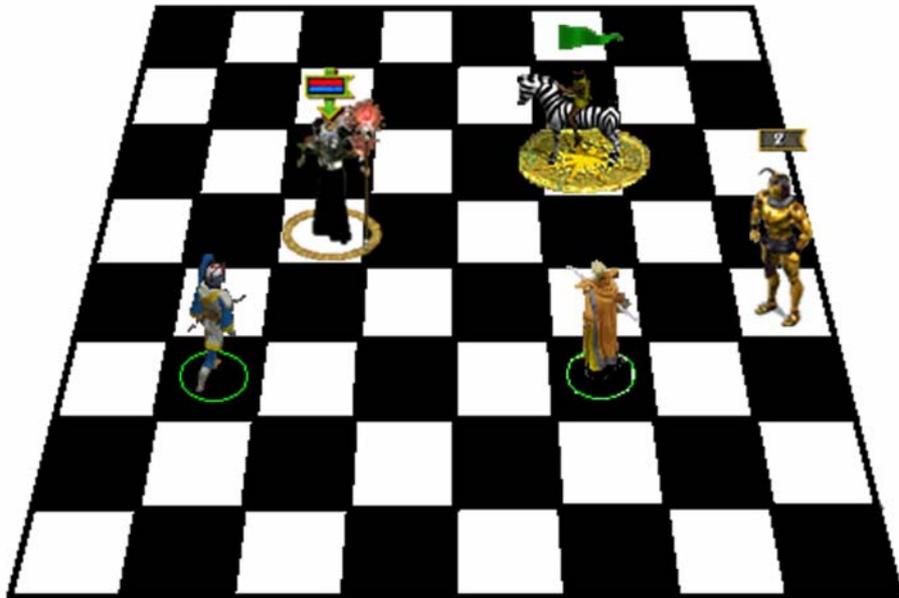
Aporia & Epiphany

in Context:

Computer Game Agency in

Baldur's Gate II &

Heroes of Might & Magic IV



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Abstract

This thesis studies computer games from a recipient's perspective by doing an analysis of how an implied player is expected by game design to take action in computer games. From the assumption that the player of computer games is cast in the role as *problem solver*, the thesis aims to study how the player engages in the structuring of courses of action in the computer role-playing game (CRPG) *Baldur's Gate II: The Shadows of Amn* and the turn-based strategy game (TBS) *Heroes of Might & Magic IV*.

The work is based upon theoretical views from different fields. One of the central concepts utilised is *agency*, derived from the action theory branch of philosophy and adapted to computer environments by Janet Murray and Brenda Laurel. Coupled with Espen Aarseth's claim that a computer game player meets *aporias* or roadblocks in the game that must be solved by sudden *epiphanies*, the concept of agency will be fruitfully developed in order to investigate the player's participation in computer games. Parallels will be drawn between the aporia-epiphany pair and cognitive psychology's view on problem solving in order to identify different species of problem sequences in games. Most interesting is the proposal of the concept *computer game agency*, which denotes a kind of player action that is motivated, intentional, and has a certain effect in that it contributes to the progression of the game.

The comparative analysis of *Baldur's Gate II* and *Heroes IV* demonstrates how an implied player traverses the game via the means of problem solving. *BGII*'s focus on role-play creates a very different motivation for problem solving than does *HoMMIV*'s focus on strategy. While *BGII* little by little reveals the goal of the game by letting the player traverse a chain of separately arranged problems, *HoMMIV* defines the goal beforehand and presents new problems within existing ones like a Chinese box. Since *BGII* lets the player concentrate on one problem at a time, while *HoMMIV* lets the player plan ahead and see problems as interrelated, it becomes clear that the games rely on different kinds of logics when it comes to how the player is expected to traverse them.

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This thesis is dedicated to my father Denny, who would have been proud of his daughter tumbling down the path of her own interests instead of following the road of conformity.

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Yes, ye shall find many useful tidbits within this morass
of information that Volo has seen fit to call a book.
I shall clarify as needed. – Elminster
(*Baldur's Gate II Manual*: Bioware 2000b:4)

Chapter 1: Prelude

There is an episode in the computer role-playing game *Baldur's Gate II* where the player discovers a creature in a jar, barely alive. A message informs the player that the cells that power the jar are out, and that new ones must be found to revive the creature. The player has a task: how do I *find these power cells*? Since s/he has no knowledge of any power cells, s/he decides to search for it. At some point the player enters a room with a golem guard who says he will open some doors for the player if s/he brings an activation stone. If the player asks the golem where the activation stone can be found, the golem politely answers: 'Rielev has the activation stone, master. It is on the table of his room.' Several questions arise: who is Rielev and where is his room? While searching, the player finds a room with another creature in a jar, alive. The creature turns out to be Rielev, who is in torment and wants to die: 'This unit that contains me is powered by cells, by crystals. Take them and I can sleep... die... again die at last.' Suddenly the initial *problem of finding power cells is solved*: after helping Rielev to die by removing the cells that power his jar, the characters may bring the cells into the first room and revive the first creature (Bioware 2000a: *Chapter 1: Irenicus' Dungeon, level 1*).

This is an example of an action sequence from the computer role-playing game *Baldur's Gate II*. It shows how the player traverses the game, and demonstrates that it happens by the means of *problem solving*. When the player meets a game, s/he is faced with challenges that are his/hers to solve; otherwise the progression of the game comes to a halt. Nevertheless, the player is obviously not alone in this process. It is clear that the game sets up an environment and also fabricates challenges for the player, and reacts to the player's actions. There is a mutual relationship between the two, and the fact that the course of action is dependent upon the player in order to progress is a distinct feature that separates computer games from other fictional and aesthetic works. This thesis concerns the role of the computer game player; how s/he engages in the action of game, and how s/he reaches an outcome by traversing the game via problem solving. The emphasis lies on how the game structure expects or cues certain player actions, but it also studies the player's choice of actions from his/her point of view.

1.1 Issues & Structures

This thesis seeks to take computer games seriously as an object for academic study by doing an analysis of player action in two different computer games. More specifically, the thesis aims to *study the role of the computer game player in engaging in the structuring of courses of action* in the computer role-playing game (CRPG) *Baldur's Gate II: The Shadows of Amn* (BioWare 2000) and the turn-based strategy game (TBS) *Heroes of Might & Magic IV* (New World Computing 2002)¹. Studying player action in computer games is an interesting task, since the role of the computer game player is very different from that of the appreciator² of films or literature. The player has the power to influence the aesthetic work³ in a sense that has no equivalent in traditional media. Computer games *require* the participation of a player in order to function in the intended sense. Not in the same fashion as a book demands that the player turn the pages; computer games require that the player physically engages in the work from a position *internal* to it, in the sense that s/he takes immersed action with implications on the course of action in the game. Moreover, the work cannot reach its final outcome without player action, and the player must take on tasks in order to realise the essence of the work (Juul 1999:5). The participatory role of the player is thus dependent upon more complex actions than traditional receptive media require. This means in no sense that the player engages in the creation of the work; rather, it means that the player has the role of an operator that 'keeps the machine running' (Ryan 2001:211). While reader-response theorists argue that the *meaning* of a work is not realised without the active participation of the reader (Iser 1978:3-19), in computer games it is the *course of action* and the *progression* of the game that cannot be realised without the player. This untraditional role of a recipient is also interesting because it may shed light upon the general view of the process of communication and the relationship between message and receiver, since it questions the whole concept of the receiver role.

When one studies how the player influences courses of action in computer games there are several issues that must be taken into consideration. In order not to confuse the activity of playing a computer game with any other receptive activity, this thesis makes a point in describing the interplay between the game and player in relation to what it is that drives action

¹ These games both have the PC as their platform.

² *Appreciator* (Ryan 2001:205) describes the user of a work, and is a more neutral term than for instance 'reader', 'viewer', or 'player'. It is also more suitable than 'user' since it implies that there is some kind of pro attitude on part of the player to use the work in question.

³ Even though the field of media studies recognises the use of the term *text* to include 'any communication that temporally controls its reception by the audience' (Chatman 1990:7), this thesis will try to avoid the term, since it to a great degree seems to include informational structures with a certain user role very different from that of computer games. Instead I will use wordings like *aesthetic work* because this gives a less biased feeling.

forward in computer games. Even though the role of the player is crucial, the restrictions of the game environment, the rules and other design features define a certain style of game play. The courses of action are dependent upon both such game features and player action, in addition to the moves of the human or computer opponent. Another point in this thesis is that there are player actions with different relevance for the progression of the problem solving process that a game typically centres on. Types of player actions are identified and discussed in order to separate actions of different importance to the problem solving. In this respect it is also argued that most actions may feel more or less important to the player, but this does not mean that the action has the power to take the game a step further on the path towards reaching the outcome the game by solving problems. It is actions with such power that are central when analysing player engagement in structuring courses of action in computer games.

Ideas will be taken from many different fields that at first sight may seem unrelated to each other, but put together they form a framework that illuminates player action in computer games. The theoretical considerations do not only draw on computer game research or literary theory applied to hypertexts; I have also tried to take into account theories not commonly associated with the textual analysis branch of media studies in general, or computer games in particular. Most heavily utilised is the philosophical based *action theory*, with its focus on the term *agency*, but concepts have also been adapted from the mathematical based *game theory*. In addition, problem solving is viewed from the perspective of *cognitive psychology*, which is used to illuminate Espen Aarseth's use of the terms *aporia* and *epiphany* in digital works. The analyses follow the ideas outlined in the chapter on theory, but they do not follow the theory strictly, since both parts must be seen as a philosophical-analytical account of computer games instead of an empirical study. Thus, the analyses should be regarded as examples based on the theory at the same time as the theory is based upon the analyses. Moreover, it should be kept in mind that neither theory nor analyses should be regarded as models for future research, but instead seen as an early attempt of doing a comprehensive analysis on computer games based on a theory specifically applied to player action and the problem solving process.

1.2 Game & Narration

The game versus narration debate is one of the most heated debates in computer game research today (Aarseth 2002, Juul 1999, 2001, Murray 1997, Ryan 2000, 2001), and as a starting point I will shortly discuss this relationship. This thesis will not function as another argument in the debate, but it is important to briefly outline how computer games and narratives

differ in order to explain why I have chosen to concentrate on action in computer games without taking into account narratology or the idea that computer games are narratives.

There are many definitions of narrative, but a common view is that a narrative is a (textual)⁴ *representation* of a series of events progressing from a state of *equilibrium* via *dis-equilibrium* towards a new *equilibrium*. Important features in a narrative are the division between the story as it is structured (*syuzhet*), and the reconstruction in the reader/viewer's mind of how the story happened (*fabula*). In order to illuminate the concept of narration in relation to computer games, I will present Marie-Laure Ryan's discussion on different understandings of narration. She notes that there are many different views of what a narrative is (2001:242-3), and confusion on definition is obviously a source to the disagreement to whether computer games are narratives or not. She separates the views of *relativists* and *universalists*. The relativists see narrative as a form of representation that varies with culture and period. The universalists, on the other hand, argue that narrative is a universal cognitive model used to make sense of the relationship between time and human action. For the relativists, prose fiction including individual and mental events is automatically labelled narrative, while the universalists claim that narratives need a certain semantic structure. Thus, relativists would claim that many computer games are narratives, but that they are a *new form* that alters earlier concepts of narrative. From a different viewpoint, the universalists would say that some computer games may have certain narrative *features*, but that they cannot in general be labelled narratives since they do not have a strict narrative structure. Ryan is clearly coloured by the relativist view, but argues that neither view is entirely correct (2001:244). Illustrating her own view, Ryan refers to two common views of narrative, 'a discourse reporting a story as well as the story itself', and claims that even when understood merely as 'story' it can be comprehended differently: 1) As a representation of events ordered temporally, but not necessarily causally, and involving related participants. Ryan calls this the *sequential* narrative. 2) As an interpretation of causally connected events, called the *causal* narrative. 3) As a semantic structure that meets some formal requirements, such as theme, point, and progression from equilibrium to crisis to a new equilibrium, accompanied by a rise in tension. This is the *dramatic* narrative (2001:244). Ryan argues that all these may be implemented in games and 'interactive' environments, but in different ways (2001:245-6), and shows then how computer games may utilise narrative features. Ryan argues that this shows that games and narratives may be compatible, depending on how narrowly we define narrative. But is she entirely correct? Finding cer-

⁴ Cp. Chatman 1990:7.

tain compatibilities between the two phenomena does not eliminate other more crucial features that separate them.

It is important to keep in mind that computer games first and foremost are *games*. According to Avedon & Sutton-Smith, a game is ‘an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrium outcome’ (1971:7). Thus, a game 1) is a *voluntary activity*, 2) includes *rules for action*, and 3) has some kind of *competitiveness* related to an outcome. Going deeper into the ontology of games, Roger Caillois identifies two modes of playing, *ludus* and *paidea* (1961:12). *Paidea* is ‘uncontrollable fantasy’, dominated by carefree gaiety and free improvisation, while *ludus* requires a greater amount of effort, patience and skill on part of the player. There is also a ‘need (...) to utilise purposefully the knowledge, experience, and intelligence at [the player’s] disposal’ (1961:33). Thus, *ludus* is found in what we label games, while *paidea* is commonly known as play. It is *ludus* games that are object of study in this thesis. Concerning structure it is hard to say that computer games have something similar to *syuzhet* and *fabula*. There is a *path traversed* by the player, and a kind of *material* that the game consists of, but the material is not identically presented to each appreciator the way the *syuzhet* is. In computer games, there is instead the division between *scriptons*: strings of signs as they appear to the reader, and *textons*: strings of signs as they exist in the text (Aarseth 1997:62). The player’s path of traversal then consists of *scriptons*, picked from among an unknown amount of *textons* of which the player only knows a few. The relationship between the *experience* with the work and the *structure* is thus very different from that of narratives.

However, those speaking of the essence of games are concerned with actual *physical actions* taken while the course is realised, while those speaking of narratives are concerned with a certain *semantic structure* in texts. Jesper Juul points out that the difference between games and narratives depends on their *distribution of time* (1999:31-6). *When* does the action depicted happen? Juul does not come up with a convincing solution, but Espen Aarseth describes this well by his term *ergodic* (1995, 1997), borrowed from physics. The term is derived from Greek *ergon* (work) and *hodos* (path), and describes ‘action that comes into being via user improvisation while it is experienced’⁵ (1995). Thus, *ergodics* is action that is developed through engagement with the phenomenon in question, and presented while it is taken. This is the kind of action found in games, and Aarseth separates this from narration, which implies action that is predefined and cannot be altered. However, Aarseth claims that a game

⁵ My translation.

of sports has ergodics only; computer games have ergodics and description, while narratives have narration and description. The *description* Aarseth has in mind is that which Gerard Genette separates from and claims is inferior to narration: the diegetic content we deal with when there is no progression of action in the work, and the properties of things are stated, depicted or described (Chatman 1992:9-10, Genette 1980:99-106). Thus, computer games place themselves somewhere in between traditional games and aesthetic works such as narratives since they have both ‘determined materiality (descriptions) and a non-determined action (the ergodic)’⁶ (1995). Thus, Aarseth labels computer games *ergodic works*, and explains this by claiming that *narrative works* have *description* and *narration* as their two diegetic levels; *sports* and *traditional games* have neither, but instead *ergodics*, and may not be labelled works at all. Lastly, *computer games* have *description* and *ergodics*, and must therefore be seen as ergodic works. He suggests thus that it is *description* that is the key to being labelled *work*. The fact that computer games and narratives share description and a course of action is obviously a great source of confusion, but it is important to separate the notions of ergodics and narration in order to understand the relationship between computer games and narratives. Within the notion of the ergodic, there lies an assumption of some agent that takes action while it is being appreciated. Games take for granted a *player* that takes action from a viewpoint internal to the environment of the game. The game player is the protagonist, as it were. This has no equivalent in narratives, where the protagonist is very clearly separated from the appreciator. The reader or viewer does follow the protagonist of a narrative and may have an empathic relationship to the protagonist, but s/he is not *in control* of the actions taken by the protagonist. Thus, since they are games, computer games demand that a player take action upon its world (Poole 2001:27). The player has access to the space of the work, and as Aarseth points out, while narratives are focused on *time*, games are more oriented towards *space* (2002b). The appreciator of a narrative has no access to any space that the narrative does not present. In computer games, the player has access to the fictional world and may explore it at will. As a matter of fact, exploring the space of computer games is very often part of the method used for problem solving in games. Related to time and space is the relationship of games and narratives to the final outcome or goal. Narratives have an end, but it is not clear for the reader/viewer what this end is, even though s/he may have hypotheses about it. Thus, narratives focus on the causal chain of events that leads to a somewhat uncertain end. Games on the other hand, have a very clearly defined end that is always in focus, while the chain of

⁶ My translation.

events is uncertain: the player is supposed to win, or reach a goal. This is not always accomplished, since competitive games may be won or lost. However, computer games with save and load functions allow the player to play until the win situation is reached.

To sum up the conflict between game and narrative we should keep in mind that these phenomena share several elements. The similarities have led the designers of computer games to force a background story and a personal interest on part of the protagonist in solving a problem onto many games. Also, there seems to be a confusion of the definition of narrative, in addition to the fact that causality and goal-orientation have a somewhat different function in narratives and games. Even though the two phenomena share some qualities, this does not mean that we speak of the same phenomenon. We should also notice that to the extent a story is attempted implemented into a game, this is mainly to create an *atmosphere* and a *motivation* for playing the game. As Aarseth points out, games are highly *themeable* (2002a:5), and the narrative elements in a game could in most cases easily be changed for other elements. Those games that to the greatest degree utilise some kind of ‘plot’ that the player must follow, work along the narrative paradigm of the *detective story* or the *quest*. In a detective story, the events have already happened, and it is the protagonist’s task to disclose the events and the causal chain between them. A quest (Tronstad 2001) is based around the search for a goal, and it is oriented around the problem solving process related to this goal. Since a quest may be seen as a game-oriented story it is easily implemented in a character-focused game.

1.3 The Concept of Agency

Concerning player action in computer games, this thesis focuses on ergodics and not narration, since we speak of action developed by the player during his/her interaction with the game, and not a predefined sequence of events that cannot be modified. In relation to this, it is important to state how this thesis regards the concept of action. The concept of ergodics will not be central, since action will be studied to a greater detail than the term ergodics allows. Ergodics is well suited for describing the difference between narrative action and other kinds of action, but it does not say anything about how courses of action develop or how the interplay between player and game influences courses of action. Instead the thesis draws on the concept of *agency* taken from the philosophical *action theory*. Brenda Laurel (1997:117) and Janet Murray (1997:126-9) introduced the concept of agency to computer games and the idea of participatory narratives. Laurel defines agency as ‘the power to take action’, while Murray goes further and claims that agency is the feeling that one has an effect on the system. Agency

thus stresses the importance of an *agent* that executes action. It also stresses that these actions must have some *relevance*. Laurel and Murray's idea is in accordance with what action theorist Donald Davidson (1971:43-6) argues is crucial for agency: in order to labelled agency, an action must be 1) intentional, 2) meaningful and 3) have a certain effect. In action theory, agency denotes a conscious and rational agent, who sees the meaningfulness of the action taken. The effect, however, does not have to be expected.

It is not hard to see how agency is highly relevant when discussing player action in computer games. Games imply a process of problem solving on part of the player, and to a great degree the choices made and actions taken are intentional and meaningful. Moreover, player action in computer games is always focused on some kind of desired effect or outcome. Thus, agency seems to be a very suitable term for describing how the player takes moves in games generally. A somewhat game theoretical bias is also taken into account, since all actions that the player takes will be on the basis of some strategy developed during the course of action. The player will always assess the situation, game and opponent, and make hypotheses about them. Anyway, it is actions taken in relation to the *progression* in computer games that are crucial for this thesis, and agency is the central concept since such actions are taken on the basis on determinism on part of the player. Thus, in accordance with action theory's careful description of how an agent makes a choice and acts upon the choice because s/he has a belief that the action will have a desired effect, this thesis will propose a similar *scheme* of how *the process of problem solving* is carried out in the computer games *Baldur's Gate II: The Shadows of Amn* and *Heroes of Might and Magic IV*.

1.4 Methodological Considerations

This thesis is an analysis based upon my own gaming experiences; thus it is the interplay between theory and analysis that must be regarded as the methodology utilised. But what kind of analysis is it? It is not a traditional textual analysis, like those of literature or film. Neither do I study the games as collections of rules, but the *gaming activity*. It is then an *action analysis*. Studying how computer game players act may be seen as a task that needs the careful observation of empirical players. However, the entity that is object of this study is the *implied player*⁷, since my analyses centre on the player's traversal of the game designers' intended

⁷ *Implied player* is a term derived from concept of the implied reader of literature, who is a reader position cued by the text. It 'designates a network of response-inviting structures', and constitutes the role that the real reader is offered to play when reading a text (Iser 1978:34-35).

courses of action towards the desired outcome. However, this is a kind of *action cued by the structure* of the work. The role indicated by the implied player is the role that game theory takes for granted: a player that acts in a *rational* manner (Binmore 1992:3). Since the game is designed in a carefully planned manner that motivates the player to act in certain ways, the tendency is that different players take similar courses of action when playing the game. Game design cues the player by allowing specific actions while restricting the player from taking others. Also, as long as players act rationally and in accordance with some kind of strategy, their behaviour seems to a certain extent to be predictable. Even though players have the power to influence the game through their actions, the courses of action are manifested according to the same kind of logic with every traversal, and this makes computer game analyses possible as a method for studying interaction between the game structure and a player. Note that players also may solve problems in unintended ways and take courses of action that were not implied by the game. This is the feature known as *bug exploitation* and will not be dealt with here. This is not to say that player action related to bug exploitation is not interesting; only that it goes beyond the scope of this thesis, which studies intended courses of action.

Anyway, the courses of action studied in this thesis are my own. How does this relate to the concept of the implied player? I am very aware of the fact that I am an *empirical* and not an *implied* player. However, as real player I have tried to fulfil the role that the game designers seemingly want the players to take, at least concerning the central process of problem solving that one must go through in order to reach the final outcome. It should be noted that being focused on reaching the goal is a feature of the implied, and not necessarily the real, player. These are reasons for analysing only my own traversals of the games. It should be kept in mind, however, that I have played these games intensively and repeatedly, and that I have explored many different possibilities in the games. With a vast experience also from many other games from different genres and periods, my experience with computer games should be thorough enough for me to have insight into what kind of phenomenon this is and how it functions. Also, although not specified, the analyses are influenced by information gained via informal conversation with other computer game enthusiasts. However, the disadvantage of not studying a sample of actual players is obvious. It is hard to verify whether the conclusions I make correspond to the experiences of actual players. On the other hand, since I have played the game with the intentions of being an implied player, it is likely that my conclusions hold as an early attempt of making a study of the player's traversal through computer games.

Also, since strategy is not developed consciously (Waern & Lundh 1996:150), it seems that the average computer game player is not aware of what lies behind the actions and

moves s/he takes when playing a game. When confronting empirical players with how they assess their own actions when playing computer games, I have discovered that they in general do not have many clear thoughts about it. This led me to play the games analytically by evaluating all my own actions and their contexts. Especially important were those sessions where I took screenshots for analytical examples in this thesis. Because of the importance of finding sample screenshots that demonstrate the whole process from comprehending the problem to solving it, I had to carefully decide when I made decisions and took actions that were of certain importance, and which situations that influenced my hypothesis about the problem. I became thus very aware of my own actions, and often I had to replay sequences because I realised that I had missed screenshooting significant features.

Another methodological question is why analyse player action when there are so many other interesting features in computer games? The reason is simple: player action is one of the most crucial features that separate computer games from other aesthetic forms of communication. As noted, the concept of *player* alters the whole idea of a reader/viewer or receiver of a message. The position of the appreciator is so different that it is hard to be certain that we speak of a receiver role at all. By studying the implied computer game player we may have a better understanding of not only the receiver function of new media, but also of the receiving part in the communication process in general. Also, when we analyse player action, we touch upon theoretical issues unknown to the field of media studies, and adding new ideas to a field may lead to new interesting insights.

Why did I choose these games and not any other as objects of study? The first answer is because of the genres. Computer role-playing games and turn-based strategy games are very different concerning how the game designers expect the players to play the games. While the CRPG to an extent tries to implement a personal motivation on part of the main character as a game feature, and attempts building the course of action around a pre-planned 'plot', the TBS regards strategy as the motivator for action. To the extent narration is implemented, it is only there to create a certain atmosphere. This difference makes the games inspire somewhat different ways of behaviour in the player. The second answer is that both games are quite popular and well known among PC game enthusiasts, and the genres are two of the most widespread in the computer game industry. Thus, the results gained from this analysis may include an understanding of player action in today's PC games in general.

*A few moments of careful deliberation to plan and
prepare can often mean the difference between
victory and defeat. – Elminster
(Baldur's Gate II Manual: Bioware 2000b:39)*

Chapter 2: Theory: a Background

2.1 The Legacy from Literary Theory

The field of computer game studies is still young at the time of writing. However, certain scholars have marked themselves as pioneers of the early research within the field. Many of these are originally scholars from the field of literary theory, and derive their theoretical implications from there. Even though one may argue that literary theory cannot easily be translated into a new field that needs to be taken seriously on its own terms, there is no doubt that scholars with a literary theory background may have many interesting views because of their thorough experience with a very established theory of aesthetic works and their recipients. This chapter shortly presents the theoretical background for this thesis as grounded in literary theory. Three important scholars rooted in literary theory who are concerned with new aesthetic structures such as hypertext literature, 'interactive narratives' and computer games are Marie-Laure Ryan (2000, 2001), Janet Murray (1997), and Espen Aarseth (1995, 1997, 1999, 2002). They all have relevant views that are important to the aim of this thesis, and the most interesting terms will be presented here as a theoretical framework.

Espen Aarseth is sceptical towards placing computer games under the label narratives, and a scholar from the field of literary theory, he is very aware of his background but wants to step away from literary theory and study games from their own point of view (2002). In his 1997 book *Cybertext* that has become a must-read for everyone concerned with new aesthetic structures such as hypertexts literature and computer games, Aarseth coins many important for the continuing debate on developing a field of game studies. The following will be discussed in this thesis: 1) The division between *scriptons* and *textons*, which are strings of signs as they appear to the reader and strings of signs as they exist in the text respectively (1997:62) is important when identifying both how games function, and the relationship between the game as structure and the player's experience with the game. 2) The nuance between different forms of action, *ergodics* and *narration* (1995, 1997:1-5): ergodics comes into being while the

action is being experienced by the user of the text, while narration is predefined and unchangeable when it is being experienced. As we have seen, this observation is crucial when understanding the difference between game and narrative. 3) The separation into four *user functions* in the reception of different works is also interesting. These are ranged on the basis of how the user may manipulate the text from an *interpretative* function via an *explorative* and a *configurative* to a *textonic* function where the user may add own objects to the text (1997:66). 4) Replacing an *aporia* with an *epiphany* shows how the player solves problems in ergodic works according to Aarseth's 1999 article *Aporia and Epiphany in Doom and The Speaking Clock*. When a player finds him/herself in a situation that presents a seemingly unsolvable problem, s/he experiences an *aporia*, which is not overcome until the player suddenly realises the one and only way to solve the *aporia*. This solution is the *epiphany* (1999:38). This is highly relevant to the discussion of problem solving in computer games, and will be added to action theory's idea of agency, in addition to cognitive psychology's view on problem solving.

Janet Murray focuses on participatory narratives in *Hamlet on the Holodeck* (1997), and celebrates computer games and virtual reality as the potential future for a new type of narrative where the user takes on the role as protagonist. She claims that computer games today are not yet narratives of high aesthetic quality, but recognises that they have the potential if guided along the right path. She separates the qualities of computer aesthetic into three: *immersion* derives from 'the physical experience of being submerged into water' (1997:98), and describes the sensation of being absorbed in a completely other reality in a way we often experience when reading an engaging novel. *Agency* is the feeling that we have an effect on a system (1997:126-129), and Murray emphasises that agency is thus more than participation or activity. Then there is *transformation* (1997:154-182); the ability to morph into multi-perspective, simulated worlds that can enhance immersion and agency. In this thesis, *agency* is most important, since it is related to actions with a certain importance, but also immersion will be dealt with since it is a prerequisite for agency within the realm of computer games. It is suitable for explaining how the player may take action from a point internal to the game.

Taking on the view that computer games may be a new narrative form, Marie-Laure Ryan is also concerned with participatory narratives, but admits there are many different understandings of narratives that make the relation between games and narratives vague. She describes how aesthetic computer environments invite the user to 'interactivity' (2000:7-11, 2001:205). She proposes two models, one that identifies interactivity on the basis of user freedom and intentionality (2001:205), which does not apply to computer games only, and

another adjusted to games, which describes the user's point of view in addition to the power s/he has to influence the work. Ryan's view is interesting, since she in a sense similar to Aarseth identifies different types of action with different relevance for the realisation of the game world, and different actions that let the player influence the game in different ways.

2.2 Non-Aesthetic Theories

Rational action and strategic thinking seem to be crucial when discussing player action in computer games. It is then reasonable to take into account other theoretical fields not commonly associated with studies of the reception of aesthetic works. The philosophical branch of action theory (Davidson 1963, 1967, 1971, 1974, 1978), ideas derived from the mathematical game theory (Binmore 1992, Harsanyi 1977), and aspects of problem solving as seen by cognitive psychology is useful when identifying how the computer game player takes action.

Action theorist Donald Davidson discusses on a general basis how rational individuals make choices and take actions according to intentions and motivations in our own environment. Compared to the social world, games are limited environments that simulate action via remote control, but it seems that player action follows the same *logic* as those taken in our own environment. This means that the actions are *technically* different since in a computer game they are taken by remote control via a game character or an *avatar*⁸ (Murray 1997:113), but they work by the same logic related to how the agent understands the relation between his *actions* and the *results*. This will be explained by action theory's *accordion effect* (1980:53), which is a description of how an action may be understood as one complex action although consisting of several movements or minor actions. Davidson also elaborates on the concept of *agency* (1980:43-61), and this is very much in accordance with Murray's short account of it. However, Davidson's account is much more thorough, and his more detailed outline stresses that to be labelled agency, an action must be meaningful and intentional, but not necessarily lead to an intentional outcome (1980:45-6). Another important feature from action theory is Davidson's proposal for a common sense scheme of how an agent acts, and this scheme seems a suitable point of departure for explaining computer game agency as well.

Game theory also has many interesting views on the logics of game play and strategy. The theory claims that game situations appear whenever people interact in a rational manner, and states that it is possible to create algorithms about the moves of the different players

⁸ The word *avatar* is originally Sanskrit and denotes the incarnation of a Hindu deity. It is used to mean the personification of a concept, or the version of a continuing entity (Wilhelmsson 2001:167).

(Binmore 1992:3-21). However, the strictly mathematical view will not be considered here, since an implied game player never assesses his/her moves according to mathematical functions. Ideas from game theory will instead be regarded as a background understanding for this thesis. Game theory is relevant because it has many ideas on how players react to each other and how players think strategically when playing games. The ideas of *common knowledge* from the logic ‘if everybody knows it, everybody knows that everybody knows it, everybody knows that everybody knows that everybody knows it; and so on’ (Binmore 1992:467) is highly relevant, and so is the idea of defined rules that specify the player’s actions, their consequences, and the information available (Harsanyi 1977:88). Another important view of games is taken from Avedon & Sutton-Smith (1971), who are concerned with games as a more cultural and sociological phenomenon, but with a bias somewhat coloured by the mathematical branch of game theory. Their identification of seven structural elements in games is very helpful when finding a method to study player action in games, since the elements focus on the crucial point that games have an active participant. These elements will be utilised when outlining an analytical tool for analysing player action in computer games.

Another view that will be considered is cognitive psychology’s view on *problem solving processes*. Waern & Lundh identify problem solving as a goal-oriented process, or a ‘controlled information processing’ (1996:137). Problem solving includes conscious attention and mental effort, and they claim that problems arise when we have a defined goal that we do not immediately know how to reach because we do not have a clear mental model of how to do it (1996:138). Waern & Lundh separate two main classes of problem solving: *step-by-step* and *sudden* problem solving. Whereas step-by-step problem solving demands that the solution must be described as a series of instructions and solved through the use of strategies (1996:141), sudden problem solving is not dependent upon this kind of process. The solution strikes down suddenly, often after the problem solver has left the problem for a while, because solving such a problem requires a restructuring in the mind of the problem solver (1996:164-168). At first, sudden problem solving reminds us of Aarseth’s aporia-epiphany pair, but it will be demonstrated that player action and problem solving in computer games are dependent upon both sudden and step-by-step problem solving.

2.3 What Forces Drive Action Forward?

It is clear that even though this thesis concerns player action in computer games, it does not advocate the view that the player is constructing his/her own narrative, or that s/he is the only

driving force of action in computer games. The thesis will neither argue that the player is completely under the power of the game structure, nor that player action only is illusory action completely controlled by game design. However, it will be demonstrated that player action in computer games is found somewhere in the middle between these extremes.

Obviously, game design is important to courses of action in computer games. We do not speak of the layout of the space only; in many computer games there are several *pre-planned events*. It is the player's task to connect these events together in a way cued by the game, and if the game relies heavily upon defined courses of action, the player may practically be very limited and thus it is the game and not the player that is the main driving force behind courses of action. Also, we should not underestimate the *layout of the environment*. As in our own world, environmental constraints force us to take certain actions. In computer games this is utilised as a game device that cues a certain style of playing, or predicts the player's moves to a certain extent. Mountain ranges force the player to guide the game character through narrow passes, which may be guarded and thus prevent the avatar from entering certain areas until the guard is evicted. This demonstrates that the environmental layout has large implications upon courses of action in computer games, and that the game designers utilise the environment in order to predict action in a discreet manner. Another feature of game design with important implications on action is the *interface*. Being the access point between the player and the computer environment, it defines how the game world may be manipulated. The connection between game functions and input devices such as joystick or mouse and keyboard decides all possible moves and actions in the game. The interface may thus decide that climbing walls is not possible in the game world, or it may allow the player to use magic. Also, the interface includes the *avatar*, the in-game visual character or figure through which the player acts in the game. It is the avatar that executes action in the game world, but since the avatar is controlled by the player, the actions also become his/her extended and remote-controlled actions. There is another interesting issue connected to game design. This is the cinematic *cut-scenes* often implemented into games. Cut-scenes are sequences in the game that do not allow any interference from the player, and therefore breaks the logic of gaming. However, cut-scenes often convey pieces of information that take the course of action in a specific direction, independent of the player's moves. They may also *motivate* the player to take action in a certain direction as well.

The issues above show that game design may be the backdrop of several features that force certain actions on the understanding that games are simulations of limited worlds where only certain actions can be taken. An important reason for this is that games simulate a *simpli-*

fied notion of causality that creates courses of *action in a vacuum*. But although game design is crucial for deciding courses of action in computer games, the player does play an important role. It is the player that must ‘keep the machine running’ (Ryan 2001:211) and this knowledge motivates him/her to take action within the limited possibilities of the game. Although the player may be restricted, s/he is able to act freely within these boundaries. It is important to keep in mind that it is the *interplay* between the game and the player that drives action forward. And this interplay is closely related to processes of problem solving in computer games. Obviously, it is the player that solves the problems served by the game and takes actions that progress the game towards a final outcome, but the actual relationship between game and player is thus: the game throws aporias into the player’s path of traversal, and these aporias have latent epiphanies. Then it is up to the player to find these epiphanies and execute them in order to solve the aporia. Let us now see what lies in problem solving in computer games.

2.2.1 Aporia & Epiphany

Aarseth advocates a view that the basic structure of any ergodic art form is a dialectic between *aporia* and *epiphany*. Adapting the terms from literary theory, he claims that aporias are not as in narratives ‘semantic gaps that hinder the interpretation of the work’, but instead ‘localizable “roadblocks” that must be overcome by some unknown combination of actions’. When overcome, an aporia is replaced by an epiphany: ‘a sudden, often unexpected solution to the impasse of the event space (...) essential to the exploration of the event space’ (1999:38). The rest of the work cannot be realised without epiphanies, and this makes the *dialectic between aporia and epiphany* the *crucial driving force* of action in computer games. However, this dialectic may be realised in different ways in different ergodic art forms. In *The Speaking Clock*, a poetry generator that combines words and sentences according to the time and date of the internal clock of the computer, Aarseth finds several aporias, but has trouble finding any epiphanies (1999:40). The aporias range from questions such as ‘Who is speaking?’ to ‘What is being told?’ and demonstrate that the problem not necessarily must be solved for the work to be realised. The epiphanies seem to be revealed only through critical scholarly debate. In computer games, on the other hand, this dialectic is realised as a problem that the player must solve in order to complete the game.

Aarseth gives an example from the computer game *Doom* where the problem is solved not through careful exploration, but through a sudden realisation of the one and only epiphany on part of the player. In *Doom*, aporias seem to be very clear, often physical, problems met along the course of action when playing a game, while epiphanies are solutions that are not

immediately seen, but turn up suddenly after a mental restructuring of the problem and the hypotheses about how it may be solved (Waern & Lundh 1996:167). However, since Aarseth shows that epiphanies also may be developed through careful discussion, as is the case with *The Speaking Clock*, there must be different kinds of problem solving in ergodic art, with different foci on the solutions of the problems. As Aarseth notes, the epiphany does not always come as an unexpected revelation. Different computer games also have different foci on the solutions of the problems. The player may often have very clear hypotheses about the epiphany at the same time as the aporia is comprehended. It is thus often *how* to execute the epiphany correctly that is the difficulty. To demonstrate this, I will further discuss Aarseth's own example from *Doom* (1999:38): he describes a situation in which the player enters a room filled with monsters. After several attempts of killing them and running around them, the player sees that there is an aporia: *how should I be able to get past?* Aarseth shows that there is a very special epiphany that may be revealed suddenly: in the end of the room there are several *barrels of toxic waste that explode* if fired at. Doing this, the player kills all the monsters and may continue unharmed. However, finding the epiphany is not always the strenuous task, even in this situation. As Aarseth notes himself, an experienced player knows that the barrels may explode if fired at, and thus the epiphany does not need to come as a surprise. Besides, the situation might be such that it is hard to come into a position where the player may shoot at the barrels without being discovered by the monsters. In this case it is simple to have a correct hypothesis about what is the epiphany, but how to execute it is not as simple. It may be argued that then it is the epiphany that has been misunderstood since the epiphany seems to be *how to execute* the solution, not *the* solution. However, this thesis follows Aarseth's definition of the term in so far as it denotes *the solution of the aporia*, not the execution of it. But this thesis will use the term both for surprising solutions and easily hypothesised solutions. However, it may still be argued that the epiphany is always revealed suddenly, since the player never understands it little by little as may be the case with aporias. Epiphanies always seem to follow after the comprehension of the aporia, and epiphanies becomes thus clear at some point *after* aporias finally are clearly comprehended. Even though one has hypotheses about it or comprehends it very easily, its revelation may still be sudden.

The two different comprehensions of aporia and epiphany from *Doom* above exemplify the difference between what cognitive psychology labels *sudden problem solving* and *step-by-step problem solving* (Waern & Lundh 1996:140-70). In *sudden problem solving*, the solution is not seen at first, but comes as a sudden and unexpected revelation after a mental restructuring of the problem in the sense that Aarseth describes in *Doom* (1996:167). In *step-*

by-step problem solving, however, it is the process towards the state when the epiphany is executed that is of importance. As cognitive psychology claims, the problem solving process must be identified as a *series of instructions*: the problem solver must get an overview of the situation, and the correct representation of the problem is then the starting point of the problem solving process. Each step in the problem solving process changes the state of knowledge on part of the problem solver, and the process is an attempt in changing the state of knowledge until it reaches the state of the goal. The problem solver executes cognitive operations that change the state of knowledge, and an example of such operations is our ability to draw conclusions (Waern & Lundh 1996:142-3). The problem solver develops a method for solving the problem, and this is the *strategy* s/he utilises. Developing a strategy is a cognitive structure that guides the direction of the process of problem solving, and it is seldom generated consciously (1996:145-50). This is in accordance with how this thesis argues that the player most commonly solves problems when playing computer games.

A question may still be puzzling: why do I keep the terms *aporia* and *epiphany* when it seems that the problem solving process often differs from the sudden revelation Aarseth describes? One reason is that it is demonstrated that Aarseth has many different types of problem solving in mind, and that the terms are not limited to problem solving processes with a sudden and unexpected revelation only. Another reason is that Aarseth in his article already has coined these terms in relation to problem solving in computer games. Also, using the words *problem* and *solution* instead would easily lead to confusion since they are already used in ordinary speech.

The most central driving force of action in computer games then becomes the player's traversal of a chain of aporia-epiphany pairs. Since this chain is set up by the structure of the game, it is the interplay between game and player that is the most important feature concerning action in computer games. Regarding the role of the player in structuring courses of action in computer games, this is obviously connected to going through a step-by-step process of problem solving set up by game design and that links several aporia-epiphany pairs together. It seems that regarding sudden problem solving, the epiphany is hard to discover, but when it is discovered it is easy to execute; and step-by-step problem solving has an epiphany that is easy to see, but difficult to execute.

Chapter 3: Understanding Action & Agency

Chapter 3 discusses player action in computer games, and tries to define different types. In this respect, *agency* has been proposed as a central term in this thesis. The concept is closely related to *action*, but it denotes a certain kind of action that is intentional, meaningful and has a certain effect. Apparently, agency is the kind of action taken by computer game players. But is this entirely correct? It must be discussed whether all kinds of player action should be labelled agency, or if there is a more detailed picture of player action in computer games. Most player actions are intentional and meaningful and have often some kind of effect, but does this mean that all actions are agency? An investigation of the notions of activity, action and agency will hopefully lead us to a deeper understanding player action in computer games. This chapter seeks to find a definition of computer game agency; thus several preliminary definitions of agency will be suggested during the course of the discussion, but a final definition will not be proposed until the end of the chapter when all necessary aspects are discussed.

3.1 Agency: a Background

One feature that separates computer games from most traditional forms of aesthetic expressions is the fact that they may be described as fictional environments in which the appreciator takes action with direct implication for the course of events internal to the fiction. While fictional narratives may concern fictional action, fictional characters, and a fictional world; in computer games, the world may be fictional, but player action is never fictional. Instead action must be seen as *simulation* (Aarseth 2002b:13) that lets the player manipulate, explore and otherwise affect its environment. Thus, real world actions are imitated in games, and even though actions taken in games are real actions in the sense of physical, their *status* is imaginary: think of an aircraft simulator where the actions are real since they are identical to those taken in a real cockpit, but they do not have any real life consequences. Player action in computer games is taken from a point situated *within* or *internal* to the fictional world, or as Janet Murray states, while the player is *immersed* in the fictional. Immersion denotes the physical

experience of being submerged in water, and is used metaphorically to describe ‘the sensation of being surrounded by a completely other reality’ in the way one may experience when reading an enthralling novel (1997:98). While turning the pages of a novel, the reader may be immersed in the fiction, but the action s/he takes is clearly separated from the fiction. The action does not have any effect on the course of action within the novel; hence it may be better to label it *activity*. However, Janet Murray claims that the active role that the player takes on when immersed in computer games *goes beyond* mere participation and activity (1997:128). Taking action from a viewpoint *internal* to the fictional, the player may affect courses of action in the work. Player action is part of the immersion, and hence *diegetic* to the fictional world. How can this be the case? It is the concept of *agency* that makes possible aesthetic works that allow an appreciator to take action with implications for the course of events while immersed in the fiction. Agency for Murray is ‘the satisfying power to take meaningful action and see the results of our decisions’ (1997:126). Such actions must have an effect related to the intentions of those executing them, and the user is not merely as a partaker but also as an agent with a certain influence on the surrounding environment in which s/he is immersed.

Action theorist Donald Davidson goes further into the concept of agency on a more general basis. He stresses the importance of actions to be *intentional*, but claims that the relationship between intention and agency is not one to one. As a matter of fact, the outcome of actions labelled agency does not need to be in accordance with any intentions at all. What is important concerning agency and intentions is the fact that as long as one is doing *something* intentionally, it is not important to agency whether the result of the action is expected or not (1971:45-6). Although he does not specify this precisely, *taking intentional action* should be related to *what makes them intentional*: what *motivates* the action? Davidson claims that ‘someone who acts with a certain intention acts for a reason; he has something in mind that he wants to promote or accomplish’ (1978:83). Thus, there must be a positive attitude towards the effect that the agent believes s/he will achieve by taking a certain action. However, this pro attitude must have a *source*. This source is the *motivation*, which will be further discussed in the chapter on motivation. Agency is also related to causality, but Davidson states that even though being a cause may be a mark of agency (1971:47), the notion of causality does not ‘illuminate the relation between an agent and his act’ (1971:53). As far as causality is concerned, it is the notion of *effect* that is crucial (1971:53,60), since agency is executed on part of the agent with a focus on *result*. However, we may argue that the notion of cause is just as important as that of effect, since the agent necessarily must have hypotheses about which actions that may cause the wanted effect. Thus, focussing on effect does not eliminate the cause,

but it refers to the goal-orientation of agency. To be labelled agency in Davidson's terms then, the action must have a certain expected or unexpected effect. Concerning cause and effect, it is important to see how the player in general may come to experience this. Via immersion the game creates the experience and the comprehension that the player's own actions are significant to what happens in the game. The aporia-epiphany pairs focus on a wanted *effect* that should be reached, and immersion helps the player recognise him/herself as being the *cause*.

At this point we reach a preliminary and general definition of agency. Agency is a form of action that is intentional in the sense of being the result of a motivation, meaningful, and has a certain expected or unexpected effect. The agent must experience him/herself as being the *cause* of the effect (Sutton-Smith 1997:75). The focus on effect is especially important regarding player action in computer games since most games are goal-oriented, and since it is the player's responsibility to reach the goal. The term agency is thus also important concerning game play in general. Agency concerns how an agent understands intentionality and causality in his actions, and it also indicates how one may influence the environment in which one operates. Nevertheless, agency needs to be further discussed. It seems that the proposed definition of agency is not optimal as long as it is adjusted to general situations only. There are many questions about how agency actually functions in computer games: Is it possible to speak of agency in its true sense when all actions to a certain degree are decided by game design? Both the notions of intention and causality are problematic in this respect. The rest of chapter 3 is dedicated to an investigation that will uncover what *computer game agency* is.

3.2 The Prerequisites: What Makes Possible Player Action?

There are several features that make possible user activity in such aesthetic forms as computer games. Chapter 3.2 investigates some of the most important prerequisites for player action in computer games. One feature relates to the fact that the computer primarily is a tool and not a one-way medium of communication. Being a tool, the computer encourages manipulation and action, in addition to comprehension and decoding, which are the receptive features of one-way media. As a tool the computer invites the user to submit input and respond to its output, a feature necessary for indicating a player role. A third feature is the existence of remote control devices that let the user take action that is relatively specialised. The last feature that will be discussed here is the fact that computer games are *games*, and thus demand that the player takes action according to some strategy on part of the player.

3.2.1 From Comprehension to Action

Computer games expand the decoding and interpreting of film and literature into immersed action on part of the appreciator. Comprehending a traditional aesthetic work depends upon the appreciator's use of the mind only. The user receives information and processes it in order to reach some sort of comprehension, and this comprehension triggers the brain of the user to set up hypotheses about events that may take place (cp. Bordwell 1985:31-9). However, in computer games, the user's engagement goes further in that s/he is also encouraged to *act upon* these hypotheses. Thus, computer games activate the player's body in addition to the mind. It may be argued that traditional aesthetic objects also may activate the body of the appreciators, as when a horror film makes the viewer start sweating and his/her pulse rises. However, this is a far shot from the bodily activation caused by computer games, which allows, encourages and demands the player to take action from a point of view internal to the fictional world in which s/he is immersed.

Aarseth also notes that there is a move from interpretation towards action in certain aesthetic objects (1997:64). He separates four user functions where the bottom function is the interpretative function that appears in all kinds of expressions. Further up he distinguishes three levels according to their degree of user influence and type of ergodic text. However, since this view is also interesting when it comes to identifying where the border between agency and other varieties of actions lie, it will be discussed in a later section.

3.2.2 Human-Computer Interaction & Remote Control

Opening for mutual response between human and machine, human-computer interaction enhances different forms of action in computer games in two important ways. First, it encourages the user to take part in a two-way communication situation resembling the mutual response of the dialogue, hence *human-computer interaction*. The computer presents data on screen as reaction to input from the user, who again submits input as reaction to the output of the computer, and so on. Response from the computer happens in an appropriate although mechanical manner since the computer first and foremost is a highly developed *tool*. This makes response from the computer somewhat predictable, but it seems that the programmable part in the communication process does its task well in situations that can be managed by mathematical calculations. As game theory demonstrates, games exemplify such situations. However, even though the human-computer interaction is described as a relationship of mutual response, the two parts have somewhat different tasks to perform. Both parts respond to each other's calculations and actions, but it is the computer that sets up the environment, and

the player that acts upon it. Also, since simulation is not as complex as the physical world, many games compensate for this by predefining the courses of action available to the player, or by setting up a simple environment in which player action is limited and thus predictable.

The second way in which human-computer interaction encourages player action is via the *interface*, which may be seen as the surface of communication between different entities, in this case between human and computer. The human-computer interface includes physical output and input devices such as monitor, mouse and keyboard, but also the visual ‘metaphors’ and icons on screen that conceptualise the organisation of data (Manovich 2001:69), known as the graphical user interface (GUI). The human player acts through manipulating the input devices. This is interpreted by the computer, which presents its reactions on screen. The actual processing of the information gained from the other part takes place in the brain of the player and in the central processing unit of the computer, and is only presented to the opponent party through the output devices. Human-computer interaction may thus separate the *processing* of information from the *presentation* of information, and this ability to keep information hidden is another feature that makes computers suitable for games.

Being a feature of the human-computer interface, *remote control* is necessary for the user to be able to submit input at all, since the user does not have direct access to the data except via input devices such as mouse and keyboard, or joystick. The interaction happens through an interface that connects the player to the game environment. Via input devices, the player takes *symbolic* action, which according to Peircian semiotics have an arbitrary relation to the world⁹. Thus, pushing the spacebar may mean ‘jump’ in a computer game. Manipulation of input devices allows the player to control a graphical user interface that again connects the player to actions in the game world, often, but not necessarily, via an avatar. The interface is the *threshold* (Murray 1997:146) between the fictional space, and the space outside the screen. Via remote control, the player becomes a member of a fictional world at the same time as being physically separated from it. Once immersed in the game, the division between the two spaces becomes diffuse, and the player does not regard the game actions as separate from other actions. Thus, in computer games the spaces of the fiction and the appreciator merge into one where the user takes action within the immersion and the fictional world (see 3.1.). Thus, suitable for simulating and imitating environments, the computer invites the users to take action on the same basis as they take action in non-simulated environments. However, as

⁹ Arguably, these actions could be labelled iconic too, since many of them share some features with the actions they are supposed to resemble. For instance, turning the mouse left may mean turning left, and pushing a button may mean pulling the trigger of a gun.

noted, the actions are obviously not the same, but the *logic* behind action in both environments may be compared.

The discussion on remote control takes us to action theory's *accordion effect* (Davidson 1971:53), which shows how an action may be described as both a complex chain of actions, and a compact and simple action. Actions that do not demand remote control may be described as 'I killed the man', or alternatively 'I moved my arm in a way that made the sword in my hand hit the man, causing him to die'. In computer games, which demand remote control, the description of the compact action would be similar to that above, while the complex action would be even more complex than that above: 'I pushed the mouse button with my finger, sending impulses to the game making the avatar move his arm, clutch the sword, and hit the man, causing him to die'. Davidson suggests that the complexity of the accordion effect does not make the action become less real or the agent become less active (1971:53-7). Although remote control, this seems to be the case also for action in computer games.

3.2.3 Games Demand Player Action

All scholars concerned with games seem to take player action for granted. Game theorists see the importance of the fact that game situations make players take rational action according to some strategy (Binmore 1992:3-4, Harsanyi 1977:87). They emphasise that players are actively engaged in the game, and that they have the ability to directly influence the actual outcome. Scholars concerned with games without the strict mathematical view also seem to presuppose player action (Avedon & Sutton-Smith 1971:384-5, Caillois 1961:65, Sutton-Smith 1997:23). Avedon & Sutton-Smith point out that the player of games acts within an environment s/he is able to influence, but over which s/he does not have complete control (1971:384-5). This is important to computer games since it demands action within some boundaries. Also, it emphasises the fact that there is a level in between on the one side reading and creating a meaning and on the other side influencing the structure of the work, and that this level is what makes gaming as player action possible. Further, in his chapter on *power play*, a term strikingly similar to Caillois' *agon*, Sutton-Smith emphasises the player's wish to be a *cause* (1997:75). The notion of cause relates to Davidson's view of *agency*, which suggests that games do not only presuppose player action, but also player agency. Thus, we may say that what makes action possible in computer games is the fact that they are a form of *games*.

3.3 Levels of User Activity

Player action may be of more or less importance to courses of action in computer games. In this section I would like to divide action into different levels according to how an appreciator may influence a computer game. In his outlining of a typology that describes a text according to its mode of traversal, Aarseth (1997:64) defines four user functions, ranging from the interpretative function present in all kinds of texts, to the textonic function where the user may add his/her own features to the text. The *interpretative* user function involves decoding and comprehension. This user function is common to all types of human engagement with aesthetic works, but it is hard to say that the user executes any physical action here even though most would agree that the user posits a fairly active role. This role will not be discussed any further in this thesis. In connection with the user functions, Aarseth defines *text* to mean ‘any object with the primary function to relay verbal information’ (1997:62), and adds that a text is not equal to the information it holds, and that it is dependent of a medium that influences its behaviour. Thus, he does not speak of computer games especially; as a matter of fact it is subject to discussion whether computer games today may be viewed under this definition of *text* at all as long as it must relay *verbal* information. Still it seems that the user functions are suitable for describing different modes of player influence in computer games.

Ryan builds on Aarseth’s idea, and distinguishes four modes of influence based on the pairs *internal/external* and *exploratory/ontological* the user of digital media may take ‘when the changes in conditions are determined by the user’s input’ (2000:6-7), and eliminates thus Aarseth’s interpretative user function. Ryan also distinguishes types of interactivity¹⁰ in another way based on ‘the freedom granted to the user and the degree of intentionality of his interventions’ (2001:205). She emphasises that interactivity is not a new receptive form introduced by the computer, but a dimension of face-to-face communication. She identifies four forms of interactivity from a ‘reactive’ that does not need deliberate action from the appreciator, to a ‘productive’ where the appreciator ‘leaves a mark’ on the environment (2001:204-5). Neither Aarseth nor Ryan thinks of computer games explicitly, but includes games as a form of ‘text’ that allow the user a lesser or greater freedom to act. However, in the following only computer games will be taken into account.

¹⁰ I choose to use the term interactivity here in order to be consistent with Ryan’s terminology. However the term *interactivity* is problematic since it has gained different meanings in different academic environments (Wilhelmsson 2001:131). In order not to confuse any readers by defining interactivity once again, I choose not to use it except when discussing Ryan’s view.

3.3.1 Internality & Externality

In addition to *user functions*, *perspective* is another of Aarseth's seven variables that allow us to describe an aesthetic work according to its mode of traversal (1997:63). He separates *personal* from *impersonal* perspective, but does not make the link between perspective and user function explicit in the sense Ryan does. Ryan separates the exploratory and the ontological modes into an *internal* and an *external* variety. The internal mode posits the user 'as a member of the fictional world' through an avatar or via the first person perspective. In the external mode, the user is situated 'outside the virtual world', from a god's point of view or navigating a database (2000:7). The division is not separated according to whether the player is immersed or not; as a matter of fact it seems that the internal mode is immersive, while the external may be both: playing a strategy game with a God view is an immersive activity, but navigating a database is in general not. However, the user of hypertext literature may be just as immersed as a player of a game that posits the player as a character in its environment, even though this is more similar to navigation in a database than playing a strategy game. Dividing the user positions into an internal and an external variety may be seen as problematic also because it seems to presuppose an appreciator technically situated either in or out of the fiction. Is it really this simple? There is a continuum with internality and externality as the extremes, and the user may place him/herself at any point along this continuum, Ryan argues. She admits that the distinction between internal and external is analogue, since 'the user can situate herself at various distances from the fictional world' (2000:8). She notes that computer games with a God view place themselves in between the external and internal ontological mode: the player is not situated as a character in the game space – as a matter of fact the only character we can speak of is the empire (*Age of Empires*) or city (*Sim City*) of which the player is in charge and of which s/he has the power to influence the evolution. Meanwhile, the player often also plays the role as the emperor of the empire or the mayor of the city (2000:11), even though s/he does not have an avatar in the game to fill this position. We may say that the player is always situated external to the game physically, but via the interface s/he gets access to the game space via remote control. Thus, through immersion, a third space comes into being that clashes the two other spaces. It is possible to argue that all computer games, whether they have the same spatial duality as God games or not, give the player a position in between the internal and external since they demand (1) immersion into a fiction, (2) action through an interface, and (3) that the player be part of two separate, but interrelated spaces.

3.3.2 Exploration

On the level above the interpretative function in Aarseth's model, one finds the *explorative* function where the user 'must decide which path to take' (1997:64). Ryan also includes what she calls an *exploratory* mode of activity (2000:7), which allows the user to move freely around the database and explore the environment. Neither modes of exploration lets the user have any impact on the virtual world in the sense of *altering* the course of events that the user must traverse in order to reach the main goal of the game, but there is little doubt that exploring an environment is a kind of activity and also an action. However, it seems more likely that exploration is a *method* of traversal, which may or may not include agency. Even though Ryan's view of exploration is based upon Aarseth's, the two notions are not identical. In their definitions it seems that Ryan believes exploring is a very limited type of action, while Aarseth believes exploring includes *choosing a course of action* and potentially choosing the outcome of the text. Thus, Aarseth seems to claim that exploration may hold computer game agency since it is related to progression, while Ryan does not presuppose this. In order to clear things up, it is important to consider Ryan's division of the exploratory mode into an external and an internal variety. Aarseth argues that the classical hypertext is an example of the explorative function, but Ryan claims hypertext should be labelled *external exploratory*. The externality of this mode is emphasised by noting that the user explores a database, not the geography of some environment. The *internal exploratory* mode, however, comes into being when the user is able to explore the environment from the inside, or is cast in the role as a character in the fictional world (2000:7-8). But since the mode is exploratory, the user's actions do not automatically have any effect on the unfolding of events.

3.3.3 Configuration

The next level Aarseth identifies is the *configurative* level (1997:64), where the user has the power to configure or manipulate the environment in a sense that goes beyond exploration. Textonic elements may be rearranged, or variables in the simulation may be changed. In a computer game this may mean choosing which weapon to use, which action to take, or how to put together an army. On this level the user in part *chooses or creates* scriptons. At a first glance this is confusing, since choosing and creating in general refer to two very different actions. However, choosing or creating *scriptons*, which are strings of signs as they appear to the reader, is obviously different from adding *textons*, which are strings of signs as they exist in the text (1997:62). It seems thus that creating scriptons means that by choosing specific

textons the user creates a (semi-individual¹¹) *path of traversal* that s/he follows during the process of problem solving. It is not likely that by creating scriptons Aarseth means that the user *creates new elements* that were not part of the structure beforehand and adds them to the work, since this would be creating textons instead of scriptons. The creation of textons is covered by the *textonic function* discussed below. However, the user may have the power to configure the content of the scripton him/herself. Thus, the best alternative is to view the configurative function as a mode where the user chooses scriptons from the available textons and puts them together in the order s/he prefers. No new elements are created, but the user's contribution to the aesthetic work is a semi-individual *path of traversal between the nodes*. What the player brings to the text is a method for solving problems. The player's contribution is the *strategy* (Avedon & Sutton-Smith 1971:403).

3.3.4 The Ontological Mode

Aarseth's configurative user function is not very different from Ryan's *ontological mode* of interactivity (2000:7). She contrasts this mode with the exploratory mode, claiming that in the ontological mode 'the decisions of the user send the history of the virtual world on different forking paths' (2000:7). The decisions of the user define the paths of the 'plot', or the courses of action. Ryan's wording is *plot* but in the following I would instead use *course of action* since this term is not connected to narratology and therefore does not imply the distinction between *plot* and *story*. As with the exploratory mode, Ryan separates an internal and an external ontological mode. In the *external* mode, the user is posited as 'the omnipotent god of the system' (2000:8). While having the power to take purposeful action that affects the development of the system, s/he holds a position outside both time and space of the fictional world. An example Ryan points to is the 'interactive' film *I'm Your Man*, where the viewer may decide courses of action without being a character within the film. Selecting specific actions for the characters, the viewer closes off all other alternatives and defines the behaviour of the characters. In this sense the user takes intentional action that is meaningful and drives the course of action forward, meanwhile the possibilities for influencing feels very limited since making choices is only available at a few specific moments.

The *internal ontological* mode posits the user within the boundaries of the fictional world as a character that 'determines his own fate by acting within the time and space of the fictional world' (2000:11). Thus, this mode allows the user to take action that matters for the

¹¹ Semi-individual will in this case mean that there is an individual selection, but that the work may give the user hints about the preferred order of the scriptons, and thus many users may have traversed the same path.

development of courses of action at the same time as having a position within that world. Ryan claims that the interaction between user and environment ‘produces a new life (...) with every run of the system’ (2000:11). The word *producing* may seem problematic, but since Ryan describes the ontological function to include both Aarseth’s configurative and textonic user functions, it is obvious that by *producing* she means both creating textons *and* realising different potentials in the structure.

3.3.5 Textonic User Influence

When an aesthetic work allows the user to permanently add textons or traversal functions to its world, the work opens for the *textonic user function* (Aarseth 1997:64). Since Ryan includes this function in her ontological mode, it is clear that this type of action may also be taken from a position internal or external to the fictional world. Aarseth does not emphasise this link himself, but it is important to note that elements may be added while being immersed in the game, which may place the player technically both internal and external to the game world, even though the textonic mode commonly is separated from the mode of game play. In many MOOs, new objects may be added while the user is playing the game, whereas for instance the first-person shooter/adventure game *Half-Life* only allows this in a mode external to game play where the player steps out of the role as player and takes on that of a software user, and thus designs own rooms, objects and scenarios.

The fact that the textonic user function often is separated from the act of game play makes this mode of activity problematic in relation to computer games. This means that the textonic function often becomes a *non-immersive mode*, where the player is no longer a player but a software user. We do not speak of *player* activity at all in cases like these. Of course, when the textonic function is available to the player during gameplay this changes. However, there is another problem about the relationship between the textonic mode and computer games. Even though this mode has great impact upon the physical structure, it is doubtful that the ability to add own objects into the environment influences the courses of action in the game. This puts an end to any possible belief that the more power the user has over the structure, the closer s/he gets to agency.

3.3.6 Ryan’s Notion of Interactivity

Ryan outlines another division of interactivity in *Narrative as Virtual Reality* (2001:205). This view is compatible with what she writes related to the external-internal and exploratory-ontological modes above, but is separated in another fashion than this cross-classification.

The most basic type is the *reactive* interactivity, which is not dependent upon any user. As example she points to pieces of art that react to noise in a room, or to sunlight. Not featuring a user at all, this mode is not relevant for this thesis, but it is interesting since it demonstrates pieces or art that include some kind of ‘activity’ not derived from a human user.

One level up, we find the *selective* interactivity. This mode may be *random selection*, which implies many alternatives to choose from, and a user that takes deliberate action without being able to see the consequences of them. Here, the purpose of user action ‘is to keep the textual machine running’ (2001:205). This is exemplified by the random clicking of many hypertexts. The selective interactivity is also found in a *purposeful* mode. Searchable databases are found here since they allow the user to intentionally search for information. Also computer games may be found here since they typically cue the player to purposefully reach a goal by acting according to some strategy. However, the wording *random* is puzzling. Why is *random* contrasted with *purposeful*? And how can Ryan claim there is randomness when the number of alternatives to choose from is limited? She does not specify this herself, but it is likely that she in this case understands random to mean *by chance*, or *purposeless*, or both. By chance since there could be the same randomness as that of dice; and purposeless since random is contrasted with purposeful, and exemplified by how many readers of hypertext literature clicks on the next link without considering why this specific link was chosen.

Ryan’s last mode is the *productive* mode, where the user takes action ‘that leaves a durable mark on the textual world either by adding objects to its landscape or by writing its history’ (2001:205). This mode also expands to engaging in dialogue and playing roles, and it seems thus that the productive interactivity covers Aarseth’s configurative and textonic functions, in addition to Ryan’s own ontological mode.

3.3.7 Summary: From Activity to Action

	<u>Aarseth:</u>	<u>Ryan 2000:</u>	<u>Ryan 2001:</u>
First level	(Impersonal) Explorative	External exploratory	Random selective
	(Personal)	Internal exploratory	
Second level	(Impersonal) Configurative	External ontological	Purposeful selective Merging of selective & productive
	(Personal)	Internal ontological	
Third level	(Impersonal) Textonic	External ontological	Productive
	(Personal)	Internal ontological	

Illustration 1: Aarseth’s user functions and Ryan’s two descriptions of interactivity.

This model demonstrates how Aarseth's user functions and Ryan's different descriptions of interactivity relate to each other. Three levels have been separated in order to identify three classes of actions according to their impact on the environment in which they are performed. Aarseth's interpretative user function has been dropped out of this model, since it shows how any user meets any aesthetic work. Also, Ryan's reactive mode of interactivity is not taken into account since it exemplifies an activity separated from a human user.

Before describing the types of action in each class, I find it necessary to note how the three models of activity relate to each other. Ryan's 2000 model is quite similar to Aarseth's, obviously because it is based upon his view on user functions in aesthetic works. It should be noticed, however, that they are not identical. Aarseth's user functions are one of the variables he sets up 'to describe any text according to their mode of traversal' (1997:62). In other words, his view demonstrates the *user's role of traversal*. Ryan (2000) claims that interactivity is when the user's input determines changes in conditions. On this basis, she separates her view from Aarseth's by showing what different types of *interactivity do to the user's relationship to a plot* (2000:6-7), or, in this thesis, to courses of action. Her 2001 account is further distinguished by focussing on the *user's intentions* related to what s/he does with the work (2001:205). Thus, neither of these views considers the progression of the work related to the user, but neither do they exclude it. This will be studied more closely below.

While the views of exploration refer to more or less the same kind of activity, it is harder to relate Ryan's ontological mode to Aarseth's user functions. According to Ryan, the ontological mode covers both the configurative and the textonic functions. This is puzzling since Ryan's external ontological mode seems to be more consistent with Aarseth's impersonal configurative mode than with the impersonal textonic mode. Externality and internality related to the textonic user function seem problematic without separating the modes according to immersion. It is not very common to have a textonic mode when immersed in a game, so here it could be reasonable to label the internal mode immersive, and the external an out of game feature. Thus, if I have read Aarseth correctly, his textonic user function coupled with an external (or impersonal) perspective would mean a user that creates new objects while situated *outside* the game world. This means that creation of objects is not a feature of game play; it is rather a mode on its own. Once there is an internal textonic function instead, the user creates new objects while immersed in the game. This is not very common, but it is possible in many MOOs. Even though Ryan claims that her ontological mode covers this textonic aspect, it does not seem that she has taken into account the difference between externality and

internality when adapted to cases when the ontological mode tends towards the textonic extreme.

The appreciator's possibilities to influence the aesthetic work are greater in the configurative and the ontological modes than in the explorative mode. Instead of only exploring the structure, the user may connect different parts of it as part of a problem solving process. In these modes, it seems that the user's actions may be important in order to make the aesthetic object work in the intended way. However, since the configurative user function allows the user to choose or create scriptons, this is not automatically identical to agency. Choosing or creating scriptons must be carefully separated from both 1) taking actions that matters for making the game work, and 2) a user that has the possibility for taking actions that make the game progress. It is a matter of configuring structural features, not courses of action. This seems to be the case for the ontological mode as well.

Ryan's 2001 model does not have a one-to-one relationship to the other models. *Random selection* may appear frequently in other modes, but it seems only to be a specific characteristic of the external exploratory mode. Random selection appears when the user cannot see the consequences of his/her actions, and this is what happens when reading classical hypertext literature. Reading Michael Joyce's *Afternoon* the reader does not get any clues to where the text is going (Murray 1997:57). Selection is of course also a kind of action, but it seems that this can be described as a *method* utilised when taking different forms of action. Selection, then, may or may not be related to user activity that drives action in computer games forward.

Applied to the other levels, the user's selection tends to be intentional or to some extent goal focused. Thus *purposeful selection* seems to be the largest category with which Ryan operates. It is important to keep in mind that purposeful selection is present both when exploring an environment, that is navigating a game space, or searching a database for specific information, and when taking actions that push the game forward. *Purposeful* selection on part of the player is not always purposeful related to the progression of the game, but neither does it exclude such purposefulness. Agency must be purposeful but purposefulness does not necessarily mean agency. Ryan's *productive* mode has much in common with Aarseth's textonic function, but it reaches into the configurative mode as well since it includes *playing roles*. It is therefore more similar to Ryan's own ontological mode since this mode covers both the textonic and the configurative. Interestingly, she finds that computer games fall in between the selective and productive categories since, although seldom creating anything new to add, the player is engaged in a very active participation (Ryan 2001:210).

From Aarseth and Ryan's descriptions of different ways a user may participate in the realisation of a work, we may derive different types of activity. Regarding Aarseth's interpretative user function, we see that although this presupposes an active appreciator that engages in some kind of mental work it is hard to speak of any kind of physical user *action* here, even though there is some kind of *activity*. The same goes for the turning of pages in a novel. This is not an action with implication for the content of the work; arguably it is hard to label it an action although it is clearly activity. However, there should be no doubt that all the other modes include action of some kind, whether or not it is focused on the goal. Even though pure exploration does not seem to affect the course of action as such, it should certainly be viewed as a form of action since it often is of certain importance to the player and his/her engagement with the fictional world. In classical hypertext, exploration is necessary to get an overview of the 'narration' or the contents, but it does not affect the plot in any sense. In computer games, exploration as action may have several functions. Most often, exploration becomes a *side effect* of problem solving: in order to solve a problem the player must explore the game environment. Exploration is a *method* of action that may or may not imply agency. In other cases exploring may be the whole point of the game, but such games would be labelled *paidea* and not *ludus*. This does not mean, however, that all *paidea* games are explorative only.

Thus, we cannot say strictly that agency is found on the level of *exploration*, since actions labelled agency are not a separate class. Whether or not we can call an action agency depends upon the *situation* in which the action is taken, and the *effect* of the action. Both the *configurative* and the *ontological* modes contain advanced user action by letting the user manipulate the environment. Manipulation may be a method of problem solving implemented into the game, but it is also possible to let the user solve problems via other means. However, it seems that problem solving often is implemented into these modes because the problem solving process may become more dynamic and challenging when executed via manipulation. Also, there is room for very many different classes of action in these modes, and this also opens up for placing agency here. But it should still be noted that it is not the complexity of the action that is important to agency, but that it is related to the goal in a clear fashion.

The *textonic* and the *productive* modes are both unclear whether or not they include actions that have an impact on the course of action in computer games. In general, it seems that the ability to add new elements that did not exist in the work beforehand does not affect courses of action in the game as such. Without doubt, however, even though they are not goal-oriented actions in themselves, these modes may *encourage* many different forms of action. For instance, adding a bike to a game that did not have bikes beforehand will invite a certain

type of action that was not possible before this object was added. In any case, asking players to take meaningful action seems to be a side effect only, and not a feature that defines the tectonic and the productive mode.

3.4 What Motivates Player Action?

This thesis' task is not to make a coherent overview of all possible factors that make a player take action in computer games. It is still necessary to make an outline of the most important issues, since there would not be any player action at all without motivation. In this section I would like to point out some features that make the player want to take meaningful and intentional action in computer games.

We may separate two kinds of motivations: The first are the *bottom-up* reactions triggered by the reactive part of the nervous system; i.e. an individual moves his/her hand automatically when touching a hotplate. Obviously, these are not relevant for motivating a player to take intentional action in computer games¹². Here we are concerned with *top-down* motivations that trigger the player to execute agency related to a certain situation in which the player finds him/herself. Motivations are all those features that give the player a reason to want a certain outcome, and to take intentional action related to this. S/he develops thus a pro attitude towards actions that s/he believes will lead to the wanted outcome (Davidson 1963:3-5). Motivations are the prime requisite needed for the player to take action in any environment. If there is no drive or wish for any special course of action, it is difficult to make players take important and intentional action with implications on the system. Motivations do not only secure action in computer games, but are more especially important for *securing agency*, by focussing the player's attention towards a goal. Thus, we are able to add another feature to our forthcoming definition of agency: In order to be labelled agency, an action must take the player a step further towards the goal.

3.4.1 Solving Problems

Ryan notices that solving problems and playing games is an important factor that makes someone want to submit input into an interactive text (2001:211-12). Problem solving is a central motivating factor in all kinds of *ludus* games. According to Gonzalo Frasca, there is always a certain desirable outcome in ludus games since they define a winner and a loser (2001:12). Hence ludus games are highly result oriented by constantly focusing on a wanted

¹² However, fast reaction and good hand-eye coordination may be important in certain computer games, but these must be said to be (semi-)conscious top-down motivators and not bottom-up nervous reactions.

effect that the player should struggle to reach. To the player, it becomes important not only to be a *cause*, but also to find what actions that might lead to the wanted outcome, and then act these out. Causing a *certain effect* of a new desirable state is thus more important than merely being a cause. Effect-focused problem solving then has a motivating function on the player since it centres his/her interest on one special issue and lets him/her find his/her way through the game in search of this goal by developing strategies and solving problems.

It should be observed that the orientation around a predefined outcome makes it necessary for game designers to shape the game in a certain fashion. They need to restrict the players from taking certain actions, and they must also often create specific paths of causality that lead to the wanted outcome. This is related to Aarseth's notion of aporia and epiphany (1999:38). Even though one might believe it to be otherwise, it seems that having a central goal to reach is motivating to such a degree that the player overlooks the fact that the game environment may be a limited simulation of the world.

3.4.2 The Moves of the Opponent

Once a player is immersed in a game and has established pro attitudes (Davidson 1980:3) towards the central goal of the game, s/he is affected by the moves of the opponent. The implied player *acts rationally* (Binmore 1992:3, Davidson 1980:3, Harsanyi 1977:87) and does his/her best to hinder the opponent from fulfilling its goals, and at the same time s/he does what s/he believes is optimal in relation to fulfilling his/her own goals (Harsanyi 1977:87). In developing a strategy to overcome the opponent, the player needs to have knowledge or hypotheses about the opponent's knowledge and possible moves (Binmore 1992:483, Goffman 1969:86,94-6). The options available for player action depend upon how information is distributed. In computer games, it is common that the player does not know everything about the opponent's actual moves. This is what game theory calls a *game of imperfect information* (Binmore 1992:100, Harsanyi 1977:91). At the same time, the player has full information about the rules of the game and the strategic possibilities of the opponent; thus the game is also of *complete information* (Harsanyi 1977:91). When a game is of perfect information, the player may develop a strategy according to what s/he knows about the opponent's actual moves. S/he will then adapt to the opponent moves at all times in the game. However, when the game is of imperfect information, the player develops a strategy based only upon the hypotheses s/he has about the opponent. This may result in situations where the opponent suddenly appears in a position that threatens the interests of the player, and the player is thus forced to act promptly in order to secure his/her interests. The whole process of playing the

game becomes one of planning, evaluating the opponent, and solving problems, and this motivates – or rather forces – the player to take meaningful action related to the desired outcome.

3.4.3 Game Genre

It should also be noted that the strategy a player develops depends to a great degree upon the type of game s/he is playing. Even though all games demand a special method in order to reach some desired outcome, there are great varieties between genres, and different genres need different strategies in order to fulfil the goal. Thus, genre influences how the player is motivated to act. A game labelled *strategy game* presupposes a player that more or less consciously develops a strategy that s/he follows, for instance collecting resources initially in order to be able to build a great army before going to battle. CRPGs, on the other hand, may have less clear strategies, and in addition, there is often need for different tactics at different situations: strategic interaction (cp. Goffman 1969) when communicating with non-player characters (NPC), and more classical war strategy in combat where the player must protect the weak archers and let the warriors go into melee.

3.4.4 Other Important Motivators

Related to problem solving are demonstration of skills and seeing that one's strategy is sufficient and meaningful by leading to a certain effect. Seeing that one's own actions influence the course of the game motivates the player to continue taking action. Also, since obstacles show up in front of the player continually, there is always something that demands the player's attention. The continuing chain of aporias and epiphanies that demands player action is then an important motivation. This shows how a computer game always needs a player that keeps the machine going (Ryan 2001:211). When the player sees that the game does not progress without his/her contribution, s/he knows that the action s/he takes is of importance.

As seen above, exploration is valuable in itself even though it is only loosely connected to actions that are of certain importance to the drive towards the ultimate goal. The possibilities for exploring may thus also motivate action. The desire for knowing the details of the system inspires the player to take actions that s/he would not take if following the ideal course of action (Bartle 1996:3). An example of this is *bug exploitation*, where one finds shortcomings in the rules or program code and utilises them. A good example may be how players of the adventure game *Deus Ex* (Ion Storm 2000) utilise proximity mines in the game to climb walls, avoiding many aporias (Juul 2002b, H. Smith 2002:2). This action must be regarded internal exploratory, since it is taken from a point internal to the environment in

which the player is immersed. This specific action definitely has important effects to problem solving, but bug exploitation is not necessarily always influencing the path towards the desired outcome the way the ‘proximity mine climbing’ does.

3.4.5 Agency: the Power to Influence

The most important motivating factor that needs to be discussed is related to several of those above. This is the notion of *agency*. As we have seen, *agency* describes actions that are meaningful, intentional in the sense of being the result of a motivation, and that have a certain effect on the system by progressing the course of action in the game. But how does agency motivate? The feeling of being a cause and taking meaningful action in the game is very inspiring for a player. Knowing that one’s specific actions are bound to the actual events in a game, player develop a strategy and act upon it in order to achieve a certain result. The player realises that it is his/her own responsibility to solve the problems and thus make the game progress. Motivation thus creates an intention in the player to try and reach the wanted outcome.

Even though agency implies how the player drives action forward, it should be noted that agency often is adjusted to actions especially intended by the game designers. This does not only go for *games of progression* (Juul 2002b), which have predefined courses of action that must be followed as serially introduced challenges to complete the game; it is also a feature of *games of emergence* (Juul 2002b) that to a greater degree rely on a player that him/herself defines the path as result of the strategy s/he chooses, and that thus creates traversal paths via a combination of rules and variables along the course of action. However, since agency is adjusted to how the designers have created the game, it cannot be separated from some intentions on the designers’ part. This means that the player may feel that the actions taken are more meaningful when following the aporia-epiphany pairs set up by the game than taking action not related to these. Since games are limited simulations of environments, the actions one may take are also limited, and the simulation is often best adjusted to the most important courses of action in the games, and the system will react in a credible way that the player feels is reasonable and meaningful. Taking actions not predefined by the game designers, the player’s feeling of agency may somewhat disappear. If the meaningfulness is detached from the courses of action that are part of the central problem solving process, the importance of the action also seems to change. Even though exploration and bug exploitation may feel meaningful, this meaningfulness is of another kind. These actions may be fun, but they do not necessarily matter for the state of the game. Thus, the game utilises the feeling of agency to motivate the player to take certain actions.

3.5 Freedom of Action?

It is a common argument that computer games do not allow the player any freedom to act. Since all possible moves are set beforehand, the player can only navigate mindlessly between nodes without being able to take influential action, the story goes. However, even though it is true that moves to a certain extent are predefined, this does not seem to decrease the importance of player action nor the feeling of agency. It is the aim of chapter 3.5 to identify how and to what degree the computer game player is free or restricted to act. It will be demonstrated that it is possible to take influential, meaningful action in limiting environments.

3.5.1 Game Rules

In games there are certain *rules* to be followed (Avedon & Sutton-Smith 1971:7, Frasca 2001:9, Caillois 1961). Rules may be seen as restrictive since they define legal and illegal moves, but it is important to note that they also define what actions are possible. Although restrictive, rules also open up for agency by presupposing influential action. Game theory takes for granted an active player who is able to take rational decisions and act upon them (Binmore 1992:3, Harsanyi 1977:87-8), and this is determined by the rules of the game. The rules must decide 'who can do what and when they can do it. They must also indicate who gets how much when the game is over' (Binmore 1992:25). In other words, the rules decide *legal actions* and *the outcome*. Rules are present in order to guide the player as s/he takes actions when moving towards a certain outcome. The rules thus define what may or may not be done in the game space: they influence the possibilities and constraints in the environment, and create the boundaries within which action can be taken.

Without discussing all different kinds of rules a game may have, I will go into what it is that makes the formal or technical computer game rules different from corresponding rules in other games. Since they are computer programmes, computer games have the possibility to implement rules in the source code. In a classical game like chess, the moves of the pieces are defined beforehand, but it is up to the players to move according to the rules. In computer games, on the other hand, it is almost never possible to cheat as long as the game is thoroughly programmed. This means that the system *stops the player* if s/he tries to make an illegal move. Or rather, the system *will not allow the player to even try*. Computer games are thus very constraining regarding actions of cheating, and a player cannot act freely if freely means breaking the rules. However, for players with a reasonable computing skill, there are ways to cheat a game. *Baldur's Gate II* lets the player enter a so-called *cheat code* by certain commands, allowing the player to add helpful items to the player character's (PC) inventory, or to

automatically kill characters or monsters (Cheat Codes 2003). But this kind of cheating cannot be seen as *breaking* the rules; it is rather a method to *avoid* the rules by going beyond them. It does not ruin the fact that computer games in general cannot be cheated, while traditional games can. On the other hand, since these rules are implemented into the system, they do not feel constraining to the same extent as rules of classical games. In classical games a player normally needs to learn the rules, while in computer games the player does not need to learn any rules at all. One may say that computer game rules are invisible compared to rules of other games. The player does, however, need to learn the rules of the interface of any computer game, and while not the equivalent of traditional games' structural rules, the interface may be seen as a formal feature that needs to be learned before being able to play the game correctly. The interface then constrains the player in the sense that it defines what actions are possible within the game. But as mentioned above, it is via remote control the interface allows the player to take any action at all.

3.5.2 The Impact of Constraints and Possibilities

In a computer game, *possibilities* are what the game rules, the interface, and the game world allow a player to do, while *constraints* are what the same features hinder a player to do. Ulf Wilhelmsson touches on the same idea, but labels the pair *affordances* and *constraints* instead, adapted from James Gibson's ecological approach to perception (2001:53-69)¹³.

The discussion of how rules may hinder and allow player action concerns constraints and possibilities on a more structural, technical or formal level of computer games. Let us now turn to those features that influence player action resulting from the game environment¹⁴. The setting motivates constraints and possibilities, and the restrictions become credible since they seem to fulfil the setting. Computer games often operate with simulations of natural environment restrictions like mountain ranges, oceans, and not at least scarce resources. Being implemented as the natural environment of a simulated world, these constraints and possibilities feel limiting in a sense similar to those we meet when interacting with the natural environment around us. We accept them because they are a feature of the environment, but at the same time the constraints of a game environment are more limiting since they are placed in the game with a certain purpose of cueing certain actions. Restricting actions by means of the

¹³ I choose to use the more common word *possibilities* instead of *affordances* since *affordances* is not widely known outside the field of ecological psychology. Also, Wilhelmsson draws heavily on other Gibsonian ideas when describing *affordances* and *constraints* even though it does not seem to be necessary when discussing what it is in computer games that opens or limits for player action.

¹⁴ Possibilities and constraints may be seen as part of the game rules. Harsanyi claims that in social situations analysed as games, rules include laws of nature, distribution of resources, and social conventions (1977:88).

environment is very powerful since the players accept constraints when they relate to restrictive features that they know from other environments. Also, when the possibilities and constraints are motivated, the players do not feel that they limit action. The player only needs to take *different actions*, or take the wanted actions at *different locations* or *times*. Moreover, game designers utilise the possibility for creating environmental restrictions in order to make more challenging games, which means that the possibilities and constraints are there to give the player an opportunity to plan his/her actions, develop a strategy, work towards the goal, and thus get a greater feeling of agency. We may then say that problem solving is constraining to the actions at the same time as it encourages and makes possible more creative thinking, attempting, and in some cases also action.

Constraints and possibilities may also be motivated by *situations* within the game. Many actions cannot be taken until some condition has been met. The possibilities are thus extended when an epiphany is reached. The epiphany is thus the answer that enables the player to continue his/her search for the main goal. The typical situation in an adventure game or CRPG may be that a central non-playing character (NPC) will not give the player a certain piece of information or item until the player has done the NPC a favour. When the player has done the favour, s/he receives the piece of information or item and may go on in his/her mission towards the main goal. Thus, an aporia is a *temporary constraint*.

It seems that restrictions in computer games do not feel limiting on player action as long as they are somehow motivated. If they at the same time are tied to the central process of problem solving, they might function as challenges that increase the player's feeling of taking action of importance since the game demands creative thinking and action on part of the player. As long as the player keeps his/her focus, no urge to explore the limitations of the game comes into being. However, in cases where a player does turn his/her interest towards other aspects it may be easy to discover the limitations of the game (cp. Aarseth 1997:111). Games that are very open in relation to actions and central goal, and let the player exploit freedom of action often reveal this by opening for events not intended by the designers. An example can be taken from the very open CRPG *The Elder Scrolls II: Daggerfall* (Bethesda 1996): nothing prevents a player from attacking city guards, and since objects in the game are flat, two-dimensional 'sprites' (Manovich 2001:139) it is possible to stack the guards up. This is done by running around them, making them gather together on the same spot in a certain distance to the player character. Then it is easy for the player to kill all the guards by one strike of the sword. This demonstrates that there is a reason why constraints and possibilities

are motivated, and also that there is a need to constrain the player to a certain degree from taking actions that are not related to some goal in the game.

3.5.3 Gaming Digression: Saving & Loading Games

There is another feature that should be taken into consideration when discussing player action in computer games. This is the ability to *save* games and *load* a previously saved game. These should be regarded as non-immersive or out-of-game activities, but even so, saving and loading are important in relation to the courses of action within the game. Saving and loading a game are actions done external to the game world since they let the player step out of the immersion for a moment and alter the fictional reality. In relation to the theory of player action proposed here, it should be regarded as a legal irregularity.

Saving a game is always done as a preventive act. When the player just accomplished a hard task, or expects that problems ahead will be particularly difficult, s/he saves the game in order not to let it end prematurely. It is, however, the load function that allows the player to repeat a previously taken action that did not have the outcome s/he wanted in order to improve. Loading a game, the player puts him/herself back to the last point of saving.

This activity has important implications. The feature of saving and loading clearly separates action in computer games from other actions we may take since it allows us another attempt in an otherwise unrepeatable situation. More interestingly, saving and loading give the player increased knowledge about the situation in question. When the player repeats the situation, s/he takes advantage of the information gathered during the first play, and his/her strategy in the next attempts will be based upon this knowledge. Even though this is a kind of knowledge not possible in real world situations outside the game environment, it is important in relation to how one develops a strategy in computer games. In fact, many games today expect a player that develops a strategy on the basis of the increased knowledge gained from the save and load functions. Thus, this issue inspires a ‘what will happen if I do this’ strategy, which means that the player may save a game just to check out the effect of a certain action. Lastly, saving and loading may eliminate the possibility of failing since all actions may be loaded as long as there is a saved game.

3.6 From Action to Agency

So far player action has been discussed on the basis of several different aspects. The central problematic issue freedom of action is discussed, and motivation has been studied as the prerequisite for important action. From the comparison between Ryan and Aarseth’s descriptions

of user activity, we have seen that there are many different types of actions, and that it is hard to strictly place agency within one of these categories. Murray states that those actions that go beyond mere activity and participation are agency (1997:128), but this thesis tries to identify the concept more exactly. In a somewhat diffuse sense, it has been proposed that agency is motivated intentional action with a meaningful, but not necessarily expected, effect that takes the player a step further towards the goal. Several features of player action have been discussed in order to illuminate and better understand the concept of agency, and it seems that we now are able to clarify more precisely what agency is and how actions under this label are especially important to courses of action in computer games.

3.6.1 Agency & User Activity

When placing agency into the comparative model of user activity above, one may get a general idea that it should be situated somewhere on the second level: the level of the *configurative* and the *ontological* mode, and where the *selective* and the *productive* interactivities meet (see model chapter 3.3.7). This is the level that to a greatest degree seems to open up for agency by being the level on which the user has a great deal of freedom to act in meaningful ways, but without being as free as to change the environment in any other permanent fashion. It seems that it is *manipulation*, not creation, of objects that is important when it comes to trying to achieve the desired outcome in games. Placing agency on this second level is not unproblematic. As we noted above, it is most of all the external ontological level that causes trouble. An ‘interactive’ movie like *I’m Your Man* does not seem to invite agency, since it is only possible for the viewer to take action at certain points. Even though those user actions available have the power to change the course of action, the user appears as viewer most of the time. On the other hand, the actions available in a computer game with a God view like *Age of Empires* may be labelled agency since the player, in addition to affect the evolution of the system, may take actions at all times – s/he is part of the *continuous flow of action*.

Another problem is that Ryan’s modes of interactivity and Aarseth’s user functions do not say anything about how the *user may influence the outcome* of a work; they only seem to state different modes of action that may somehow influence different states in the works at different situations. However, the relationship will be discussed below. Besides, being able to influence the structure is not the same as influencing courses of action, and agency thus seems disconnected from this.

Even though agency may be found on the second level, it also reaches into the other levels. Being able to explore an environment seems to *enhance* the feeling of agency even

though exploration cannot be regarded a mark of agency on its own. Exploring is important to immersion, motivation, and taking pleasure in games generally, and should therefore not be seen as irrelevant for agency. Exploring is a kind of action that may be meaningful on part of the player, and computer games might be based upon exploring alone. What is important concerning the relationship between exploration and agency is that exploration in itself does not drive the course of action forward towards the central goal of the game.

Agency also reaches into the third level of the *textonic*, *ontological* and *productive* modes. Many may argue that this is the only level where agency can exist since this is the level where the player has a real possibility to affect the game environment permanently. However, this argument does not hold. In the first place, games that allow the player to create their own objects to add to the game only lets the player do this in an authorial mode *external* or *non-immersive* to the game. The user must step out of his/her role as player and into the role as software user. Secondly, adding objects to an environment will normally not change the course of action. However, there may be rare cases where adding objects does affect the central course of action. These demonstrate that agency also is a possibility on the third level.

As indicated, we cannot exclude agency from the three levels in the comparative model above, even though they neither explicitly includes it. As a sum-up, however, I will suggest how the three modes may include agency. If a game lets the player choose between two different actions in the course of exploration, the impact of the player has little or no effect on the structure, but it may have an effect on the *progression* of the game. This is often the case in traditional adventure games. The configurative/ontological mode may let the player manipulate objects in order to have progression: a certain artifact must be found and used in a specific manner at some location, and when this is accomplished, the player may continue towards the goal. The textonic/ontological mode is not very common, but we may imagine a situation where the player must create his/her own object in order to progress the game. This creation should not be the result of configuring and manipulating already existing objects in the game world.

3.6.2 Specifying the Concept of Agency

Many may find the idea of agency in computer games problematic because of the game designers' beforehand structuring of events, for instance in CRPGs. How can agency be possible when courses of action are partly designated beforehand? The answer is that agency indicates that the player may influence courses of action without creating anything new or altering what is possible in the game. As a matter of fact, to have an effect on the progression of the game is

something very different from the power to change the structure. Computer games are simulations of fate-bound worlds where agents may take important, intentional action with a certain effect, even though it is beforehand decided whether courses of action will lead to success or failure. In the same sense as fate-bound worlds cannot do without strong personalities with the ability to getting things done, computer games cannot do without the player.

As Davidson points out, agency is connected to intentionality and causality (1980:45-7). Murray emphasises the importance of meaningfulness that goes beyond participation (1997:126-8), and she also suggests that the action must have implications upon the progression of the game (1997:126-7). Through the discussion this far, we have seen that computer game agency goes further beyond what both scholars say. It is correct that agency is a form of action that is intentional, meaningful, and leads to an expected or unexpected effect regarding the progression of the game. But this does not tell the whole truth of computer game agency. In computer games, in order to be labelled agency, the action should have an effect that *takes the player a step further in the process of problem solving*. It should take the course of action towards, and ideally through, a *change in state*. Ideally, agency implies actions that *solve an aporia and replace it with an epiphany*. ‘Ideally’ in both cases, because some actions labelled agency only take the player one step closer to achieving the epiphany. Such actions are excused as agency because they are part of the *accordion effect* (Davidson 1980:53).

3.7 Computer Game Agency: a Schematic Overview

3.7.1 Conditions for Modelling Agency

A graphical overview of computer game agency will be presented in the following. It illustrates the player’s process from comprehending the problem and realising the importance of a certain goal, to taking actions that lead towards the wanted outcome. The model will serve as analytical tool to be utilised in the following analyses of the CRPG *Baldur’s Gate II: The Shadows of Amn* (Bioware 2000a) and TBS *Heroes of Might and Magic IV* (New World Computing 2002a). The model is inspired in particular by two descriptions of action. Davidson suggests a ‘common-sense scheme’ for describing how someone acted as s/he did. The scheme includes the desires, purposes, and goals of the agent, in addition to the specific belief of the agent that connects the desire for the action to be explained (1980:231-2). His explanation should therefore (1) describe the goals and motivations of the agent, (2) show how the

motivations link to a belief that a certain course of action leads to a certain outcome, and (3) map the course of action in detail.

The second view taken into consideration is Aarseth's explanation of how a computer game player overcomes an aporia by replacing it with an epiphany (1999:38). This pair describes typical problem solving in computer games, and Aarseth presents us with a thorough portrayal of how a player goes from aporia to epiphany in *Doom* (1993). Describing the player's course of action, he identifies these stages: (1) There is a situation where the player realises that there is a problem or 'road block': the aporia. (2) The player makes hypotheses about how to overcome the aporia, and (3) based on some loosely defined strategy s/he makes attempts to solve this until s/he runs out of patience. (4) At some point the player discovers that there is a special method to solving the problem, and that the strategy or hypotheses utilised were faulty. This solution is the epiphany, which needs to be acted out by the player.

Davidson's action theory coupled with Aarseth's description of problem solving in computer games will make a good point of departure for a model illustrating how a player executes computer game agency. It should be noted, however, that the map is only an analytical overview where the course of action is analysed out of context. In real game situations, one should be aware of the fact that the problem solving process may at all stages be affected by reactions from the computer. In addition, the player's knowledge, hypotheses, and development of strategy may change during the whole process.

3.7.2 Flowcharting Aporia & Epiphany

The model below shows problem solving on part of the player both when the process goes smoothly and when it does not. The correct flow of problem solving in relation to the game designers' intentions is found when following the arrows from the aporia box on top to the epiphany box in the bottom. The faulty flow is found when following the arrows from the aporia box to the box marked *quasi-causes*.

At the top of the model is the problem or *aporia* that the player meets on his/her path towards achieving the goal of the game. As seen above, aporias are roadblocks that the player must overcome; thus an aporia may be seen as a temporary constraint, or a constraint that exists until the correct actions are taken and the specific problem is solved. The first task for the player is to *comprehend the aporia*. Comprehension is not a physical action, but it is definitely an activity. At this stage the problem is processed in the brain of the player, who figures out that this is a problem that s/he must solve. Thus, situated on the mental level of activity, it

is the first step of mentally preparing oneself to take action¹⁵ (cp. Bordwell 1985, Branigan 1992). When recognising him/herself as being the one to solve the problem, the player is engaged in an activity related to agency, but as far as this activity does not have any effect on the progression, it cannot be labelled agency as such.

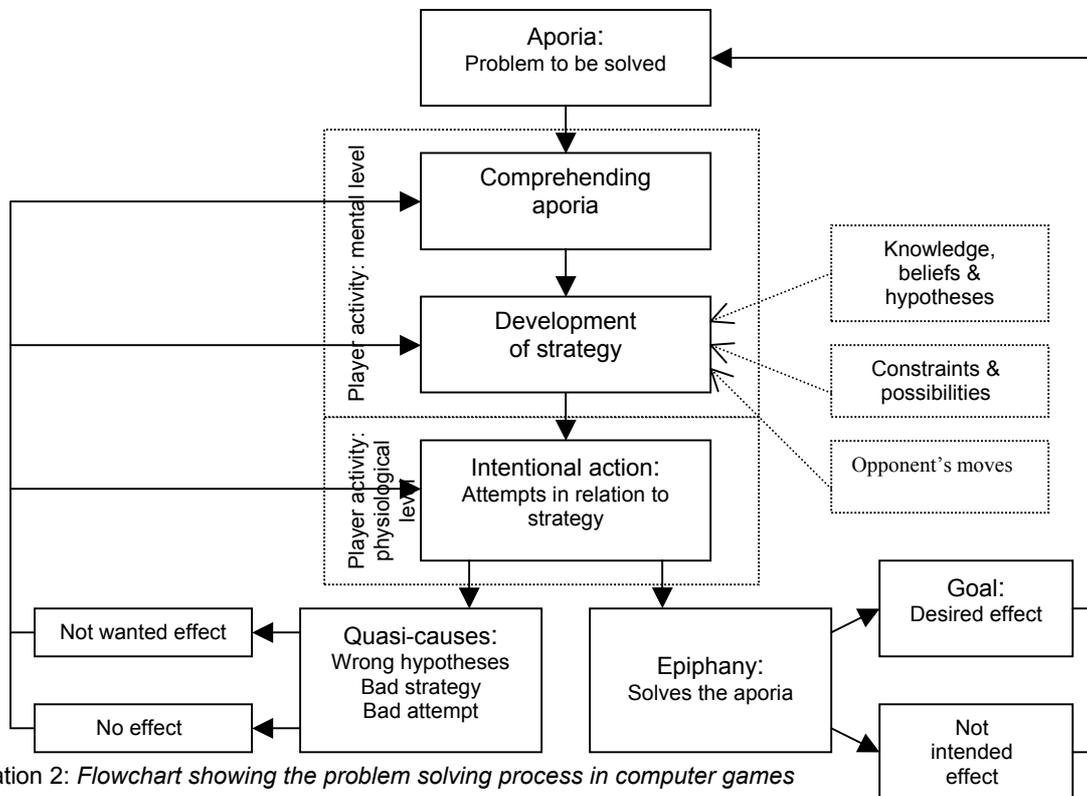


Illustration 2: Flowchart showing the problem solving process in computer games

The next stage in the process is *development of strategy*. This is also situated on the mental level, but works as a link between mere comprehensive activity and physical action. It may be argued that audiences of non-participatory aesthetic environments also make strategic decisions (Ryan 2001:141-2), but in a participatory environment like computer games the strategy needs to be somewhat different. In a game, the player knows that the strategy s/he develops is a tool for his/her own actions, not only a hypothesis about what is likely to happen within the course of events. However, finding a strategy is normally not something the player does consciously and at one specific stage of the process of problem solving. The reason for situating development of strategy here is that it necessarily must come after comprehending the aporia. There is no reason why it should not be developed during the course of action, but since it must be labelled mental player activity it is placed before physiological action.

There are at least three different groups of features that may affect how the strategy is developed in computer games. Also emphasised by Binmore (1992:47,118,445-67,483),

¹⁵ Of course, the player must also comprehend that the game is an environment with which s/he is meant to execute agency, but this is not included in this model since it is taken for granted in the thesis.

Davidson (1980:231), and Goffman (1969:10), the first group concerns the player's own cognition. *Knowledge, beliefs, and hypotheses* are acquired through interaction with the game, but they may also derive from experience with the game genre in general, and the specific game in particular. Together with these issues, the player's experience with real life phenomena should also be included since these also may influence how the player develops a strategy, and what kind of strategy it will be (cp. hermeneutics).

Both *constraints and possibilities*, and the *opponent's moves* are features that evolve external to the player's cognition. However, the moves of the opponent are affected by the moves of the player, in the same way as the player's moves are influenced by the opponent's moves. As mentioned above, in a game of imperfect information the player and the opponent must develop their strategies without knowing anything of each other's moves. On the other hand, constraints and possibilities influence the development of strategies by limiting or allowing for certain actions (cp. Goffman 1969:28-43). Computer games are often designed with a certain layout in order to provoke certain strategic decisions, and a certain distribution of resources may do the same.

Up to this point the correct and the faulty paths are structurally the same. Player action may result in an *epiphany*, which is the solution of the aporia and the cause that leads to an effect when executed. Or it may result in *quasi-causes*, which lead to no effect at all, or an effect that is not wanted by neither the player nor the game designers. Epiphanies may have an intended or an unintended effect (cp. Davidson 1980:45-6). An example that illustrates this comes from Bioware's 2002 CPRG *Neverwinter Nights* (single player modus). After the player has accomplished his/her first main mission, namely finding the four lost creatures needed for making a cure for the plague-infected city, there is the occurrence of an unintended effect over which the player has no control. Immediately after the making of the cure, one of the city lord's most trusted servants steals it and disappears. This happens in a cut-scene, and is an example of the epiphany (collecting the creatures) not leading to the goal (curing the city), but instead to an unintended effect that is part of the game. It is not possible to load the game in order to prevent this from happening; it is part of what will happen in the game when the correct epiphany is found.

The path towards quasi-causes illustrates how players solve problems in computer games most of the time. Often players make several attempts before solving the problem and finding the epiphany. The reasons for this is that they might have had wrong hypotheses about what the epiphany that solves the problem is; their strategy may have been unsuitable for reaching the goal; or their attempts might not have been good enough. The player has not

found the proper cause to the desired effect (hence the term ‘quasi-cause’), and gets thus no effect, or no wanted effect (for instance death on part of the avatar). It can be seen from the model that quasi-causes make the player go back some steps in the process of problem solving. If the hypotheses were wrong, the comprehension of the aporia was faulty and the player needs to rethink the problem. If the strategy was unsuitable, s/he should develop another one. And if the attempt was faulty, the player should try again. Players deal with quasi-causes in three ways: they may quit the game; they may try again and again until success; or they may load a previously saved game. Deciding which one to choose depends on several issues; for instance the game genre or the attitude of the player. Also, if the avatar has died, there is little one can do but load the game.

3.7.3 Summary: The Player, the Aporia & the Epiphany

Concerning player action in computer games, we have seen that it takes the form of a problem solving process. The action the player takes is based upon a strategy developed on the basis of the player’s beliefs, hypotheses and knowledge about the opponent and his/her moves, and the game environment and its restrictions. This action is intentional, rational, and unfolds as attempts to reach the goal according to the strategy. When the strategy is satisfying, the player solves the aporia and acts in accordance with the epiphany, which is the solution of the aporia and will cause the effect that will provide progression in the game. This is the essence of computer game agency. Player action happens through remote control, but apart from that, action happens to a great degree according to the logic presented by action theory. Intention makes the agent move his/her body in a way s/he believes or knows out of experience will cause a certain effect. The agent also acts for a reason (Davidson 1980:3-6). In addition, however, remote control demands that the player of computer games learn the interface between the real and the virtual world. However, in this thesis it is not the way the player uses the interface that is important since this is not crucial for agency. What is crucial for agency is how the actions of the immersed player have an influence on the game progression.

Chapter 4: Analysis: an Introduction

4.1 On Analysing Computer Games

Doing an analysis of computer games is not a simple task. There is no common consensus on how to do it, but a few academics have tried outlining a general method. It is obvious that computer games cannot be analysed in the same fashion as film or literature. The ability of games to be somewhat different with each traversal in addition to the fact that the user is positioned internal to the game in a sense we are not familiar with from traditional media makes computer games very different phenomena from film and literature. In addition, this thesis does not attempt to analyse computer games from a general point of view. The focus is on player action and problem solving, and describing this does not require a full analysis of all aspects of the games. Here I will give a description of the elements that need to be discussed when analysing computer games from my viewpoint. Earlier attempts to define a consensus for computer game analysis will be mentioned (Aarseth 1995, Juul 1999:64-5, Konzack 2002:89-100), but it seems that the best way to analyse games from my point of view is to draw on Avedon & Sutton-Smith's identification of seven elements in games (1971:422).

Initially, it is important to say something about the general structure and function of the games. Formal descriptions of both the CRPG *Baldur's Gate II: The Shadows of Amn* and the TBS *Heroes of Might & Magic IV* therefore introduce the analyses. The overview is separated into two parts, one concerning features of the fictional world such as setting and quest, the other concerning more structural issues like space, time, interface and interaction. This resembles the division Lars Konzack makes between *virtual space* and *playground* (2002:90) when wanting to describe the game in question before analysing it. *Virtual space* is setting, adventure and characters, and *playground* is the interface, control and game console. I will also draw on Aarseth's identification of basic elements in computer games in this formal description (1995). He broadly identifies *time* and *space*, and *action* and *player position* as important features that should be considered.

Concerning the actual analyses of the games, there seems to be no definite solution how to do it. Dependent on which aspects of the games one looks into, one needs to identify in each separate case the elements important to the specific analysis. However, as a starting point when studying games in general, one gains much on drawing from Avedon & Sutton-Smith's identification of elements in games by combining views of mathematicians and behaviourists (1972:422). These elements are *purpose and result*, *procedures for action*, *rules for action*, *player roles*, and *interaction patterns*. They also add *number of players*, but this seems to be irrelevant to my analysis since the games I study may have a variable number of players in addition to the fact that it does not seem to change players' pattern of behaviour to a greater degree. The analyses will mainly follow the elements outlined by Avedon & Sutton-Smith since they focus on player action related to outcome as an essential feature of games.

Most importantly, the proposed model of player action that describe player participation from comprehending an aporia to solving the problem and reaching the goal will be used as analytical tool in order to analyse how an implied player traverses the games in question by the means of problem solving. It is necessary to analyse both the general features of game traversal and a selected sequence from each game.

In this thesis, then, I will try to use the theoretical considerations outlined above as a method for analysis, since the theory points toward what is relevant for my project of explaining player participation in courses of action in computer games. Getting a full understanding of computer games means knowing both the surface layer of visuals (*material*) and the underlying computer programme (*programme*), and this implies that both need to be studied. However, as Juul claims (1999:64-5), the *material* is easily analysable in a similar fashion to traditional expressions. The problem comes into being when we regard the *programme*: there is no precedence for analysing the computer programme behind the game's surface. It is, however, possible to interpret the combination between programme and material, because a computer game player will learn to know the programme by using it indirectly through game play. This is the method that will be utilised here since my focus is dependent upon how a player via a comprehensible and recognisable environment interacts with an abstract system that responds reasonably to the player's actions. This will not, however, be discussed in detail, but it will rather be understood as the background for how players comprehend computer games.

4.2 Describing the Games

4.2.1 A Short History

Even though there are many overviews of the history of computer games found elsewhere (Aarseth 1995, 1997, Juul 1999, Poole 2001), it is necessary to outline a historical context for the games in this study. Below is a brief introduction to computer games, with focus on the history and background of computer role-playing games, strategy games and their ascendants. Initially, we should note that games played on a computer are not a new phenomenon. Aarseth points out that the first computers were indeed probably used for games and fun, since new technologies have a tendency to inspire experimentation (1995). However, many date the birth of computer games to 1958 when William A. Higinbotham at the American nuclear research facility Brookhaven National Laboratory created a two-player tennis game. This was not a commercial game of any kind; it was rather an entertainment curiosity for visitors at the lab (Poole 2001:29-30). Played on an analogue computer, it was realised as ‘ghostly blips on an oscilloscope, controlled by a button and a knob’ (Poole 2001:30). The first computer game available for a larger audience was created at MIT in 1962 and is known as *Spacewar!*, which was, as the name suggests, a game of war in space: Two opposing spaceships shoot at each other while avoiding a centre of gravity. This game was created and played on MIT’s new transistor-based mainframe computer, a PDP-1, and included real-time¹⁶ response to physical input (Poole 2001:30-1). Although regarded primitive today, *Spacewar!* had several features that come close to features of today’s computer game genres. In addition to a space setting, it operates with a complex simulation of a real-world physical feature, namely gravity. It also includes the pleasures on part of the player to master a consistent system that works on the basis of simple rules with complex possibilities for combination (Poole 2001:31). We may also see *Spacewar!* as the first true computer game since it was not a simulation of an already existing game, but a new *autonomous game form* that created its own *new genre not available outside computer environments*.

Another early game which has been of importance to many computer game genres today was *Adventure*, developed in the mid-1970s as a simulator of cave exploration by programmers William Crowther and Don Wood. This was a textual based adventure game inspired by tabletop role-playing games (RPGs) like *Dungeons & Dragons*¹⁷ (Aarseth 1997:98-

¹⁶ When a game is in *real-time*, in-game time passes independently of the player. In many games this also means that several processes progress simultaneously, and the different players move simultaneously.

¹⁷ 1st edition.

100). In short, in RPGs a group of players take on the role of adventurers who explore an imagined world controlled by a *game master* (GM), who manages problems for the players to solve. The game takes the form of a quest, where the main object often is based on stereotypical fairy-tale quests: killing the monster, finding the treasure and rescuing the princess. Although based upon textual commands and a non-graphical space, *Adventure* and its clones featured most of the same possibilities for action available in today's adventure games and CRPGs. Second in the line of influence after the text-only games are the two-dimensional ASCII-character games in the tradition of *Rogue* (1980). They include real-time action in an environment that is graphical but with more arbitrary symbols than today's graphical games of exploration, monster hunt and adventure. All elements in the environment are represented by ASCII signs; for instance the player character is represented by an @ (Aarseth 1997:102). From the early 1980s, adventure games included more and more true graphics. *The Hobbit* (1984) is an early hybrid between textual and graphical adventure. It depended upon textual interaction with the game, but there were also certain locations that included graphical representation (Juul 1999:12). The 80s brought cheaper and better computer graphics, and games of adventure and exploration with focus on spatiality had a great opportunity to develop further and eventually into the three-dimensional games of today (Aarseth 1997:101-2). All the different adventure games above must be regarded the ancestors of CRPGs like *Baldur's Gate II*, which is one of my objects of study. They are all built upon traditional tabletop role-playing games, and it is not only the focus on quest and exploration that has been the reason for this. Also, since the rules of traditional RPGs are fairly complex with many calculations and dice rolling, it is suitable to implement them into computer environments and let the computer take care of all calculations.

The development of computer strategy games may be linked to the development of simulators for military purposes. Even though it is hard to see the direct link between a flight simulator and a turn-based strategy game like *Heroes IV*, we may assume that the development of computer programmes for strategic calculations also may have been used for gaming purposes (cp. Aarseth 1995). At a very early stage, computer power was utilised in board game simulators. In 1947, programmer Arthur Samuels created a programme that knew how to play draught, and that developed better techniques by playing against human opponents. Later, chess was very popular for those interested in creating computer-based games (Aarseth 1995). Even though these clearly were simulators of games that already existed outside the computer, and not computer games in their autonomous sense that cannot be separated from computer environments, they are highly relevant for computer strategy games today. A game

like *HoMMIV* is in all respects a game of a genre that could not exist outside computer environments, but it still has many parallels to classic board games. Whereas *Adventure* may be seen as the computer game ancestor or *BGII*, there is another early computer game of the 60s that may be regarded the ascendant of *HoMMIV* and other strategy games. According to Steven Poole, *Hammurabi* was the first game with a ‘God view’. Here the player is in control of a feudal kingdom where s/he administers tax rates and plant grains (2001:32).

4.2.2 Genre: Classifying two Games

Above was a brief account of the early history of computer games that outlines a period that defined many computer game genres as they appear today. Today there are a variety of different genres, most labelled on the basis of marketing considerations and function as customer information. The journalist Steven Poole fruitfully divides computer games into different groups that may be seen as broad genres. In his terminology, *Baldur’s Gate II* is an example of a game in his category *role-playing games* (2001:53-5). This form is recognised by its focus on the individual, its development and its ability to have real power, and its focus on deterministic actions related to the characters and events (2001:54). Concerning *Heroes IV*, this game may be labelled a form of Poole’s category *God games* (2001:48-9). This category may be regarded opposed to the role-playing game since it neglects the individual and instead focuses on the evolution of an environment. The player does not have an individual role, but functions instead as the ‘god’ of the game environment (2001:49). This genre is thus much more than advanced board games – it also implements the modelling of dynamic processes. But it does not seem to be entirely correct to place *Heroes IV* here. In the first place, the modelling of dynamic processes is only moderately complex in this game. The programme does not count for as many variables as for example *Sim City* does. Moreover, it is not the evolution of a society that counts, but rather a short period of wartime that includes defined individuals. In addition, it seems to have similarities with what Poole labels *real-time strategy games* (RTS) (2001:49-51), although *Heroes IV* clearly is turn-based, in the sense of having opposing players that move one at a time. The similarities are due to Poole’s focus on RTS as war games that ‘originally grew out of a military simulation’ (2001:50). Besides, if estimated according to its time processing instead of its military theme, *Sim City* should also be labelled *real-time strategy* as opposed to *God game*. This demonstrates that Poole’s division between *God games* and *real-time strategy games* does not hold. Instead we should merge the two genres into one, and label it *God game* or perhaps *strategy game*. Whether it is real-time or turn based is a matter of sub-genre.

Poole does recognise the fact that many of the genres overlap. To a great degree, his genres fall together with marketing genres, although marketing genres often are even more specific. In addition to the three genres mentioned above, he mentions *shoot-'em-ups*, *racing games*, *platform games*, *fighting games*, *sport games*, and *puzzle games* (2001:35-57). As is the problem with genre theory in general, all the genres he takes account of do to some degree merge into each other, and it is hard to find a pure genre without elements from any other.

Another more general account of game genres is outlined by Roger Caillois in his now classical *Man, Play and Games* (1961). Even though his classification is not developed with computer games in mind, it seems to work well on all games regardless of whether they are played via a computer or not. Caillois separates four classes of games, *agon* (competitive games), *alea* (games of chance), *mimicry* (games of role-play and make-believe) and *ilinx* (games of vertigo) (1961:12). He also identifies two modes of playing, *ludus* and *paidia* (1961:13), separated in the same way as we separate *game* and *play*. These terms posit themselves as the two extremes on a continuum, and we may place a game's mode of playing anywhere in between these. In the games of my study, *HoMMIV* is dominated by *agon*, while *BGII* has a mixture of *agon* and *mimicry*. Both games must be placed towards the *ludus* extreme, even though at least *BGII* has moments of *paidia* in it. Because of the competitive aspect of many computer games the theory outlined on how a player acts in the problem solving process seems to apply first and foremost to games with a certain degree of *agon*.

4.2.3 A General Overview of *Baldur's Gate II: The Shadows of Amn*

Baldur's Gate II: The Shadows of Amn is a computer role-playing game (CRPG) based upon the fantasy setting *Forgotten Realms* found in the classic tabletop role-playing game (RPG) *Advanced Dungeons & Dragons* (AD&D) (Bioware 2000b:36). Being games of role-play, CRPGs allow the player to create his/her own game character that becomes the central protagonist in the game. It is reasonable to label the main character of a CRPG 'protagonist' since the player gives the character specific character traits that define its personality. Also, the courses of action developed around the character are based on reaching a highly emotionally motivated goal. Since the game is part of the tradition of role-playing games, an important feature is to role-play the character's personality traits. Games developed around such character traits may often be confused with narratives, since a common understanding of narrative is 'prose fiction that refers to individual existents and relates mental or physical events' (Ryan 2001:243). Since *BGII* links individual mental and emotional states to the central process of problem solving, we may say that this game has many narrative features.

I) Character-Oriented Problem Solving in a Narrative Setting

Baldur's Gate II is set in a fantasy world featuring a Renaissance style. Being a world of fantasy inspired by J.R.R. Tolkien's fictional world, it includes magic and supernatural monsters. The central goal is related to a personal quest on part of the player character (PC), and the quest takes the form of a kind of mystery or detective story where the goal is to investigate and disclose the state of things. According to Aarseth (1995), games that define clearly when the goal is reached and the game is over, have *finite teleology*. *BGII* must be labelled so since it is made very clear that the game is over after having confronted the evil wizard Irenicus¹⁸.

Even though there is a background story to motivate player action and make the PC credible as character, one should be careful not to describe the game as a narrative structure consisting of *fabula* and *syuzhet*. There is a background story and a point of departure that create a context for the role-playing aspect, but at once playing the game it is problematic to talk about *fabula* and *syuzhet* since the path towards the goal of the game is somewhat unstable. As Aarseth puts it, the player only traverses some selected strings of signs in the game, which need not be identical with the strings of signs as they actually exist in the game. This is the difference between *scriptons* and *textons* (Aarseth 1997:62). While narratives have a *syuzhet* that is the actual structuring of events as presented to the player and a *fabula* that is the story behind as it would appear if the narrative was an actual episode in the physical world (Bordwell 1985:49-50), computer games in general and *BGII* in particular have something quite different. The actual unfolding of events that the player goes through may change from time to time, and the player will probably not at all traverse every element in the game. Obviously, this makes it difficult to do a textual analysis in a way understood by for instance media or literature studies. Because of *BGII*'s nature where game play is focused on the characters' personality traits it is still important to say something about both the background story and the – from the designers' view – intended course of action.

Initially when starting to play the game, the player needs to create a character, that is, defining sex, race, occupation and other properties that will decide the personality of the character. After character creation, which is a non-immersive or out-of-game configurative feature of game play, the player finds his/her character imprisoned, and possibly suffering from amnesia¹⁹. Three of the PC's friends are there too, and the player is motivated to team the PC up with them. Thus, in fact the player is in control of a party of characters, but only one that s/he

¹⁸ That this is the goal is not clear throughout the game. It is revealed little by little during the course of action.

¹⁹ Depending on the player's choice of speech lines and whether or not s/he has played the first *Baldur's Gate* game of which *Baldur's Gate II: The Shadows of Amn* is the sequel.

has created him/herself. The first problem to be solved is to find a way out of the prison, but comments from the PC's friends try to motivate the player also to find out who imprisoned the group and why. As the player soon discovers, this is only a minor goal. At once the player has accomplished the first goal and has escaped from the prison, the party encounters their capturer Jon Irenicus of which the player during the escaping has received hints. In a cut-scene where the player is in no control, the group witnesses Irenicus kidnapping the PC's friend Imoen before escaping. This event motivates *BGII*'s central goal: freeing Imoen and finding Irenicus to confront him about both the imprisonment and his kidnapping of Imoen. What is interesting about these goals is that the player may choose which one is most important according to player style or character personality. Of course, they both lead the player towards the same courses of events, and the aporias and the epiphanies will be the same regardless of what the player finds most important. It is therefore more of a *quasi-choice* between motivations. It becomes very obvious that the goal set up by the designers is confronting Irenicus, regardless of the player's motivation. After having freed Imoen, Irenicus flees once again, but at this point the player has collected enough information to know that it is the PC Irenicus for some reason want, and not Imoen. According to the game's logics the player's next and main goal should be to trace Irenicus and investigate what it is that he wants with the PC.

In *BGII*, there are always many different missions the player may take, and in many cases there are a couple of epiphanies to every aporia. However, there are missions of different importance, some there are for the player to gain experience or money, and others take the player closer to the goal. Related to my view of computer game agency, this means that only missions of the latter form truly can be labelled agency. However, many missions of the first kind are in some way related to the main goal in some fashion, and those that are not may be seen as separate subgames with their own aporias and epiphanies. It is thus possible to argue that there is computer game agency in these missions too, but this agency can only be related to the subgames, not to *BGII* as such.

Regarding the 'plot' structure or course of action related to the central goal of the game, *BGII* is a very *determinate* game (Aarseth 1995). This means that the same situation always generates the same outcome. However, it may seem that certain situations, such as combat, are not predictable in the same sense since they are governed by a die simulator. Here we deal instead with *quasi-indeterminism*, since every number hit on the die is connected to a predefined outcome. Thus, the situation seems to be unpredictable because the system takes account for so many variables that it is impossible to say whether we deal with an identical situation if playing the game situation once again.

As a last point it is important to say something about character status according to Aarseth's terminology. The game characters are *dynamic* since they may increase or decrease their properties. But emphasising that this is a typical feature of role-playing games, Aarseth seems to have overlooked the fact that role-playing games also add other important dynamic features to their characters: they have a personality that should be acted out. In some cases, character personality hinders the player from taking certain actions; in other cases, the character is sanctioned in some way if the player does not take actions appropriate for the specific character. For instance, a character's *reputation* heavily influences how non-player characters (NPCs) react to it. Also, the character's *alignment* and *race* play a role (Bioware 2000b:38)²⁰.

II) Interface & Interacting

BGII is played on a PC. This means that the interface consists of some special features different from those of console games. These features allow for a more detailed player engagement because the input devices are mouse and keyboard, and also because of the physical closeness between the visuals on screen and the player. The interface is tightly connected to the action in this kind of CRPG, and the game is based upon the Infinity engine (GameSpy: Planet-BaldursGate 2002), the computer programme that is the base for many CRPGs in the (A)D&D tradition²¹. In a single-player game of *BGII*, the player controls a party of maximum six characters. The player creates only one of the characters, while the other characters are individuals met on the way. There are sixteen characters in *BGII* that might join the party, and the player chooses who s/he wants to bring along according to the different characters' expertises. *BGII* may, however, also be played as a multiplayer game via network. A maximum of six persons create then their own characters and play together in one party. While in a single-player game, the joining characters are entirely under the player's control; in multiplayer games all players are cooperatively controlling those characters that join the team. However, the multiplayer function will not be taken into consideration in this thesis.

How does the player control the characters and interact with the environment? There is a top-down perspective where the player sees the characters from a God view. The characters move around in an environment that behaves like a three-dimensional space on part of the ob-

²⁰ The better the *reputation*, the more positively certain groups of people will be towards the character.

The world of the roleplaying games in the *D&D* tradition separates the people into different *races*, such as dwarves, elves, humans etc. In *BGII*, the presence of a dark elf in the party decreases the party's reputation, and certain people may behave accordingly.

In *D&D* games, *alignment* is a general way of describing a character's personality according to nine categories. The character's alignment will create different reactions with different groups of people and different situations.

²¹ Recently, a third edition of the *Dungeons & Dragons* series has been released. This is *D&D 3rd Ed.*, and the most recent CRPGs in this tradition, such as *Neverwinter Nights*, are based on this system.

jects in the game, but the player experiences the space as being two-dimensional since the point of view is fixed and there is no possibility to change angles. Moving around the environment is done through a *point-and-click* interface where the player clicks on the spot where s/he wants the characters to move or take an action. If the spot indicated allows for specific actions, the cursor changes from a hand icon into some other icon that resembles the action allowed: A door icon indicates that this is a door that can be opened, and sword icon means attack mode. There is also a main interface that frames the space of action and that may be hidden if the player wants to. This interface allows the player to toggle menus like character inventory, spell books and options, and also select different characters in the party. Another important issue of the interface is the possibility of *pausing* the game. This feature has the function of time control in combat. When pausing, the player stops the game and has some time to ponder on what is the best strategic move to do next. This pause function is necessary since the player controls a maximum of six characters and would have a difficult time controlling the strategy of each of them²² individually. The interface is exemplified below.

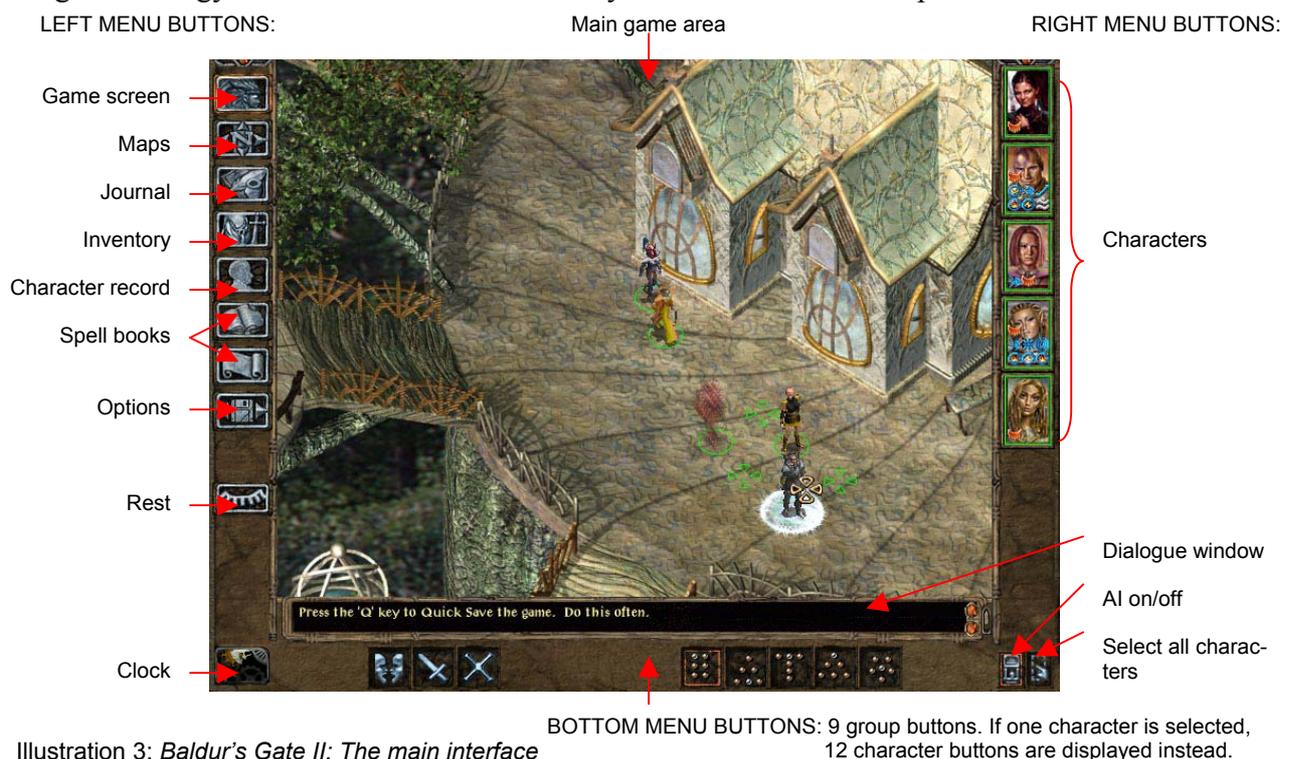


Illustration 3: *Baldur's Gate II: The main interface*

It is interesting to see how the different menus relate to character and player knowledge. While *options* and *character record*²³ cannot be seen as anything the characters know about, *maps*, *journal*, *spell books* and *inventory* fall in between character and player knowl-

²² However, the game has an artificial intelligence (AI) function that makes characters take actions themselves if provoked.

²³ Character record indicates character traits by numbers, and although an individual roughly knows which abilities s/he is good at, this formal specification is clearly aimed at the player's knowledge, not the character's.

edge. All these are clearly present as help functions for the player, but they also relate to the characters' knowledge in a sense. *Maps* have a navigational function for the player, but they are also related to the character's (and player's) knowledge about the area in question. If the PCs have not been at a location, the map will not reveal what is there until they have. The *journal* functions as a log or diary both for the player and the characters. It has the graphical layout of an ancient scroll and seems thus to be a feature of the fictional game world, but it conveys information that is useful for the player when keeping track of quests and tasks. *Spell books* work in the same fashion. They are an overview of all the magical spells a character knows, and the player uses them to memorise the spells that s/he wants the character to use²⁴. The *inventory*, however, departs from the illusion of being part of the game world. Although the character of course knows what it carries, which weapon it uses and so on, its graphical layout is clearly aimed towards the player's knowledge of graphical user interfaces in general. The inventory screen can be seen below:



Illustration 4: *Baldur's Gate II: The inventory screen*

The space in *BGII* is *topological* since it has a structure of *multiple arenas* linked together (Aarseth 1995). The space of a computer game is topological when it has a finite number of discrete positions or locations. These arenas are linked as in a network, and all arenas are not accessible at all times. A map allows the player to travel between different arenas. However, it is possible to move freely around within each of these arenas, and this feature

²⁴ In *D&D* games, a character must learn a spell and scribe it down in his/her scroll before using it. Also, the character must memorise the spells s/he wants to use. That is, in the world of *D&D* s/he must create a mental pattern in his mind. Once memorised, a spell does not need to be memorised again. The skill level and intelligence of the character decide how many spells it may have memorised at the same time (Bioware 2000b:55).

gives *BGII* a *geometric* dimension as well. Aarseth's distinction between *topological* and *geometric* space is then somewhat problematic since the distinction between them seems to be clear only in theory and not in reality. In one sense, it is possible to say that no space is geometric since one always must situate oneself on one specific spot and not another. In another sense, all spaces are geometric since also topological spaces, like chessboards, demand that the player move around freely in the topology. However, even though this division may be useful in theory, it is not very useful when describing the games of this study. It is perhaps better to view spaces of complex computer games where the player explores a large environment in relation to how the player experiences and learns to know the space. Does the player comprehend the space in the same sense as one who reads a *map* – as an outsider looking in and having the full overview? Or does the player comprehend the space as navigation within that room – in the same sense as one *walking the streets of a city* (cp. deCerteau 1984)? It is possible to argue that *BGII* has both, but at different moments. As mentioned above, the player has a top-down view similar to the God view, but closer up. This creates some distance to the space even though the player is not situated as far away as s/he would be when reading a map. The player navigates the space from within, from a similar position of one that goes for a walk. However, activating the *map screen*, the player is able to see the space from above and orient him/herself according to it. *BGII* has two maps, one local for the present arena and one global for all arenas presently available. Whereas the main view allows the player to navigate by taking the first turning left and second right, walk past the pub and over the bridge, the local map lets the player navigate the same local space by a mouse click on the specific location on the map. This posits player navigation on the local map somewhere in between going for a walk and navigating via a map. It is also possible to navigate globally by a mouse click on the global map, but it only takes the player to a new arena, not to a specific location within it. Interestingly, on the map the player may not see what is present at a location s/he has not yet visited. Having visited the location, s/he may see the layout of it but not what happens there unless s/he is present.

It is also important to say something about *time* when presenting a general overview of *BGII*. 24 hours in the game is compressed into 2 hours real time (Bioware 2000b:35). Thus, the game is played in *real-time*, which means that time passes independently of the player's actions. Nevertheless, important episodes do not appear if the player wants to wait for them; instead they are programmed to appear when the player is situated at certain positions. This means time is *continuous*, and it vacillates between being *synchronous* and *asynchronous* (Aarseth 1995). It is synchronous within arenas since it is real time although compressed, but

should be labelled asynchronous when the player goes from one arena to another since the game leaps over sequences of time in order to demonstrate how long time it took travelling to the new arena. This is similar to how time is distributed in the syuzhet of a narrative: for instance in between scenes where some time often is omitted.

There is also an option for playing combats in a turn-based mode (Bioware 2000b:4), which means that the game is played like chess: one piece or player moves at a time. In such cases, even though *play time* is prolonged, *event time* is not so (Juul 2002a)²⁵; to have a turn-based game only means that the player may separate the individual characters' actions and have them go one at a time. Thus, in real-time, the characters would have acted simultaneously. Turn-based games in general have a *discrete* distribution of time, in Aarseth's terminology (1995), since the action is separated into discrete steps. It is important to notice how an out-of-game and non-immersive feature like saving games relates to action in *BGII*. Aarseth separates game *action* from *lapse*, related to how the player holds both a position internal to and external from the game. Aarseth's *action* is what I labelled *in-game action* above, and *lapse* is what I labelled *out-of-game action*. Lapse therefore includes the feature of saving and loading games as well. Since *BGII* is a game that allows for saving, it has *multicursal lapse* (Aarseth 1995).

4.2.4 A General Overview of *Heroes of Might & Magic IV*

Heroes of Might & Magic IV is a turn-based strategy game (TBS) set in a fantasy world of magic and supernatural creatures. The player manages one or more warlords (heroes), cities, and a number of armies. Both heroes and cities increase their properties during the course of the game according to the player's choices. The player moves heroes and armies around game space (map) for exploration, collecting resources, and fighting enemies. Depending on the actual map one plays, *HoMMIV*'s central goal is either to defeat an enemy or capture a specific city. In opposition to *BGII*, where the computer opponents cannot develop their skills while the game goes on, *HoMMIV* has opposing (human and/or computer) players that develop their heroes and cities parallel with the player. This leads to a specific playing style on part of the player: the competitiveness comes to the foreground, and the player must use some kind of strategy in order to get the advantage over the opponents. Since all players normally start with approximately the same conditions for development, it is a question of who collects the most resources and who develops the greatest and most powerful army and heroes.

²⁵ According to Juul 2002, *play time* is 'the time the player takes to play', while *event time* is 'the time taken in the game world'.

I) Forcing a Narrative upon a Game

HoMMIV is a strategy game of development and battle. Like *BGII* it is set in a fantasy world, thus the units in warfare are to a great extent supernatural creatures. There are for instance elves, unicorns and dragons that may be recruited to the player's cause. In addition, there are heroes: warlords with the ability to improve and acquire skills during the game. The heroes are arguably the avatars of *HoMMIV*, and they are *dynamic* since their properties may change during the course of the game. The avatars have no personality that should be acted out by the player; hence this is not a role-playing game. Other units of battle under the player's control are *static*. They do not develop, but are influenced by the power of the heroes in their army.

As mentioned, the goal is to defeat your opponent. This is done differently in different scenarios. Normally defeating your opponent means killing all of its heroes and conquering all of its towns, but in some scenarios and campaigns the goal may be to defeat one specific hero or conquer one specific town, or achieving some special artifact or reaching a specific location on the map. Also, the win and loss conditions are stated in the initial presentation of the map. This clearly defined goal makes *HoMMIV* a game of *finite teleology* (Aarseth 1995). In some cases, a narrative that is loosely connected to the game accompanies the problem solving process towards the goal. This narrative has the function of a *background story*, and may give the player hints about where to find certain objects, or how to defeat the enemy, but the story is not necessary in order to complete the quest or win the game. Campaigns rely on a narrative to a greater degree: 'A campaign is a series of scenarios tied together by a single storyline, and often by a single character as well' (New World Computing 2002b:22). Having finished one scenario, the player is allowed to continue to the next, and the player often brings along at least one hero to the next scenario. The goals of each scenario are linked so that they seem to be lesser goals in the quest for the greater goal that is completing the whole campaign. Together they form something that may be transferred into a narrative, although in a loose sense. Once in a while messages are displayed on screen with story information of different kinds. These often come in the form of diary notes supposedly written by one of the heroes that follow from one scenario to the next, or as letters written by the hero's mentor or enemies. The messages are linked to the action of war and strategy, and to characters with some personality traits that are revealed through these messages, and gives thus the game a kind of narrative feeling even though the player may skip reading these notes and still be able to fulfil the quest with no greater problems. This narrative is very loosely connected to the actual action in the game. At some points, a certain action may trigger a message with narra-

tive content to be displayed; for instance, finding a certain artifact may lead to a message that hints to where it is strategically best to take the next move. Hence the messages may also trigger the player to take a certain action. Most of the time, however, the messages are displayed when the player is exploring the map, and do not relate directly to his/her actions. This works because the narrative does not need to take into account anything else but the central problem solving process. The function of the narrative is thus to create a certain atmosphere, and is a bonus to game play. Also, in a campaign the narrative functions as a connector between scenarios. It creates a motivation for the game to continue after the goal is reached.

As a last point, *HoMMIV* seems to deal with the same problem of *quasi-indeterminism* as *BGII*. There are complex situations also here, and it is not possible for a player to know all the variables that may influence the game. However, this game seems also to be *indeterminate* in some cases, as can be seen when a player reloads a previously saved game, takes identical actions, and experiences that the computer opponent takes a different move than last time.

II) Interface & Interacting

HoMMIV is played on a PC, which means that there is a detailed interface and input devices such as mouse and keyboard. While the use of keyboard may be very intensive in *BGII*, *HoMMIV* to a greater extent lets the player rely on the mouse. However, there are keyboard shortcuts in both, but since *BGII* primarily is in real time while *HoMMIV* is turn-based, the player is more likely to utilise the shortcuts when playing *BGII*, because of the time they save. Being a turn-based strategy game means that playing the game is somewhat similar to chess: the different players move one at a time. Related to time in the game world, the players move simultaneously; but it is represented as one at a time²⁶. The feature of turn-basedness does not require a pause button since time is dependent upon the player's actions. This gives the game *discrete* distribution of time (Aarseth 1995), since time is separated into defined sequences.

The player has a God view of the game space when playing *HoMMIV*. S/he controls as many armies as s/he wants, which consist of one or more heroes and/or battle units. There is no clear identification between the player and a hero in the sense that there is one hero that is 'you'. But the player may refer to the starting hero as 'me' since this is the hero that presumably will develop into the most powerful one, and that the player thus feels is most important. In campaigns the relationship is emphasised by the fact that a hero is carried over between scenarios, and that it is accompanied by narrative information via pop-up messages.

²⁶ A TBSs such as *Age of Wonders* let players move simultaneously. Having finished all moves in a round, the player notifies the other players s/he is done. Nobody may take their next move until all players are ready.

Most of the time, the relationship between the player and the game world is one of *strategic distance*. The game map becomes somewhat similar to the strategy maps often used by warlords or state leaders in actual wars. The player chooses where to move his/her armies and what actions to take, and is not situated within the zone of danger. It is not a personal loss if armies are defeated; it is a strategic loss. This is supported by the fact that there is no focus on individuals, but on the development of a system, as Poole argues (2001:48-9). However, the campaigns attempt to focus on individuals through its utilisations of narrative motivations.

Similar to *BGII*, *HoMMIV* has *multicursal lapses* (Aarseth 1995) since it is possible to save the game and replay sequences. More advanced scenarios utilise this as a game feature. This means that it is almost impossible to defeat the opponent without replaying certain sequences. Replaying gives the player increased knowledge about a situation and about the opponent, and it also gives the player the opportunity to test different strategies.

Interacting with the environment and controlling characters are done through a *point-and-click* interface. Although similar to *BGII*, this does not make player action similar in the games since how one is able to interact with an environment is not important to the concepts of action and agency (Davidson 1971:53). In *HoMMIV's* *adventure screen* the mouse cursor's hand shape changes when there are actions to be taken at certain spots. The icon changes into a pair of crossed swords when the player runs the mouse cursor over an object, which means that this is an object that may be attacked, i.e. an army, hero or the likes. If the icon changes into a prancing horse, the object may be manipulated in some way. There is also a main interface that functions as the visual frame of the game, but it cannot be hidden in the same way as the main interface of *BGII*. The adventure screen of the interface is shown below:



Illustration 5: *Heroes of Might & Magic IV: The adventure screen*

In addition to the adventure screen, there are two other interface views that are important to game play in *HoMMIV*. These are the *town screen* and the *army screen*. The town screen is activated when the player moves a hero or army into a town from the adventure screen. Here, the player may build different structures, or buy new units for the army. It is also possible to hire new heroes here. Depending on the scenario or campaign that is currently played, some structures may not be available. Below is an example of the town screen.



Illustration 6: *Heroes of Might & Magic IV: The town screen*

The army screen is activated when a hero or army on the adventure screen attacks or is attacked by another army or hero. The screen turns into a battlefield where turn-based movement on a grid of hexagons is allowed. In this mode, *HoMMIV* has many similarities to classic board games like chess. Also, the different units have different moves they can take: some creatures fly, others cast spells, and they are of different strength and toughness. Unlike earlier *Heroes* games, the heroes of *HoMMIV* may physically join in battle. This means that they may use their special abilities, whether they are based on physical encounter or casting spells. Also, the heroes may die. There is no limitation on how many heroes an army may have; it is possible to have an army that consists of heroes only. The army screen can be seen below.



Illustration 7: *Heroes of Might & Magic IV: The army screen*

Regarding player and character knowledge related to different menus in *HoMMIV*, it seems to have a somewhat different function than in *BGII*. As in the CRPG, exploration and map view are related to what the player characters know. Other than that, it seems that player and character knowledge cannot be separated. The most important feature concerning that division is not how the different menus relate to character and player, but rather how loading previously saved games influences knowledge. *HoMMIV* encourages the player to develop strategies by repeatedly playing scenes. Repeating a scene by loading must be seen as increasing the player's knowledge while not increasing the knowledge of the characters in the game.

Although the space of *HoMMIV* technically is *topological* in that it consists of absolute and discrete positions for each unit, I will argue that the space is comprehended as *geometric* in the sense that it is 'a matrix of objects and distances' (Aarseth 1995). The map is a continuous space that lets the player traverse it seamlessly. However, there are different arenas, and switching between them is not seamless and adds therefore a *topological* dimension to the game. The different screens above show different arenas of *HoMMIV*. The *adventure screen*, the *combat screen* and the *town screen* are three separate arenas. In addition, the *adventure arena* is divided into a ground map and a subterranean map. It is therefore safe to say that this game has *multiple arenas*. Related to deCerteau's (1984) division between navigating a map and navigating as one who walks the city, we can say that even though the main game area functions as a map, the space includes both modes at different moments. The player of *HoMMIV* has a top-down God view that is more distanced from the game space than that of *BGII*'s main game screen, but it is still possible to say the main screen of *HoMMIV* is navigable in a fashion more similar to that of a walker than that of a map reader. One chooses to

navigate according to the typology and environmental constraints, not according to how one sees the space from above. However, there is a mini map available for exactly this purpose of navigating according to the logics of a map, though it is not possible for the player to see what is present on a location s/he has not yet visited. In addition, if s/he has visited the location, but has no properties or armies at the specific place, s/he will not see what is going on there.

4.2.5 Summary: Formal Features of *Baldur's Gate II* & *Heroes IV*

In order to sum up, it is necessary to say something about how courses of action in both games are structured by the game designers. *BGII* has a very determinate and linearly planned structure. Even though there are many paths that do not need to be followed, and many quests that do not need to be taken, there are certain events that must be fulfilled before the action continues towards the main goal. Perhaps the best way to characterise this game is to refer to Ryan's model of the *directed network, or flow chart* (2001:252):

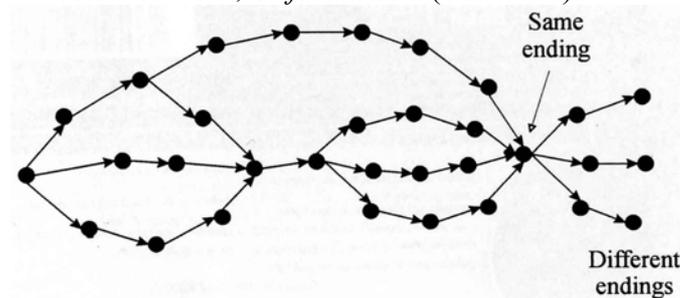


Illustration 8: *The directed network, or flow chart* (Ryan 2001:252)

There is more than one road that leads towards the goal, and there may even be somewhat different endings. It is possible to take quests that lie *outside* the main path towards the goal, and then return to the main path. *BGII* is certainly more complex than this model, but it gives an indication of how the designers have structured courses of action when developing the game.

HoMMIV's structure is quite different, and somewhat complicated. There is no clear, predefined course of action that must be followed, no clear path that leads to success. Exploring the map while collecting resources enough to build a strong army is implied as the method a player should employ in order to win the game. In most scenarios there are no obligatory nodes that must be reached before one can head for the main goal, but there may be hindrances such as environmental restrictions or powerful guards that the player cannot overcome before s/he has built a strong army him/herself. It is first and foremost *strategy* that leads the player towards the goal, not finding the way through a labyrinth of some sort. Nevertheless, in some scenarios there are nodes that must be reached in order to reach the goal. This is typical for scenarios that are parts of a campaign. The player is asked to find some specific artifact, or visit someone specific before s/he is allowed access to certain areas of the map. The structure of *HoMMIV* reminds us somewhat of most of the structures pre-

map. The structure of *HoMMIV* reminds us somewhat of most of the structures presented by Ryan (2001:246-258), but it does not seem to be accurate to label this game as any one of them, since Ryan's structures attempt to demonstrate how narrative may be possible in 'interactive texts', and even though *BGII* tends towards having narrative features, this is hardly the case when speaking of *HoMMIV*. This is due to the fact that *BGII* is an example of a *game of progression*, since all solutions and options are beforehand described by the game rules, and presented as a series of challenges out of a *quest* paradigm, while *HoMMIV* is a *game of emergence* where simple rules and several variables combine into unpredictable courses of action (Juul 2002b).

Comparing the two games according to how they posit themselves in Aarseth's categorisation, we find that apparently they only differ in few respects:

	<i>HoMMIV</i>	<i>BGII</i>
Perspective	2 ½ dimensions	2 ½ dimensions
Arena	Multiple	Multiple
Time	Discrete	Continuous
Action	(In)determinate	Determinate
Lapse	Multicursal	Multicursal
Teleology	Finite	Finite
Character status	Dynamic	Dynamic (RPG)
Player	Single- & multiplayer	Single- & multiplayer

Illustration 9: *HoMMIV* & *BGII* according to Aarseth's typology (1995).

This leads us to believe that the two games are quite similar indeed. It may seem disturbing that the games take on similar status in two of those variables that are of importance for this thesis; namely *action* and *player*. However, there is a feature not included in this model that may be of great importance to how a player participates in driving the action forward. This is a feature that arguably is a part of the *action* variable, but that Aarseth has not included in his overview. His focus is *not* on how the *player meets the game* and solves problems by taking certain actions, but on how the *game reacts to player actions* and whether the game is playable after the central problem is solved. If we include the player's problem solving process as a feature within the action variable and compare *HoMMIV* and *BGII* according to this, we will find that the games differ to a greater extent. Problem solving in *HoMMIV* is based upon strategic choices and expanding faster than the opponent, while *BGII* is based upon a quest where problem solving is linked more closely to discovering the state of things. In addition, *BGII* reminds us more of traditional narratives like fairy-tales, both thematically and when it comes to how the protagonist is personally involved with the central problem solving process.

*You should always be on the watch for
traps in dungeons, friend! - Volo
(Baldur's Gate II Manual: Bioware 2000b:52)*

Chapter 5: Comparative Analysis

5.1 Structural Analyses: Phases in the Games

The player's traversal of *BGII* and *HoMMIV* may be separated into different phases. Both games have a certain 'step' structure based on the chains of aporia-epiphany pairs. Related to the main goal, this means that every time an aporia is exchanged with an epiphany and the problem is solved, the player ascends to a higher step on the ladder of reaching the desired outcome. This thought of a hierarchy of levels is familiar in computer games, but in *BGII* and *HoMMIV* this level structure is more complex than we typically know from platform games.

5.1.1 *Baldur's Gate II*: a Walkthrough

A game of progression, *Baldur's Gate II* is more clearly structured according to aporia-epiphany pairs than by a focus on different types of action. The game is divided into seven chapters according to quests and location. The border between chapters is marked by a cut-scene in which a voice-over, accompanied by written text, narrates events that supposedly happen in between the chapters. The narrator's voice and the written text enhance feeling of narration. However, this division into chapters is not completely in accordance with the step structure of aporia-epiphany pairs. Here I will present an analysis of the structure of *BGII* related to the chain of aporia-epiphany pairs in the central process of problem solving.

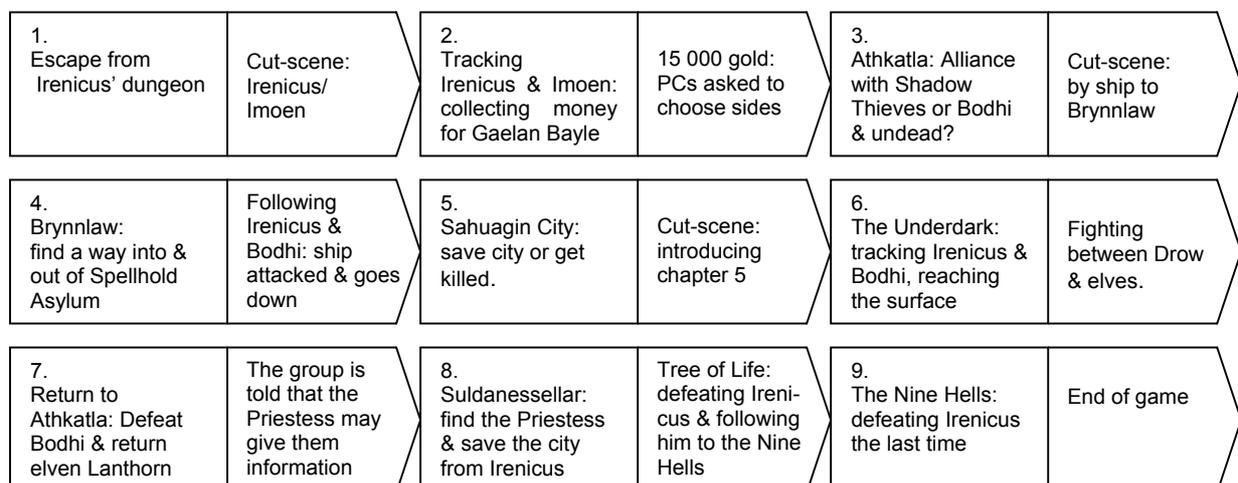


Illustration 10: *The structuring of aporia-epiphany pairs in BGII.*

The structure above needs some explanation. It demonstrates the central course of action that the player must go through in order to complete the game. This course of action is manifested as a series of aporia-epiphany pairs illustrated by quadrangles, while episodes connecting the central aporia-epiphany pairs to each other are shown as arrow-shaped boxes. Each episode consists of at least one aporia-epiphany pair necessary for the progression of the central problem solving process. Replacing this aporia with an epiphany is therefore a case of computer game agency since the action triggers progression towards the goal. Having solved the main problem in the first box above, the player is allowed to go on to the next aporia. Thus, the aporia-epiphany pairs in the central course of problem solving have the function of *a key* that unlocks the door to the next room of action.

As the model shows, defeating the evil wizard Irenicus is the outcome we seek even though this is not made absolutely clear at the start of the game. Initially the goal of both player and characters is to escape the dungeon in which the PC is held prisoner. But as knowledge is increased, motivation and goal are extended. Pre-programmed comments from the other PCs and information gained in the dungeon make clear that Irenicus has experimented on the characters in the group. Further comments from the PCs reveal an urge for revenge, and this is supposed to motivate or give a hint about the central goal of the game.

Part 1: Escaping Irenicus' dungeon

The PCs find themselves imprisoned. The aporia is how to escape the dungeon. Utterances from those PCs not configured by the player suggest that the epiphany is related to teaming up, finding weapons and carefully search the dungeon for an exit. The central method for reaching the goal is exploration; the dungeon must be thoroughly explored, not only in terms of visiting all locations and finding a way out of the maze, but also when it comes to finding hidden secrets, treasures and traps. Thus, the player meets many new aporia-epiphany pairs that appear during the course of action. The reward gained from escaping is interesting: In addition to giving the player a new freedom of movement, exploration and action, the game gives the player more problems: Imoen is kidnapped and Irenicus disappears from action.

Intermediate phase 1: Cut-scene: Irenicus & Imoen

In a cut-scene the player sees Irenicus confronted by wizards and they start a spell fight. The party member Imoen is also partaking in the spellcasting, with the result that the wizards take both her and Irenicus away since spellcasting is not allowed in the city of Athkatla. The player cannot take any actions until the wizards have disappeared with their prisoners. The function of this phase is to give the player new problems to solve. It also shows that executing the

epiphany is not always identical to reaching the wanted effect. The wanted effect would be to let all the PCs escape, but instead the player receives a new problem: Imoen is kidnapped.

Part 2: Collecting money for Gaelan Bayle

At first the aporia seems to be how to find Imoen and/or Irenicus. Initially this may be a confusing task. The imprisonment allowed for very few actions related to the central problem solving process, but out of the dungeon the possibilities seem endless in comparison. It is puzzling to find where to start searching. Without knowing the epiphany, the player is likely to start exploring the space and questioning people. During exploration, the player receives a number of quests without any direct connection to the main process of problem solving. Questioning people may lead to increased knowledge: It is made clear that the wizards are the Cowled Wizards, who possess much power in Athkatla, and that they take spellcasters away to a secretly located prison. However, when the PCs enter *The Slums*, the only other part of town accessible at the moment, a thief named Gaelan Bayle approaches them. His suggestion clarifies the epiphany: For the amount of 20,000 gold he will introduce the group to someone who may help them getting to where Irenicus and Imoen are imprisoned. The epiphany of how to find Imoen and Irenicus seems then to be collecting the money. This knowledge also *changes the aporia-epiphany pair*: the aporia is now how to collect 20,000 gold, and as Gaelan Bayle hints, the epiphany may be taking on missions for payment. The reward of collecting 20,000 gold is information and assistance to reach the location of Imoen and Irenicus.

Intermediate phase 2: A moral choice

The search for 20,000 gold is interrupted when the player has collected 15,000. At this point the group is asked to choose sides: For the amount of 15,000 gold, the undead led by the vampire Bodhi may help them out. However, the thieves also lower the amount to 15,000, so the choice is basically a matter of alignment and taste. It is not possible to choose both; allying with one group makes the other the enemies of the PCs. This interrupt is interesting because it changes the aporia-epiphany pair somewhat since the object is not collecting 20,000 but 15,000 gold, and because it makes the player take a ‘moral’ choice on course of action.

Part 3: Alliance with the Shadow Thieves or the undead

Allying with either the Shadow Thieves or the undead, the group takes on quests given by that group. Before the PCs can be allowed passage to Brynnlaw and Spellhold Asylum where Irenicus and Imoen are held, they must complete a series of tasks in order to show their allegiance. The epiphany is clear: complete the quests assigned. Thus, part 3 consists of several

aporia-epiphany pairs linked together, and the central aporia is not clear. Instead there are *several aporias* that should be overcome in order to reach *the main epiphany*. Having fulfilled all the quests, the player is allowed passage to Brynnlaw, and the goal is reached. The reward of this phase is thus identical to the goal.

Intermediate phase 3: Cut-scene: ship to Brynnlaw

The player receives information that the PCs cannot have through a cut-scene depicting Irenicus experimenting on Imoen. This creates a situation where player knowledge is greater than character knowledge. Although this may colour player action, it does not seem to be important here. The function of revealing this information is rather *motivational*: it tells the player that Irenicus' experiments on Imoen are central to the game's progression, and that the player should keep this focus on his/her path through the game. This phase also marks the shift between chapters 3 and 4 by a narration of the voyage to Brynnlaw, allowing the game to leap over a certain amount of time that otherwise could be uninteresting to play. Since *BGII* is character focused, however, it is important to give a report of the event in order not to let the player end up with several unanswered questions.

Part 4: Entering and escaping Spellhold Asylum

There are two central aporia-epiphany pairs in this phase; both are centred on Spellhold Asylum. The first part of the aporia is how to get inside to find Irenicus and Imoen. The epiphany, or the method utilised to accomplish this, must be discovered. Having found the epiphany and executed it, the player is subject to a second problem: Irenicus and Bodhi place the group within a maze, and the aporia is now how to get out. The epiphany is linked to exploration. The goal of this phase as a whole is rescuing Imoen, which implies getting inside and out of the Asylum, and confronting Irenicus, a task with a more uncertain direction, but entering and escaping have different goals and rewards. The goal of entering is to find Irenicus and Imoen, and the reward of reaching this is a new problem: how to escape. The goal of this second aporia is finding a way out of the maze, which has a very interesting reward: getting to fight Irenicus. Winning this fight does not lead to the intended effect of killing Irenicus, however; it leads to Irenicus escaping and leaving the player motivated to follow him for a last fight.

Intermediate phase 4: Shipwrecking

This phase centres on leaving Brynnlaw. After some more problem solving, the player finds a ship to take the group back to Athkatla, but the ship is attacked and shipwrecked. This phase demonstrates an event over which the player has no control. The only way the shipwrecking is

avoided is if the PCs leave Spellhold through a magical portal instead of trusting the traitorous sailor Seamon. Choosing the portal, the player takes a leap over the fifth part of *BGII*.

Part 5: Sahuagin City

The group finds itself in the underwater Sahuagin City as prisoners of a mad king. A conversation between the king and two priestesses reveals that there is a disagreement regarding whether or not the PCs are the prophesied rescuers of the Sahuagin people. Depending upon the answer given by the protagonist, the PCs must fight the Sahuagin or do a task for the king before being allowed to leave. The aporia is in any case how to be able to leave, and there are two epiphanies: fighting or helping the Sahuagin. The reward is being allowed to exit the city.

Intermediate phase 5: Cut-scene: escape of Bodhi & Irenicus

The passage from parts 5 to 6 is marked by a change in chapters, and a cut-scene showing Bodhi and Irenicus fleeing through the Underdark. The cut-scene clearly exposes information that the PCs cannot have, but this information is anyway revealed to the characters during the sixth phase. The reason this is exposed is probably to make the player have a motivational link and see that s/he is still on the right path of the central problem solving process.

Part 6: The Underdark

The aporia is how to reach the surface from the Underdark. Speaking with people met, the characters learn that Irenicus and Bodhi have travelled this route on their way to the surface. The epiphany is not immediately clear, but is unveiled little by little. This phase is dominated by investigation on what is the epiphany, and hints are given during the course of action. Related to the main aporia-epiphany pair are then several lesser aporia-epiphany pairs that must be solved separately in order achieve a to better understanding of what is the epiphany of the main aporia. When all aporias are replaced by epiphanies, the player reaches the surface. This is both the goal and the reward, but there is more to the reward. The player also gains new information about Irenicus and Bodhi. This is manifested in the intermediate phase below.

Intermediate phase 6: Drow vs. elves

Reaching the surface, the PCs meet a group of elves that just had a battle with a group of Underdark elves also known as the Drow. The fight extends into the Underdark, and the group is already familiar with the fight. At the surface the elves confront the PCs with questions and give them another quest. The quest is interesting since it is related to Irenicus and Bodhi's deeds, and it shows that also the elves have matters to solve with Irenicus.

Part 7: Returning the Lanthorn: defeating Bodhi

The quest given by the elves is returning the Lanthorn that Bodhi stole. The Lanthorn is a magical device that permits access to the elven city Suldanessellar, and without it the city cannot be reached. In one respect the aporia is to permit access to the city, and then the epiphany is returning the Lanthorn. Or, the aporia is how to find the Lanthorn, and thus the epiphany is defeating Bodhi. A last view is that the aporia is how to defeat Bodhi, and the epiphany is the strategy the player utilises to find and fight her. It is a multi-layered aporia-epiphany pair, where the last view seems most correct, since the other two obviously contains the last one. Concerning problem solving, it is obvious that the player must develop hypotheses and strategies on how to solve the problem, and make attempts related to this. Since the epiphany is given in the two initial cases above, these are only motivations and goals of the problem solving process. The epiphany is the *answer* that the player seeks, or the *method* utilised to solve the aporia. Then it is also possible to say that the goal of this phase is to find the Lanthorn and return it to the elves, and the reward is access to Suldanessellar.

Intermediate phase 7: Increasing knowledge

This phase focuses on the reward the player gains from returning the Lanthorn. The player is given information about Irenicus, and is told that the priestess of Suldanessellar may add more. This triggers a motivation in the player and the PCs to continue to Suldanessellar. Then, since the Lanthorn is returned, it is possible for the group to travel to the elven city.

Part 8: Suldanessellar

Here the aporia is twofold: The PCs should find the priestess, and the city should be saved from Irenicus. Finding the priestess may be seen as an initial event that is not part of the main aporia-epiphany pair. Its function is to introduce the player to the aporia, which is how to save the city from Irenicus' destructions. The priestess increases player and PC knowledge about Irenicus' past, and tells the group what should be done in order to find the wizard. The player must summon the Guardian of the Forest by collecting a number of artifacts and bring them to the temple. This requires exploration of the city, and during the course of the search other events may happen that make the process more difficult. The epiphany of this process is related to *search*, and even though this is easily comprehended and also hinted by the priestess, it is the reward that seems unclear here. What will happen during and after the summoning of the Guardian is a bit fuzzy, but is unveiled after the task is accomplished: The Guardian opens an entrance into the Tree of Life, where the PCs finally meet Irenicus. The reward from summoning the Guardian and saving the city is thus having access to the location of Irenicus.

Intermediate phase 8: Tree of Life

The meeting between Irenicus and the PCs reveals the aporia-epiphany pair that this phase consists of. The aporia is how to defeat Irenicus, and the epiphany is the *strategy* the player utilises. It is of course possible to utilise several strategies, but it may turn out that some methods are more suitable than others. The goal is to defeat Irenicus once and for all, but the effect is not the one intended. Defeating Irenicus has the effect that both him and the PCs die, and the group follows Irenicus to the Nine Hells for a final battle.

Part 9: The Nine Hells: defeating Irenicus

The aporia in this last phase is how to track and defeat Irenicus. This may be seen as two tasks, but they are closely related. The search takes the characters through a phase of riddles where the answers given by the protagonist have direct consequences for its physical abilities. The epiphany is related to answering the questions in a strategically optimal way, in order not to make the protagonist lose abilities that are important for battling a powerful wizard. When confronting Irenicus the last time, the player faces the most difficult aporia in the game. Defeating Irenicus is also the central aporia in the game as a whole, and it is expected to be a more strenuous task than the other aporias in the game. The epiphany of this central aporia is the sequence of computer agency executed by the player: the entire course of action taken in the game that has been related to this central goal. The reward is of course winning the game.

In *BGII*, epiphanies are often given or hinted beforehand. The player does not always need to ponder on what is the right way to solve problems. The real problem is often *how to act* according to the epiphany. Thus, some may argue that what I call the epiphany is the true aporia, since it is the problem that should be solved. This argument is mistaken, however. In many cases, the epiphany of one problem is the aporia of the next, and this may cause some confusion. For instance, in part 2 above, the aporia is how to find Irenicus and Imoen. The epiphany is demonstrated to be collecting 20,000 gold. Collecting this vast amount of money, however, is also an aporia that needs another epiphany.

5.1.2 From Beginning to End in *Heroes IV*

HoMMIV is a game of several unrelated scenarios, while *BGII* only has one scenario centred on the personal interest of the main character. Thus, each scenario gives different courses of action, and a thorough description like the one above is therefore not possible. When playing a *campaign*, the player must complete one scenario in order to go on to the next in a fashion that reminds us of the phases of *BGII*. Several scenarios are linked together with intermediate

phases describing the object of the next scenario. In addition to stating the win and loss conditions, the intermediate phases include a written narrative also read aloud, which gives the scenarios an atmosphere, linking the otherwise arbitrary levels together, and creating a motivation related to the heroes of the campaign. I will not focus on the relationship between the levels in a campaign, however. Whereas *BGII*'s structure is based upon aporia-epiphany pairs, *HoMMIV* seems to be more structured around different types of actions. This is not to say that aporia-epiphany pairs have no importance in *HoMMIV* or that different types of actions have nothing to do with *BGII*. The object of this part is to make an analysis of the different phases of action that a player goes through in a single scenario. There are three phases in a scenario:

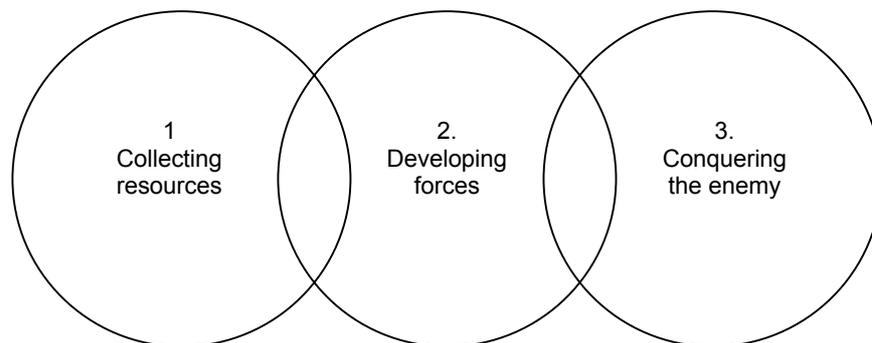


Illustration 11: *The three different phases of problem solving in HoMMIV.*

The phases are characterised by a focus on different types of player actions. They are highly dependent upon each other, in the sense that they are not mutually exclusive. All three tasks are commonly present in each phase, but the different phases are centred on the actions given in the illustration above. A turn-based strategy game, *HoMMIV* is a game where previous knowledge of the game is very helpful. It is necessary to play the game repeatedly in order to play the game successfully and with a thorough understanding for developing a strategy. Unlike *BGII*, *HoMMIV* is typically played more than once. This is implied in the game since there are a number of different scenarios available. The knowledge one gains from playing the game over and over again is manifested through the development of a strategy that is commonly utilised at each playing of the game. An account of the different phases is given below.

Part 1: Collecting Resources

In this initial phase the player is vulnerable and weak. In most scenarios, the player starts on a very low level of development, and the main constraint for improvement is lack of resources. Thus, there is an initial aporia of how to improve, and the player realises that the epiphany is collecting resources. The player may figure this out when wanting to build a new structure in a town but not being allowed because of lack of resources. Units also cost resources, and the player realises that having a decent army is crucial for moving about the map, exploring and

flagging mines, since both mines and narrow passages are typically guarded. Thus, this first phase is dominated by collecting resources, but building forces and conquering guards do play an important role related to this. Since the opponents are subject to the same constraints as the player, it is not likely that s/he must fight any opponent's armies in this initial phase.

Part 2: Developing Forces

This second phase typically starts before the end of the first phase. As resources are earned, the player tends to start developing his/her forces. First by building the structures appropriate for the different forces, and later by recruiting units from the different structures. In *HoMMIV*, structures with weaker units must be recruited before the player is allowed to recruit stronger units with greater advantage in battle. This motivates the player to collect even more resources since stronger units are more expensive. The aporia is then how to develop the strongest possible army as efficiently as possible. The epiphany is thus dependent upon the strategy one chooses. Should the player trade his/her resources for other resources when wanting to build a certain structure, or should s/he wait until s/he has earned or collected enough? This phase is highly dependent upon different strategic choices. The player must choose whether to build all the structures before recruiting units, or build units before the town is well developed. Another issue is whether to buy structures that allow for unit recruitment, or other structures that may give the player other advantages. Collecting resources is very important also in this phase, even though it is not dominant. However, in this phase there may be encounters with opposing armies. This may have many reasons. Either the player or the opponent may have reached a higher level of development, and is already in the third phase of conquering. Or during exploration the player may accidentally meet other exploring armies even though neither the player nor the opponent is out to conquer the other. The player may also have made a strategic choice to attack the opponent before s/he feels ready for it, hoping that the opponent is even weaker. Experienced *HoMMIV* players know that the game is a race that only the fastest player can win, and that *speed* is an important strategic feature.

Part 3: Conquering the Enemy

Neither collecting resources nor developing forces is ignored in the third phase. Both are important when conquering the enemy. In this phase, the player has most likely built all structures available in the town, and recruits units for one purpose: defeating the opponents. Conquering is in focus, and flagging mines and building structures should be past stages, so the player does not have to concentrate on these while preparing for victory. If there are several opponents, some of these may already be defeated, either by the player or by other opponents.

The aporia is how to defeat the last of the opponents. This is not the same as defeating a hero; since heroes may be recruited in towns, conquering of a town and holding it is most often the goal²⁷. The epiphany is related to fighting and winning, but the strategy is individual. It is likely that the player must defeat several armies and heroes before coming close to victory. Even if the player has the advantage over all the armies met so far, this does not mean s/he has the advantage when attacking the last town. In towns the defence skill of heroes is increased, and the strategy utilised during a siege may be of great importance. The player must use his/her magic and fighting skills as appropriate. It is also likely that the last battle must be replayed several times, and the player utilises the knowledge s/he gains from each encounter.

In *HoMMIV*, epiphanies are typically related to the strategy the player chooses. There is generally no single solution to the aporias in this game, since the aporias are more or less loosely connected to collecting resources, development and preparation for battle. Even though aporia-epiphany pairs often are related to combat, many scenarios have aporia-epiphany pairs with single solutions as well. There may be quest gates that demand that a hero brings a certain artifact or a certain amount of resources before being allowed to pass. Here, the aporia is how to find the artifact or amount of resources in question, and the epiphany is related to the method the player utilises to solve the problem. Often the player receives hints during the course of the game how the aporia can be overcome, for instance via messages that pop up.

5.2 Different Sequences, Different Actions

As we can see, *BGII* and *HoMMIV* have very different structures with different ways of focussing on aporias and epiphanies. It is also hinted that how the player takes action depends upon different kinds of logic. It seems that *HoMMIV* expects somewhat different actions from the player from phase to phase. *BGII*, however, expects different types of action to different kinds of problems. This section seeks to identify sequences that need different kinds of action.

Assigning different types of actions to different stages in the game does not seem to be suitable for *BGII*. Here, different tasks suggest different types of player action. Many aporias in *BGII* should be solved according to a *quest* model. This means that the player has been assigned to do a task and must accomplish it. The player receives an aporia, and often also hints about the epiphany, and solves the problem from this point of departure. It is possible to identify three different kinds of quests in *BGII*. The most important type is quests related to the

²⁷ Some scenarios have as their winning condition to defeat a hero.

central process of problem solving, or the ‘plot’ as it were. These are outlined in the description of the structure in chapter 5.1 above. We may say that these quests have the closest relationship to computer game agency, since they consist of aporia-epiphany pairs directly related to the progression of the game. Player action in this quest type is not qualitatively different from player action in the other quest types that can be found in *BGII*. Another type is quests external, or remotely connected, to the main process of problem solving. These can be divided into two groups; quests that the player freely takes on, and quests that are thrown upon the player in certain situations. Both have their own aporia-epiphany pairs, but solving them does not take the player a step ahead in the central problem solving process. Since these quests do not relate to the central goal, solving these cannot qualify for computer game agency, but they must be labelled thus for another reason: since the solving of problems here clearly leads to the progression of this specific quest we speak of computer game *agency on a micro level* instead of a macro level. So it is possible to say that even though the actions taken by the player are the same in quests on the macro level as in quests on the micro level, they function differently as far as their relationship to the main goal is concerned.

In *BGII* it is easy to see how external quests have a remote relevance to the main goal. Since one of the first central objects is collecting a vast amount of money, it is a close solution that the group lets different people hire them as mercenaries. But why are these quests implemented in the game in the first place? One answer is that it makes game play more entertaining and dynamic if the player him/herself may choose how many and which tasks to do. Another answer is that the quests give the PCs rewards that come in handy later in the game. These rewards are magical items and weapons, gold, and experience points. Experience is a feature in many RPGs that allows the characters to improve their skills. It is very important in *BGII* since it allows the characters to become strong enough to be able to defeat Irenicus.

As demonstrated, the types of action in quests are not very different from each other despite of the fact that they relate differently to the central goal of the game. However, there is another type of task the player must solve that is dependent upon another kind of problem solving. This is what I choose to call *events*. Events are episodes that happen without the player initiating them, as for instance ambushes. These may be emergent; that is randomly generated by the programme, or progressive; i.e. pre-programmed in advance. Events throw the player into action and force him/her to solve the problem without any chance to plan beforehand. The aporia of an event must thus be understood immediately, and the player must have an immediate hypothesis about epiphany. Normally events do not demand complex problem solving on part of the player, and the epiphany is almost given beforehand. Events

usually take the form of combat and may then be seen as a spontaneous reaction to defend oneself when being attacked. To speak of agency in relation to events is to speak of agency on the micro level, since they do not have any direct relevance to the main goal. However, the player's actions in events are meaningful and intentional, with a very clear importance to the problem solving process that the event consists of. In this sense, we may speak of agency also in events, even though it is of a very different importance than agency on the macro level.

In *HoMMIV*, the three phases seem to have different relationships to the main goal, and it is obvious that the different phases represent different stages of problem solving. This is very much compatible with *step-by-step problem solving* identified by cognitive psychology (Waern & Lundh 1996:139-64). The main goal is conquering the opponents, but the first phase seems remotely connected to this. Here, the player first maps the situation and creates a mental representation of what is the problem (Waern & Lundh 1996:141). The relationship between this phase and the central goal is one of long-term planning, and seeing this relation requires that the player comprehends that the actions and strategic choices made in this phase have consequences for the outcome of the game. Exploration and collecting resources are in this case thus closely related to computer game agency.

The second phase also has a remote connection to the main goal since it is part of a long-term planning process. But player action seems to have a more direct relevance for the central goal, since building an army is only done for two reasons, defence or attack. This makes this phase more clearly connected to the central goal than collecting resources. Also, encounters with opponents are far more common in the second phase than in the first phase. During the course of building an army the player is not as vulnerable as in the first phase, and may therefore deliberately provoke or attack other armies. It is not uncommon that the player already in this phase tries to conquer the opponent, since it may be crucial to defeat the opponent before it becomes too powerful. Thus, the second and third phase may tend to merge as far as player action is concerned. Agency is easily detected here, not only because it is easier to see the link between the action and the central goal, but also because the strategic choices made in relation to when to encounter the enemy have major consequences for the outcome.

The conquering phase is where the central epiphany is executed. It is revealed whether the strategic choices of the player have been satisfactory or not. The epiphany is connected to the strategy the player utilises, and even though some strategic choices may be better than others, there is not one strategy that is the correct epiphany, but many. This phase may include several attempts on part of the player. If the first attempt of attacking the opponent's town does not lead to victory, there are several actions the player may take. S/he may load a previ-

ously saved game, or s/he may strengthen his/her forces further. Or s/he may try attacking again, but with different combat tactics. This is the phase where agency is most clearly executed: all actions related to defeating the opponent have a very direct connection to the central goal since they are the last actions in the problem solving process. The whole problem solving process may be seen as a parallel to action theory's *accordion effect* (Davidson 1971:53), since it demonstrates that an action may be described as a series of several simple actions. The problem solving process may thus be seen as one complex action, where the first actions do not seem to be as relevant as those closer in time to the outcome.

Combat has its own logic of action. In both games the player must assess every move of the opponent at the moment it appears, but s/he still takes action dependent on a combat strategy s/he has developed during game play. It is important to see that *BGII* is dependent upon faster comprehension of aporia and epiphany since it is in real-time, and although the player may pause, action is continuous. Being turn-based, *HoMMIV* separates the moves of each unit, and it is easier to have an overview of the action.

Belonging to different genres, the games have different logics of problem solving. *BGII* follows the logics of a quest or a *mystery story*: it is the process towards reaching a goal that is important. However, there are also episodes that demand that the player solves the aporia-epiphany pair by the logics of a *maze* or a *puzzle*. Finding the way through a dungeon is clearly navigation in a maze, and some aporias expect the player to solve riddles in order to solve them. There is also a certain puzzle bias throughout the game since it is often how to execute the epiphany and not finding it that is difficult. *HoMMIV*, on the other hand, has its logics of problem solving from classical games: there are opponents and their moves, a clearly set goal, and separate phases where the player must take different kinds of strategic action. The logic is thus similar to that of *chess*.

5.3 General Analysis: From Motivation to Problem Solved

This part of the comparative analysis is dedicated to a general investigation of computer game agency in *Baldur's Gate II* and *Heroes IV* by attempting to make an overview of how agency is realised and secured in the games. The investigation starts by taking a look at motivations in the games: what is it that makes the player want to take action with direct implication upon the course of the game in the first place? Then the analysis goes on to study the different phases presented by the flowchart of problem solving introduced in chapter 3.7.2. How the player comprehends the aporia will be investigated, and also how hypotheses about its solu-

tion are formed in the player's mind. This is closely related to development of a strategy, which is seen in relation to the intentional action taken by the player. The execution of the epiphany is also discussed, and whether or not this leads to the desired outcome.

5.3.1 Securing Agency by Motivation

In *BGII* motivation is closely linked to the role-playing aspect. Being a CRPG, *BGII* simulates the social situation of a fictional individual that the player must adapt into. This motivates player actions that imitate those of social situations in our own environment. Also, features of role-play do not create a game situation as in chess where competition and winning is the primary focus; rather than emphasising *agon*, *BGII* emphasises *mimicry* (Caillois 1961:12): play that consists of 'becoming an illusory character (...) in an imaginary milieu' (1961:19). The role-playing aspect is secured through a focus on the main character: Irenicus has experimented on the main character and wants him/her because s/he has some special abilities that the player does not yet know of. This rouses an interest in the player to find out what this is all about. We may say that the willingness to take on the role as problem solver in *BGII* is connected to this personal focus, and to a great degree this is what secures agency in the game. There is also a second kind of personal motivation exclusive for CRPGs: *BGII* focuses on the main character's personality, wants and wishes. Taking on the role as another individual, the player does not only get a representational figure or a 'remote-controlled extension of herself' (Aarseth 1997:113) in the game; the player also represents another individual, and this is a feature *expected* by the genre of role-playing games. The player must try to set aside his/her own motivations for playing the game, and concentrate on what the *fictional character would do* in the different situations. One may argue that the player in most cases will let his/her own motivation dominate, but in certain situations different personal features of the PCs may practically constrain the player from taking certain actions, and they also make NPCs react differently to the character. For instance, if the *race* attribute of one of the PCs is *Drow*, many NPCs will refuse talking to the group or even attack since the Drow are not well respected in the *Forgotten Realms* setting. Also, many quests are especially assigned to characters with certain classes, such as *Thieves*, or *Fighters*, and these will not be available for other characters at all. Whether the player follows the personality of the character strictly or not, the player is motivated by the personal interest in any sense; otherwise s/he would not play a CRPG in the first place. The player needs to assess what happens to the player characters and act upon situations that concern them. When Irenicus disappears with Imoen, this concerns the characters personally in two ways: first, Imoen is kidnapped. Out of a personal

interest in a friend, the characters are motivated to find her. But if the main character has a personality that does not care for individuals, the player might not let her/himself be motivated by this to take action. However, there is a second way that the above situation concerns the characters: Irenicus disappears, and the group may be motivated to confront him in some way or another, either for revenge or to find out what it is that he wants with the group.

The fact that *BGII* presents some sort of mystery that the player should get to the bottom of is also a motivating feature of certain importance since it raises curiosity in the player. This is very different from *HoMMIV*, which secures agency by the player always connecting his/her actions and strategic assessments to winning the game. The player of *HoMMIV* has an understanding that all actions are part of the *step-by-step problem solving* process, and this is important for the initial motivation that makes the player take action with implications upon the game. Also, this kind of problem solving inspires the player to demonstrate his/her strategic skills. Although in campaigns designers try to implement a feature that seems to remind us of a personal motivation on part of the characters, it does not have the same impact upon the game. In campaigns commonly one hero is carried over from one scenario to the next. Messages are displayed on screen from time to time, representing the diary or log of this hero. However, there is no need for the player to read the messages to be able to play the game successfully. In this sense, we may say that this attempt of personal motivation only functions to *enhance* motivation and perhaps also create a motivating atmosphere.

An important issue concerning motivation where *BGII* differs from *HoMMIV* is their relationship to an opponent. *BGII*'s two types of opponents are *internal*, in the sense that they are controlled by the game. The first class has *pre-defined moves*, and consists of the most important NPCs in the game. The second class is connected to *events* (see 5.2), and *controlled by an AI* programme. *HoMMIV*, on the other hand, has the possibility for also having an *external* opponent, controlled by human players. The game also has two *internal* AI controlled opponents: the first type is similar to the external opponent, but guided by the AI via rules and variables that create seemingly random reactions, and is thus *emergent*. The second type has *pre-programmed reactions*, and functions as guards that attack only if an army is close enough and not too powerful. In *combat mode* the internal opponents move according to the AI's strategic functions, which are somewhat predictable since the programme obviously has defined beforehand what is the optimal strategy. Concerning *internal* pre-defined opponents, these are not too common in *HoMMIV*, but they appear for instance as powerful heroes programmed to guard a town. Moves of opponents always motivate the player to take action in both games. In *BGII* for instance, Irenicus' pre-programmed disappearance with Imoen moti-

vates the player to track them down. An event-based ambush by NPCs is even more motivating: placing the player in the middle of action, it *forces* the player to act. Another example is taken from *HoMMIV*: when an opposing army approaches a player army, the player is forced to flee or fight. In *BGII*, other episodes related to friendly pre-defined NPCs instead of hostile opponents will also motivate action. When the thief Gaelan Bayle approaches with an interesting offer, the player is forced to accept or deny it. We find parallels to this in *HoMMIV*, even though they arguably are more primitive. Here, quest huts like the one that asks the player to collect 20 of each resource motivates the player to take actions. Though it is not the quest itself that motivates the player, it is the *reward* that can be gained from doing it. This goes for both games: *rewards are always motivating*.

There is another motivation shared by the two games, namely the possibility for exploration, which inspires the player to act within the environment, even though exploration itself does not necessarily inspire *agency*. However, in both games exploration may lead to the discovery of different events and quests that need to be solved. The possibility for exploration may also enhance the immersion within the environment, and this is very inspiring in itself. However, the fact that *HoMMIV* is more geometrical than *BGII*, since *HoMMIV* has a whole map to be explored while *BGII* only has a limited number of arenas, may motivate to exploration more frequently in *HoMMIV* than in *BGII*.

HoMMIV includes a motivating feature that *BGII* does not have. The fact that the game is turn-based introduces a special motivating issue. Each time the player ends his/her turn because there is nothing more s/he can do, the opponents move, and related to whether or not the player already has knowledge of the opponents' territories s/he may watch the opponents' moves. After they are taken, a message is displayed on screen: 'It is [player's name]'s turn'. This is a direct request that the player should move, and it also reveals heroes, armies and towns that once again may be manipulated. Seeing that heroes and armies have new movement, and that it is possible to purchase new structures, the player is motivated to again take actions related to this. In this sense, we may also say that it is the new movement and new possibility for purchase that is a motivator for player action.

This part shows that several features in games can make the player want to take action. In general, we may say that what makes these motivations is the fact that they in some respect trigger the player to want to take action, or they make the player see the importance of his/her own immediate participation. It has been demonstrated that motivations are the prime requisite for securing agency in the games since they are the cause for wanting to take action at all.

5.3.2 Comprehension of Aporia

The player's comprehension of an aporia will often be a motivating issue in itself, since the want to solve a problem may arise in a situation where the problem solver realises what the problem is. What is crucial for this section is identifying how aporias in *BGII* and *HoMMIV* are comprehended. Not least when lesser aporia-epiphany pairs are encountered, the comprehension of the problem in both games is related to a hinder that more or less suddenly appears in the player's path. As Aarseth describes it (1999:38) an aporia is comprehended when there suddenly lies a 'roadblock' in the way, and the player finds this constraining on action. However, identifying the correct aporia is not always simple. Below I will try to find how the player realises what are the aporias in *BGII* and *HoMMIV*.

Baldur's Gate II lets the player understand the problem by placing PCs in the middle of a situation where they obviously do not want to stay. Some evil wizard has imprisoned the characters in a dungeon, and a general knowledge of imprisonment, and perhaps a more specific knowledge about evil wizards and dungeons make it easy to see that the aporia must be escaping the dungeon. Whereas knowledge is increased during the escape, the player understands that the central aporia is more complicated than this, and that it must be related to the wizard Irenicus. Thus, increase in knowledge also lets the player comprehend the complexity of the aporia, and since knowledge is distributed little by little, the aporia will be comprehended differently at different times. However, there is an aporia in each phase that needs to be comprehended, and when receiving a quest the aporia may be comprehended in two ways. In complex quests, the player will not understand what is the true aporia before having investigated the situation. The comprehension is thus similar to that described above. However, if the goal presented by the quest is identical to the aporia, it is comprehended immediately.

The central aporia in *Heroes IV* is comprehended somewhat differently, since it seems that we speak of another kind of problem solving here. The player starts the game weak and vulnerable in an environment that inspires him/her to strengthen him/herself in different ways. Seeing that there are many dangers around, the player realises that the aporia in the first phase is related to becoming stronger. However, the aporias in the different phases of the game are quite dissimilar, and thus the aporia must be comprehended each at a time. The aporia of the second phase is understood in a similar fashion to the one in the first phase, since it also concerns the player's strengthening of his/her own capabilities. The aporia of the third phase is somewhat different: the player must have met the opponent, seen its resources and strength, and perhaps also have experienced it in a battle to comprehend that the opponent should be

defeated. Of course, this increase in knowledge may have happened in earlier phases, but it is in this phase it is important for comprehending the aporia. The main aporia is then comprehended in several independent steps that are closely connected to each other. The steps are not comprehended until the situation is thoroughly mapped, but since the main aporia is closely linked to the central goal given initially in the game, the player may have a somewhat diffuse understanding what it is all about during the course of the game.

5.3.3 Strategy

What is *strategy*? Cognitive psychology views it as ‘an arrangement of rules that decide what one should do in different types of situations’²⁸ (Waern & Lundh 1996:150). Game theory describes it as ‘a full description of what move a given player would make in every possible situation’ (Harsanyi 1977:94). Thus, it seems safe to assume that strategy is some sort of *plan* that the player more or less consciously develops about *what actions that should be taken* in different situations in order to reach the wanted outcome. Strategy is based upon those hypotheses that the player has about what may be the epiphany, and strategies are then important to player action and problem solving in games in general.

Developing a strategy is generally not a conscious process (Waern & Lundh 1996:150), but the hypotheses on which the player bases the strategy may be fairly clear. In general, the player will see that there is a problem to be solved, most likely followed by a highly attractive goal. To solve this problem, s/he develops hypotheses about what may be the solution. These hypotheses are central to the development of a strategy. Since epiphanies are closely related to aporias, it is often easy to have correct hypotheses about the epiphany even before the player has made a first attempt of solving it. It is often a greater problem finding out *how* the epiphany should be executed than what is the actual epiphany. The fact that the aporia often contains the epiphany is one reason, but the player’s previous knowledge with the game genre is another reason. Aarseth’s example from *Doom* (1999:38) that demonstrates a suddenly revealed epiphany is thus not necessarily the most common type of aporia-epiphany pair found in most games. Even though the epiphany may be a sudden revelation on part of some players, it is not so on part of experienced players that knows the common properties of objects in games. Also, in most games today, an aporia has more than one epiphany, or at least more than one way to execute it; otherwise the game might feel limiting on the player’s freedom of action. To have hypotheses about the epiphany or how it is executed is then important to the development of strategy since this helps the player build a plan on how to act.

²⁸ My translation.

Constraints and increased knowledge are important contributors to the development of strategies. Environmental constraints give the player physical obstacles that cannot be ignored when planning actions. Where do possibilities and constraints lie, and how may they be utilised? In *HoMMIV*, if the player starts the game on an island and strong monsters guard the passages from it, the player must choose a strategy that utilises this optimally. For instance, s/he builds a strong army to crush the guards before starting to explore. On the one hand, forsaking exploration gives the player a strategic disadvantage, since s/he neither learns the layout of the environment nor the moves of the opponent. On the other hand, defeating the guards before having a superior army also gives the player a strategic disadvantage by weakening the player's rising army. As a matter of fact, such a situation gives the player a new, initial aporia to solve. The same goes for *BGII*. Constraints such as locked doors, limited personal skills, or resources, affect the player's thoughts about how to solve the problem, and the strategy s/he chooses in that situation may be completely dependent upon these constraints.

Increased knowledge is also important: in both games, the player has an initial idea of how the problem may be solved, but the idea is unclear and object to change. The player realises that the situation will be more complex, and that hypotheses will change into a better strategy as knowledge is increased. Thus, s/he sets up *temporary hypotheses* s/he knows will change after knowledge is increased, and as new aporia-epiphany pairs are added, these hypotheses will tend to develop into a more clear strategy.

Since *BGII* consists of different steps, it does not seem important to form a complex strategy. Aporias in the central problem solving process are easily comprehended, and so are the epiphanies that also may be executed in a number of ways. Instead of carefully planning ahead, the player decides on the action in the precise situation. At the start of the game, the player makes a hypothesis that the epiphany is related to finding a method to escape Irenicus' dungeon. Since the dungeon possibly is a labyrinth, careful exploration seems to be the strategic choice that is the epiphany. Thus, in a dungeon the player has no choice but exploring, but whether exploration is careful or not is a strategic choice. The epiphany is therefore related to exploration, while it may be executed in different strategic modes. As the player acts upon the hypothesis, it is confirmed, and as knowledge increases the player develops more clear hypotheses about how to escape the dungeon. New aporia-epiphany pairs are encountered during the course, and add new information to the hypotheses. The strategy is thus developed by increased knowledge about the situation, environment and the problem in question.

It is difficult to speak of a carefully planned strategy that the player uses throughout *BGII*, since the different aporia-epiphany pairs are dependent upon different types of problem

solving (chapter 5.2) related to the specific situation. It does not seem to be possible to develop far-fetched strategies, since the course of action is specified by the pre-set moves of NPCs. Still there is some kind of strategic action within *BGII*, but it is limited to the problem solving process in which the player is at the moment. We seem thus to touch the division between *tactics* and *strategy*, where tactics denotes a short-term plan of action, while strategy is a more long-term plan. In *BGII* tactics dominate since the player must find a plan for action in each situation. There may, however, also be a more far-fetched strategy developed from growing experience and personal taste that the player utilises extensively throughout the game: the player may have a strategy that is solving most conflicts with violence, or one that is solving problems via persuasion. However, even though the player may have a strategy on playing style, s/he cannot have a strategy on how to track and defeat Irenicus. Here s/he is subject to what happens next in the pre-defined course of action, and the strategies s/he develops can only apply to specific situations.

HoMMIV depends more heavily upon strategic action. When picking a scenario or campaign to play, the player is given information about the map, such as conditions for winning and loosing. Since the main goal is stated so early in the game, the player is able to see the scenario as a whole, and reaching the main goal becomes the central aporia to which the player must find and execute the epiphany. This motivates the player to focus on the central goal from the start, and it is thus easier to develop a far-fetched strategy. The main aporia contains the epiphany: the experienced player easily sees that the epiphany of conquering an opponent includes building a strong army for attacking and defeating the opponent. The inexperienced player may not see the epiphany clearly, but also for him/her it is obvious that conquering an opponent means battle. However, the player makes hypotheses about how to execute the epiphany based upon the situation in which the player finds him/herself at the start of the game. The player sees that there is an initial aporia: the kingdom is weak and vulnerable. Since there often is an improvable town available that invites the player to purchase structures and units in it, it seems obvious that the epiphany is related to build a strong kingdom with resources and armies. Even though the player may feel that the actions s/he takes now are remotely connected to the outcome, it is not difficult to see that improving the kingdom has impacts on the conquering of an opponent. These hypotheses make the player aware of all his actions as parts of the strategy s/he chooses. Anyway, the epiphany is not limited to a single, narrow solution. There may be many different epiphanies, which also may be executed in a number of ways. It is obvious that it is closely related to strategy; and even though many strategies may function as epiphany, it is not all that will give the optimal outcome. However,

it is shown that *HoMMIV* has three different phases that encourage different actions related to the central problem solving process, and these are strategically closely connected. The phase of conquering must be kept in mind also when collecting resources and developing in the first phases. The player realises that strategy is important, and that s/he needs to increase his/her power before the opponent does. This makes *speed* an important strategic feature.

It seems then that the games emphasise strategy differently. While *HoMMIV* demands that the player plans ahead, *BGII* demands that problems are solved one by one without long-term planning, since the course of action is specified by the moves of the NPCs. Thus, *BGII* relies more on tactics in the precise situation while *HoMMIV* is based on strategy. However, *HoMMIV* also has episodes where tactics comes to front: in combat the player must regard this situation as special, and take tactical choices based on this, although it should be noted that the player will tend to utilise similar tactics in each battle. It is then reasonable to call it the combat strategy of the player.

5.3.4 Intentional Action

We have now investigated the levels on which the player's activity limits itself to mental capacities. This mental activity is different from the mental activity that goes on in the reader of literature or the viewer of films. In computer games the player always has in mind the fact that the hypotheses s/he makes are related to his/her own actions, while in fiction films and novels the hypotheses concern the actions of another individual. When studying intentional action, however, we leave the traditional role of a recipient, since intentional action on part of the recipient related to the content of the work is not commonly found in traditional media. This section investigates what exactly it is that the player does when playing *Baldur's Gate II* and *Heroes IV*. It is crucial that the player does not alone trigger action. There is a mutual pattern of reaction between player and game. The player acts upon invitations from the game environment, the game reacts to the player's choices of action, and again the player reacts to these reactions. In addition to this mutual pattern of reaction there are certain pre-programmed events that force the player to take certain actions. All this is crucial when discussing the player's intentional action. We speak of intention, but we do not speak of complete freedom. The freedom is to be found within some very specific boundaries.

When playing a computer game, the player must realise that s/he must take deliberate action with a certain intention. Motivations, comprehension of the aporia, and development of strategy all seek to give the player this realisation, and even though many situations force the player to act, this action must be meaningful and intentional. Games are goal-focused, and the

actions must be intentional in the sense that the player takes them with the intention of reaching the goal, and believes that a certain action leads to this goal. In other words, there must be a pro-attitude towards certain actions, and a belief that these actions will lead to a certain result. Thus, there is a reason that *rationalises* the action (Davidson 1963:3-4).

In both *BGII* and *HoMMIV*, certain goals are in focus, and most actions taken are intentional in the sense that they seek to reach the desired outcome. Reaching the goal means a process of problem solving, and since these are somewhat different in the games, so is intentional action. We have seen that the problem solving in *BGII* is based on the situation. This means the intentional action taken also is dependent upon the situation: the *focus* thus lies more on the intention the player has for the *precise situation*, not for the central goal of the game: When the PCs are prisoners of the Sahuagin king, it seems that escaping from the underwater city is the main focus. Even though s/he is fully aware of the fact that s/he is chasing Irenicus and Bodhi, the player also knows that the method s/he utilises in order to solve the Sahuagin situation does not affect the aporia of the main problem solving process. Of course, as far as the player comprehends the central goal, the aporia and the epiphany, the player will keep these in mind also when taking intentional action related to the situation. In *HoMMIV*, on the other hand, the player focuses intentional action on more *long-term goals*: The effectiveness of flagging mines and upgrading the city in the first phases have direct implications on the effectiveness of defeating the opponent in the last phase, and the intentions must be focused upon *reaching the central goal*. This is also related to how problem solving to a greater extent is based upon step-by-step processes, and upon strategic action of the same logic as the *accordion effect* (Davidson 1971:53). Describing how several simple actions must be taken in order to accomplish one complex action, this effect exemplifies what the player does when solving problems in *HoMMIV*, since reaching the goal needs a player that takes several actions with seemingly little relevance to the goal, but which actually are parts of the complex action that is defeating the opponent (cp. Waern & Lundh 1996:139-41). This demonstrates that a simple action normally not seen as a case of agency may be so since it is part of a series of several actions that together have implications to the problem solving process.

The player of *BGII* is very dependent upon different kinds of game features when taking action. The main opponents are pre-programmed to take certain moves, and in addition to controlling how and when knowledge is distributed to the player and the PCs, this controls the player's intentional action in certain situations by influencing the player to take certain moves. This makes player action quite predictable, and it is possible to say that this opens up for little freedom of action within the game. However, what happens to intention when free-

dom of action is decreased in this way? Intentions that were directed elsewhere are somehow turned towards the situation and the moves of the opponent, and thus motivates the player to take action related to them. Intention does not disappear, but changes focus. Thus, it seems that *intentions becomes motivated*: when Irenicus and Imoen disappears early in the game, the player comprehends the aporia and makes hypotheses about what intentional actions s/he may take in order to find them. Concerning events not pre-programmed but generated randomly, such as ambushes), it is obvious that action with intentions elsewhere is somehow *forced away* from its original intentions since the event centres the attention of the player somewhere else. During an ambush, the player cannot do much more than defending him/herself, and s/he takes similar tactical choices as s/he does in all combat situations. Once attacked, the player will have an intention of defeating the opponent, but the original intentions the player had before the ambush took place are temporarily paused.

Since *BGII* is a CRPG, intentional action should be related to the focus on the personality of the main character. In other words, the actions the player takes should be those actions that the character would take according to his personal preferences. This is the essence of role-play. In addition to interplay between player and character, it is then also interplay between *character personality* and *player intentions*. Seemingly irrational player actions may thus be rational in the light of the personality of the character, and the player may take actions that s/he would not take were s/he not playing a role-playing game. This reminds us of what Davidson labels *incontinent actions*, which are acted out contrary to what the agent thinks is best (1979:21). Related to character personality, actions are not necessarily incontinent, but many actions are incontinent on part of the player since the character's choices and intentions may be different from what the player thinks is best.

While in *BGII*, intention and rationality must be biased through the character and the situation, *HoMMIV* does not include a role-playing aspect at all, and thus character personality does not affect intentional action. Here player rationality and intention is always in focus. The interplay between game and player is heavily affecting action, but how does it relate to the *intentionality* of action? The interplay affects intentional action in several ways. The relationship between *player* and game controlled *opponents*²⁹ is interesting. Since most opponents of *HoMMIV* do not have predefined moves, there is an AI function that makes the opponent take rational moves within the scope of what a player is allowed to do. It is already emphasised how moves of the opponent may motivate and even force the player to take action. Get-

²⁹ Note that played in multiplayer mode, the opponents will to a certain degree be other players, and in those cases this feature will not be an interplay between game and player, but between player and player.

ting into *situations* where the presence of an opponent forces player action is seldom intentional, but the *actions* taken are placed somewhere in between being intentional and not. Whereas in *BGII*, intentional action may be temporarily paused in situations not directly related to the central goal, this is not the case of *HoMMIV*. Here the intentions of the player may be interrupted by happenings, such as an approaching army, but it is still related to the main goal and *complicates the situation* and hence the player's intentional action. However, in situations with an autonomous goal, the intentions seem to be focused upon the temporary goal instead of the central goal of the game until the temporary goal is reached. Anyway, it is important to note that the intentions of reaching the main goal are always kept in mind because unlike *BGII*, the central aporia of *HoMMIV* is known from the very beginning. The player may choose to play a scenario on the basis of the goal, since it is given in the presentation of the scenario. Another remark is that *HoMMIV* encourages very classical game situations where two players have opposing intentions and desires, and part of fulfilling one's own intentions involves hindering the opponent of fulfilling its intentions.

There is also the interplay between *player* and *environment* in *HoMMIV*. The game designers have utilised spatial layout in order to make the player act in certain ways. For instance, map difficulty is defined from the layout of the environment. Also, many aporias are constructed on the basis of the spatial layout. This makes the environment very constraining on the player's freedom of action meanwhile it cues the player to certain other actions. Thus, the player has freedom to take intentional action within the constraining boundaries of the environment (cp. Liestøl 2001:57). However, it does not seem to affect the intentionality to a great degree. Layout does not seem to interrupt the course of action taken; it only makes the player find alternative routes. An exception is those cases where the designers have utilised layout to create aporias that must be overcome in order to continue the game, such as the thunderbirds guarding the pass to Davenport. Thus, the intention will not be changed, but the action taken related to it must take into itself the new constraint. Related to the accordion effect, it seems that the complex action becomes even a little more complex since it adds another obstacle into the action.

5.3.5 Executing the Epiphany

Intentional action is executed on the basis that it is related to the aporia-epiphany pair. The player has an understanding of what the aporia is, and hypothesises about what the epiphany that may solve it is. Thus, the player takes intentional action in order to attempt to solve the aporia. As suggested, the attempts may be the correct way to solve the problem and execute

the epiphany, or it may be incorrect. If it is correct, it may lead to the goal or to an effect not intended. If it is incorrect, it leads to no effect or a not wanted effect, and the player should try again with the assumption that the hypotheses were wrong, or that attempt or strategy bad. In really bad situations the player may load a previously saved game.

In general, aporias of both of games have more than one epiphany, or at least more than one way to execute the epiphany. In many cases, the initial hypotheses that the player has about the epiphany are correct, and more or less instinctively comprehended. This does not seem to be in tune with Aarseth's view (1999:38) that the epiphany comes as an unexpected solution to a problem with which the player has been struggling with for a while. Problem solving in computer games is not always dependent upon *sudden problem solving* (Waern & Lundh 1996:139, 164-70) in the way demonstrated by the aporia-epiphany pair that Aarseth identifies in his example *Doom*. As cognitive psychology suggests, problems may also be solved as *step-by-step* processes (Waern & Lundh 1996:39-64), and this is probably how problems in computer games are solved in most cases. Both *BGII* and *HoMMIV* are dependent upon different far-fetched processes of problem solving that must be done step by step. However, this relationship between aporia and epiphany is clearly an archaic way of manifesting problems in computer games. Aporias with only one hard-to-discover epiphany seem to be constraining on the player, which may easily lose patience. This has led game designers to create games with aporias that are easier to comprehend, but where the epiphany is hard to execute instead of hard to notice (cp. H. Smith 2002).

Baldur's Gate II has many situations where the correct epiphany does not lead to the intended effect. It is an interesting phenomenon in the respect that it may give the feeling that the epiphany was not correct, or at least that it could have been possible to solve the problem in another way that would lead to the intended effect. Sometimes this is the case, though, but not at the most crucial points in the central process of problem solving. The reason for this is that the game very much wants to give the feeling that it tells a story, and therefore has a pre-defined 'plot'; the action of the game is thus to a degree predetermined as if by fate. This makes Irenicus' disappearance with Imoen inevitable: even though this is clearly not the *intended* effect, there is no other solution when executing the epiphany in the correct sense. In other cases there may be aporias with more than one epiphany, but where several epiphanies lead to the intended effect. This is the situation in the case given above: crossing the room unharmed may be done by finding the mechanism that disarms the traps, or by sneaking past.

Heroes IV does not have a 'plot', so there are many aporias in the central process of problem solving that may have several epiphanies, and the epiphanies may be executed in a

number of ways. However, most frequently, there is only one – although loosely defined – epiphany, but it is connected to strategy, and may be executed in a *more or less optimal way* that may or may not give the intended effect. This is what may happen when conquering a town. Conquering a town may be the epiphany of for instance winning the game, but often it is the *method* utilised in order to execute the epiphany that decides whether the result is intended or not. Combat may have many outcomes – the player may lose, that is, the army is destroyed; or s/he may win but the loss may be too great to continue the game. This last option is of course not crucial in the very last battle of the game. However, it is also common in the central process of problem solving that aporias only have one epiphany. The reason for this is normally to make the scenario somewhat more difficult; in addition, some scenarios make a point out of the player solving a series of aporia-epiphany pairs in a sense not too different from *BGII*; thus, they do not let the player go on to the next aporia without first having solved the preceding. This is what we will see in the case below (5.4.2), where the player first must collect resources in order to increase the hero's stealth skill; then s/he must reach Davenport before being allowed to go on to figure out how to capture the town of Twin Pines, which is the object of the scenario.

5.3.6 Note on Saving & Loading Games

It is necessary to briefly mention the impact of saving and loading games in *Baldur's Gate II* and *Heroes IV*. The possibility for saving and loading clearly affects knowledge, strategy and thus intentional action. Here I would like to show how this affects the games of this study.

The function of saving and loading is very similar in the two games. At regular intervals the player saves the game as a preventive act. When suddenly realising s/he is in a situation s/he cannot handle, the player loads the previously saved game: the player is taken back to the point of saving, and may replay the process from there. In both *BGII* and *HoMMIV*, it is expected that the player utilises this feature, and the difficulty of the games is based upon the possibility of saving and loading. As mentioned, it *influences the knowledge* the player has of the situation, and this gives him/her thus a strategic advantage. In *BGII*, for instance, when entering a room with monsters that effectively kills several of the characters the player may load the game, and now enter the room carefully, after perhaps having cast a number of protective spells on the characters. The same goes for *HoMMIV*: the player goes into a battle s/he believes s/he can win, but realises that the opposing army is stronger than s/he first thought. The player may then load the game in order to retreat into safety or change his/her strategy when again entering the battle.

Increasing knowledge in this way is problematic in *BGII*. It represents a double logic that does not seem to fit the role-playing aspect of the game. We could say that it is only the knowledge of the player that is increased when loading a game, since the character cannot gain knowledge of this kind. The saving and loading happens in an extra-diegetic sphere external to the game world, and in addition, our knowledge with our own world tells us that it is not possible to jump back and forth in time, erase events and repeat actions in the way displayed in *BGII*. Character knowledge and player knowledge should then be logically separated in the mind of the player. In tabletop RPGs, clearly separating player knowledge and character knowledge is regarded one of the most important features of good role-play, but this seems to be ignored in CRPGs. However, separating these is not easy when the game encourages saving and loading. It is almost impossible not to take player knowledge into account as a strategic advantage, and this feature may be a very important reason why the role-playing aspect to a great degree seems to be ignored in CRPGs.

The act of saving and loading games also lets the player replay a sequence of moves until s/he is satisfied with the result. This means that a player will not only load a game when the protagonist or another player character in *BGII* dies, or when a powerful hero or an army is exterminated in *HoMMIV*. S/he may also load when things turn out in a way not intended. In *BGII* for instance, when in a dungeon, the player may load the game if s/he unintentionally spent all her healing potions in one battle, since s/he knows s/he will not be able to buy any new ones before the group is out. Then s/he may replay the combat scene while trying to survive by other means than healing potions. Similarly in *HoMMIV*, if the player sees the opponent approaching one of his/her towns, s/he may decide to load the game in order to move the strongest army back to town before the opponent attacks.

What can we then say about the relationship between agency and the act of saving and loading games in *Baldur's Gate II* and *Heroes IV*? Obviously, loading, not saving, is the action important to the problem solving process. Loading lets the player replay his/her actions until satisfied. Even though it is not part of the diegesis - it only affects it – it helps the player solving the aporia by increasing the knowledge of the situation, and getting a better overview of how opponents react and the environment functions in this precise aporia-epiphany pair. In this sense, we could argue that the save-load function cannot be labelled agency strictly, but that it helps the player better execute acts of agency.

5.4 Case Studies: the Problem Solving Process

This section shows examples of sequences of problem solving in *Baldur's Gate II* and *Heroes IV*. Even though I have demonstrated that there are different kinds of action in different sequences of the games, this chapter will only show the problem solving process in one example from each game, since the process functions in a similar fashion in all different kinds of aporia-epiphany pairs. This analysis of action in the games will to a great degree follow the model proposed in chapter 3.7.2 above.

5.4.1 *Baldur's Gate II*: Chapter 1: Irenicus' Dungeon

The sequence that will be analysed below is part of the first phase of *BGII*. The aporia and the epiphany of this phase have been described above, and since it is a very long sequence with many lesser aporia-epiphany pairs that must be solved in order to escape the dungeon, I have chosen to analyse player action in detail only in one of these lesser aporia-epiphany pairs.

The sequence chosen is found on the second level of Irenicus' dungeon, and it appears in a room with two fighting persons and many traps. The aporia-epiphany sequence illustrated may be seen as an example of an *event* (see 5.2), since the episode places the player in the middle of action. It does, however, include some problem solving as well as combat and is therefore a good example although labelled an event.



Screenshot 1: Initial situation: Assassins fight. Aporia: how to kill them before they attack us?

When entering the room, the player sees two persons fighting. If the AI function is on, the characters will automatically engage in the battle, otherwise it is up to the player to decide. Engaging in the fight is an appropriate reaction, since by this time in the game the player

has discovered that individuals already engaged in fight will attack the PCs regardless of the PCs actions. However, at this point the player does not know that the room is filled with traps, but the observant player may notice the little message ‘trap sprung’. How is the aporia comprehended? If the player does not notice the above message, s/he is led to believe that the aporia is how to kill the assassins before they attack the PCs. Thus, the epiphany is the method utilised to accomplish this, and the player creates a hypothesis of how this can be most effectively executed, and attacks then the assassins. However, if the message is noticed, the player realises that s/he should be careful, and the aporia is comprehended as how to kill the assassins before they attack us *at the same time* as avoiding the traps? However, in the sample sequence, the message is not noticed, and the player believed the aporia to be *how to kill the assassins before they attack us?*



Screenshot 2: Attacking assassins: traps sprung

The player decides to attack. To most effectively execute the epiphany, s/he chooses a strategy that puts the archers at the back and goes into melee with the two sword fighters, believing that this is just another fight without any constraints as traps. However, the player soon discovers the traps as two of them spring. The main character (arrow 1, screenshot 2) is injured, and a new aporia becomes suddenly very immediate as the player realises the main character might get killed. The epiphany that spontaneously springs to mind is to move the characters in melee out of the zone of danger. The player thus moves them back to the area of the archers:



Screenshot 3: Moving characters out of trap zone

Only the archers are left to attack the assassins, who are already heavily wounded and perish. The player lets one of the characters search the bodies for valuable items; an action that often becomes a strategic routine after each combat. Then, having learnt about the traps, the player seeks to solve the new aporia: getting past the traps. The first hypothesis about an epiphany that springs to mind is detecting and disarming the traps, and s/he moves the thief, who is the character in the group with appropriate skill, towards the trap while in the *detect traps* mode (screenshot 4). The *detect traps* mode is activated by first selecting the thief (arrow 2, screenshot 4), and then selecting *detect traps* among the character class skills (arrow 3, screenshot 4). A red bar appears on the floor in front of the thief: this shows that the trap is detected.



Screenshot 4: Detecting traps mode

Now the player wants to disarm the trap. Detecting and disarming traps is also a routine the player develops after having played the game for a while, or having read the manual. It may be seen as part of the strategy the player chooses, since detecting traps is not the only way to handle this aporia. The player could have seen an advantage in ignoring the traps and crossing the floor despite of them. This would obviously cost the PCs many wounds, and the player would run the risk of killing some of them.



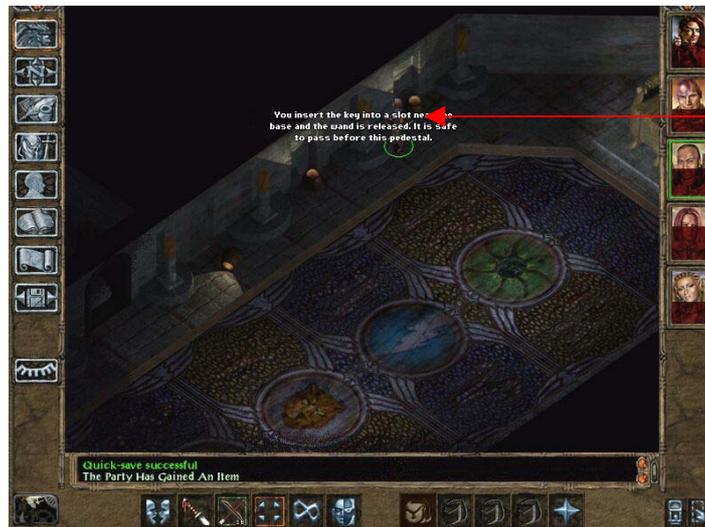
Screenshot 5: Disarming trap is not possible

Disarming the trap is not as easy as it could be. The thief fails and takes damage (arrow 4, screenshot 5). Several faulty attempts reveal that disarming the trap is not the epiphany of getting past safely. This is an example of what I labelled *quasi-cause* in the model of the path from aporia to epiphany: the player has made a faulty judgement about the epiphany, and in this case it is the hypotheses about the epiphany that are wrong. The player believes the epiphany is disarming the trap, while it really is something else. This leads the player to make new *hypotheses* about the epiphany. In the next screenshot the player has found that it is possible to get around the traps, if only s/he is careful enough:



Screenshot 6: Epiphany 1: avoiding the traps

This is one of two epiphanies that let the PCs cross the room unharmed. It is not certain, however, that this is the epiphany that the game designers set up to be the epiphany of this aporia. The second epiphany seems to be optimal since it gives the PCs experience points in addition to rewarding them with valuable items:



"You insert the key into a slot near the base and the wand is released. It is safe to pass before this pedestal."

Screenshot 7: Epiphany 2: manipulating pedestals

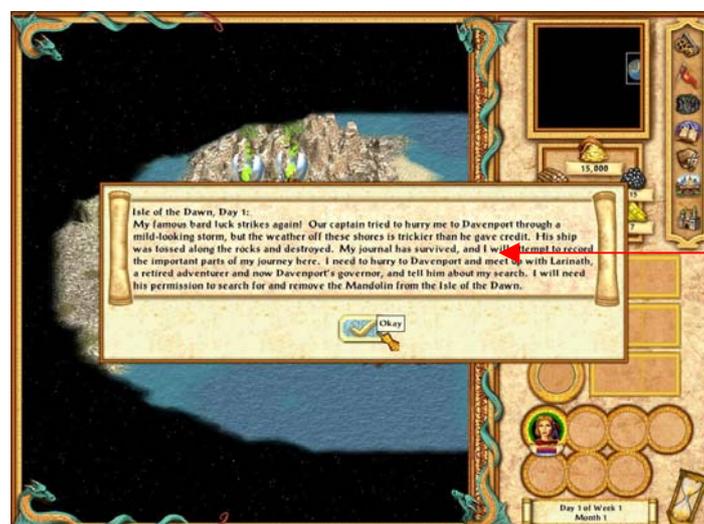
More or less by accident, the player discovers that the pedestal next to each trap may be manipulated. This leads to the trap being disarmed, and the true epiphany is revealed: the player's hypothesis that the traps should be disarmed is actually correct, but how to execute it was not as simple as first thought. Here, thus, the true epiphany comes as a sudden revelation in the sense described by Aarseth.

The sequence of screenshots above shows step by step how the player solves a problem in *Baldur's Gate II*. A problem is seldom one alone; more likely an *aporia*-epiphany pair accompanies another. The sequence starts with an *event*: the group enters the room and witnesses a conflict in which it engages. But once the opponent is eliminated there is *another aporia* of an environmental kind: crossing the room without being wounded by the traps. This second aporia is part of a *quest*: namely escaping the dungeon. Comprehending both aporias is easy, even though the first aporia in the example was initially misinterpreted. When the trap is sprung the player realises that the PCs should be protected, and takes immediate action related to this. S/he also realises that going into melee is not a good idea as long as the traps are not detected. Thus, the best *strategy*, and also the *epiphany*, is to let the sword fighters passively stand back while the archers kill the assassins. The second aporia of how to cross the room unharmed is easily comprehended as well since the traps are present and work as an environmental constraint, but the correct epiphany is harder to find. Regarding development of strategy, the aporia of escaping the traps once sprung seems to *force* the player to immediately find the best solution without time for pondering. This makes no time for a conscious development of strategy. Realising that the fighters spring the traps, the player understands that s/he should have had a better strategy. This must also be developed without any chance for planning, but seems a little more elaborate since it clearly shows that the player wants to protect his/her fighters from the trap and lets the archers do the killing. Concerning the aporia of

crossing the room, the strategy developed is result of several different attempts of getting past the traps. At last the player realises that the group may carefully walk around the traps. S/he may also have a hypothesis about a hidden way to disarm the traps, and then the strategy s/he might use is to search the room for hidden switches. Thus, we may say that the player's hypotheses about the constraints and possibilities of the room are very important for the strategy the player chooses. Also, the knowledge that traps cover the floor, and the belief that there must be a way to get past them do play an important role related to strategy.

5.4.2 *Heroes IV*: Campaign: Isle of the Dawn

The example from *Heroes IV* is part of the first scenario of the *Isle of the Dawn* campaign of the expansion pack *The Gathering Storm*. The victory condition of this scenario is to capture a specific city, and the loss condition is losing all heroes and towns. These are the most frequent victory and loss conditions in all *Heroes IV* scenarios. The sequence of problem solving examined here is found very early in the game, in the first phase of resource collection. The player starts without a town, and finding one is thus part of this first phase. Occupying a town is very important for earning resources, first and foremost because it gives the player a certain amount of money each turn according to its level of advancement. The sequence concerns this first problem of finding and occupying a town. This is made clear by an initial on-screen message when the player starts the campaign, and the main aporia is then immediately understood since it is explicitly given by the game. The epiphany is not specified, and the player will thus have hypotheses and believes about it, and thus start developing a strategy of some kind. Previous knowledge of the game may lead the player to have a hypothesis that exploration is the key, and that *exploration* will reveal a town that has only weak defence or is unoccupied.



"Isle of the Dawn, Day 1: (...) I need to hurry to Davenport and meet up with Larinath, a retired adventurer and now Davenport's governor, and tell him about my search. I will need his permission to search for and remove the Mandolin from the Isle of the Dawn."

Screenshot 1: The first task

Screenshot 1 shows the first screen that the player meets. Three goals are presented here: finding an artifact called the Mandolin; finding the governor Larinath; and reaching the town of Davenport. The initial goal is then reaching Davenport to meet the governor. There is no hint about the epiphany, but the aporia is obvious: how to reach this town? At this point there is no other option than exploring and collecting resources, and the player starts moving his/her only hero around. When it is possible to manipulate an object on the map, the mouse cursor changes into a prancing horse, and manipulation is not normally possible when monsters guard an object. However, the player may make an interesting discovery related to this, since the object behind the guard can be manipulated. It is possible to sneak past, so the hero obviously starts with a very good *stealth* skill!



Screenshot 2: The hero may sneak past the guard!

This discovery increases the player's knowledge about the actions the hero may take, and is therefore very important to the player's strategic choices. During the collecting of resources, the player uses this skill intensively. In addition to gaining resources s/he otherwise would not reach, utilising the stealth skill gives the player experience points. This motivates the player to keep on using the skill. Collecting resources with the help from stealth is easily combined with exploration, and as the player searches for Davenport, s/he also gains both resources and experience points. Sneaking cannot in itself be labelled computer game agency since it is not related to the central goal directly. It does, however, give the player an indication of what is regarded important in the game. Also, the action of sneaking taken by the player is somewhat casual: it is done without the thought of problem solving. The action is taken because the player feels the hero may gain something from it freely. However, even though sneaking itself is hardly agency, the action is obviously purposeful, and it is related to the central problem solving process in the sense that all resources gained and skills developed will give the player a certain strategic advantage. While exploring the player comes across a *vantage point*. Ac-

cessing this gives him/her the strategic advantage of seeing a larger portion of the map (arrow 1, screenshot 3). This gives the player new knowledge of the location of different things.



Screenshot 3: The vantage point gives the player the strategic advantage of seeing a larger portion of the map.

At the start of the player's eighth turn a new message pops up that increases knowledge. The message reads:

Isle of the Dawn, Day 8: Well, it will be trickier getting to Davenport than I thought. The way is guarded by a group of thunderbirds; I need to find a way to sneak past them. I wonder if anyone here will assist me before I have Larinath's official permission to search for the Mandolin? Rumors have started about a skeletal army to the northwest, threatening the Isle of the Dawn. I need to get to Davenport as soon as possible to find out what truth there is to these rumors.

In addition to increasing knowledge, this clarifies the *aporia* and the epiphany of finding the way to Davenport. Now the *goal* is to reach Davenport, while the *aporia* is how to get past the thunderbirds. There is no chance the hero alone may fight the birds since they are one of the highest level of monsters in the game. But the epiphany is hinted: the hero may sneak past them. It should be noticed that the written messages that pop up on certain days have nothing to do with player action. They are default messages revealed even if the player already has gained the knowledge disclosed by them. Thus, the messages are independent upon player action, and their function is to give the player hints in addition to create an atmosphere and relate the game to a kind of personal interest on part of the hero. They are neither necessary for being able to complete the scenario since the player will at some point disclose the information him/herself.

Screenshot 4 shows the hero approaching the thunderbirds, and the cursor changes into crossed swords, indicating that getting past the birds requires that the player defeat them. Thus, the hero's stealth skill is not good enough to let him/her sneak past the monsters. This creates another *aporia*: how to find a method to be able to sneak past the monsters. The epiph-

any of this aporia is also hinted in the message from day 8, but in a more vague manner: ‘I wonder if anyone here will assist me...?’ The player thus makes a hypothesis that someone is around to help the hero getting past the thunderbirds. Previous knowledge with the game may give the player several thoughts about this: perhaps there is a quest hut that increases the stealth skill if the hero accomplishes some task. Or there may be a different route around the thunderbirds. Maybe there is a powerful army or hero out there that would like to join the hero? At this point, only further exploration may help the player to find the epiphany.



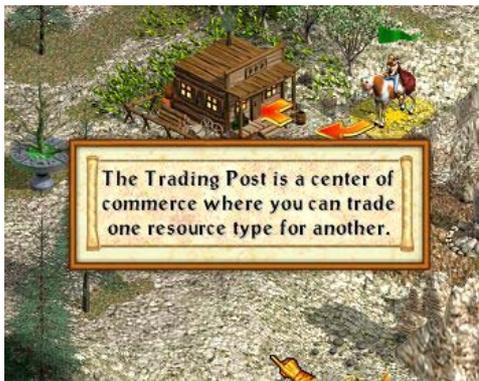
Screenshot 4: A new aporia: It is not possible to sneak past the thunderbirds.

The message above also conveys some other important information aimed towards the player’s strategy. It mentions a rising army in the northwest, and that the player should hurry to reach Davenport. *Speed* is mentioned as a strategic feature, and it reminds the player that the opponent has a strategic advantage of already occupying a town, which means that it may reach a higher level of development faster than the player. The player may react to this by exchanging exploration and resources collection with a conscious search for an epiphany, which is soon discovered:



Screenshot 5: The epiphany, which again leads to another aporia.

To the northwest the player comes across a quest hut that demands 20 of each resource in order to teach the hero *Grandmaster Stealth*. Thus, it is revealed that utilising the stealth skill to sneak past really is the epiphany of getting past the thunderbirds. This epiphany links to another aporia: how to find 20 of each resource. The epiphany of this aporia is easy to see, and may be solved by either collecting the resources, trading them, or both. Regardless of which s/he chooses, the player must continue exploring in order to find either resources or a trading post. The player picks up the resources and flags the mines s/he finds on the way, and finds also a trading post:



Screenshots 6 & 7: Visiting a trading post

It is expensive to trade resources, but at this point it seems to be the strategically best action since it fulfills the epiphany by letting the player reach the goal of collecting the resources faster. Now the player heads back to the quest hut. On the way, another message appears:

Isle of the Dawn, Day 15: I met a group of friendly peasants today. They seemed surprised that I wanted to head to Davenport; apparently a curse has been placed on the city and the area around it, and the citizens have been fleeing the city to escape it. They suggested I talk to a retired thief that lives in the woods nearby to the southwest; they insisted he could help me past the thunderbirds blocking me from Davenport-though they bid me stay away from the town for my own safety. I thanked them for their information, gave them a few gold coins for their time, and moved on.

This is interesting in several respects. The message tells about the quest hut that the hero has already visited once and is returning to. It demonstrates that the messages are not crucial for figuring out the aporia-epiphany pairs, and it creates a logical gap in the relationship between the game and the messages since the message pops up *after* the event it hints about. Once again, it is revealed that the messages and player action are independent of each other.

The next screenshots show how two epiphanies are executed and two aporias are solved and exchanged with a new situation. First the hero collects the reward for having brought the thief 20 of each resource. The hero learns Grandmaster Stealth, and has thus accomplished what the player believes is the epiphany of getting past the thunderbirds.



Screenshot 8: Aporia solved, epiphany executed



Screenshot 9: Sneaking past the thunderbirds lets the player reach Davenport

Now all aporias have been replaced by epiphanies, and all epiphanies except one have been executed. The player is able to reach Davenport, but even though the last epiphany of entering the city is found, it is not yet executed. It is time to execute the epiphany and reach the goal:



Screenshots 10 & 11: The hero attacks the city, but it is unoccupied, so it is immediately captured.

The player may be surprised that there are no defenders in the town, since capturing towns in *HoMMIV* generally is connected to fighting a defending army. Also, even though the initial goal in the campaign stated that the hero must reach Davenport, not capture it, the player may have believed that there should be combat since the message from day 15 advised the player to stay away from Davenport. Thus, the player's hypotheses about a combat were wrong.

Demonstrating the first phase of player action, the sequence of problem solving above exemplifies collection of resources and a vulnerable hero without any army to defend her. However, since the player starts without any towns, the sequence differs somehow from other scenarios: The player also needs to capture a town in this initial phase. This is part of resource collection since the town is the base that lets the player earn daily sums of money, in addition to the fact that it gives the player the opportunity to trade resources and purchase units. It is the base that gives stability to the game in the sense that it strengthens the player in various respects. It is easier to develop a rational strategy when backed up by a stable structure.

The description of player action above also emphasises that aporia-epiphany pairs in *HoMMIV* are complex. We could say that each pair is superseded by the next, but this is not entirely correct. Rather than following each other, aporia-epiphany pairs seem to intertwine. In a similar way to *BGII*, *HoMMIV* often lets the epiphany in one problem solving process lead directly to the aporia in the next, but *HoMMIV* also lets the aporia-epiphany pairs take the shape of a Chinese box or Russian doll: they are *contained within each other*. Before the first problem is solved, new problems turn up that are directly linked to the first problem. An example of this is how reaching Davenport suddenly means finding a way to get past a pack of thunderbirds, which again means collecting 20 of each resource. However, it should be noticed that even though there may be several aporias inside each other, some of the epiphanies to these might have been found. This does not mean that the problem is solved, since the player may not yet have taken the proper action that executes the epiphany.

As demonstrated, the central aporia is not difficult to comprehend since it is given in the initial message displayed. Even if the player ignores the messages it is easy to comprehend the aporia since s/he soon realises that s/he is in possession of no town. However, it is not known that reaching Davenport is more difficult than first thought. This shows that the aporia first displayed requires a much *more complex epiphany* than first believed. While the player may have had an initial hypothesis that the epiphany was as simple as searching for Davenport and perhaps conquering the defending armies in the town, it is soon discovered that it includes issues such as increasing the stealth skill of the hero, and collecting resources. The main aporia thus consists of several other aporia-epiphany pairs. Initially, the strategy utilised is based upon exploration: searching for Davenport. However, when realising that it is not the search for the town but reaching it that is the aporia, the strategy changes. Exploration and search are still central, but it is related to something different: searching for some way to increase the stealth skill, and searching for resources. In addition, there is a message indicating *speed* as strategic feature. Experienced *HoMMIV* players would already focus on this stra-

tegitic issue, since they know that this is a competitive game and that not occupying a town means strategic retardation. It is interesting to note that the designers have utilised an environmental constraint when designing the aporia-epiphany pair of the sequence exemplified. Davenport is situated on a peninsula that is only accessible via a thin passage. Powerful monsters guard the passage, and it is the player's task to find out how to overcome these obstacles.

Concerning the displayed messages, it has been suggested that they are there to create an atmosphere and a link between scenarios in campaigns. In addition, linked to certain heroes in the game, the messages want to give the player an empathic relationship with the main hero. However, concerning the hints that the messages give, they may be useful although not strictly necessary. As the example shows, the player may discover several of the issues hinted long before they are hinted. Thus, to a great degree the hints given underestimate the players of *HoMMIV*. It is therefore not unlikely that many players ignore the displayed messages.

HoMMIV sets focus on how *exploration* is related to computer game agency. Exploration is very important in this game, not only in the first phase, but to an extent also in the second phase. It is difficult to deny that exploration has something to do with agency here. *HoMMIV* would be a game without computer game agency if agency were strictly separated from exploration. Then what is the link between agency and exploration in the game? Exploration may be described as a mode of action that itself cannot be labelled agency as long as it is not related to a process of problem solving. Many games let exploration be a function within the game that is entertaining and thus valuable on its own on part of the player. However, in most of these cases, it does not matter for the progression of the game whether or not the environment is explored. In *HoMMIV*, on the other hand, exploration is in many cases closely connected to the problem solving process. This is demonstrated above in the separation of player action into three phases. The first phase is dominated by exploration and collection, and even though it may seem remotely connected to winning the game, there is no doubt that the actions taken within it have huge implications for the outcome. It is crucial to see the difference between exploration as a mode of action that may or may not contain agency, and searching. Exploration is the default mode utilised when the aporia suggests an epiphany that contains searching for resources, objects or structures. Related to the aporia-epiphany pair of a problem solving process, searching is purposeful, meaningful and done with a certain intention. We may therefore easily argue that searching may be a case of computer game agency.

This sequence is perhaps not the best example when illustrating how the player always has the central goal in mind through the course of the game. However, no single and short sequence is ideal in this respect since it is the *gaming process as a whole* that is important for a

thorough understanding of the problem solving process. Still the sequence demonstrates very many other issues important for this game.

5.5 Summing Up the Analysis

There are certain other features that are important when speaking of player action in *Baldur's Gate II* and *Heroes IV*. These will be considered here, and this part is in many ways a sum-up of the general lines of action in the two computer games discussed. This section also takes a comparative stance on additional similarities and differences in the games. Although *BGII* and *HoMMIV* both have a 'fantasy' setting, they are very different games indeed. After analysing player action, we see that even though the player goes through a somewhat similar logic concerning problem solving in both games, i.e. step-by-step problem solving based upon some kind of strategic action, it seems that the game designers have constructed the games out of two totally different views of action. This is also supported by the fact that they are labelled under different genres. However, it is how the designers and programmers have set up a logical structure for player action that makes a player take different actions in the games.

Making a conclusion on action in *BGII*, we may emphasise that the game has certain scriptons or pre-constructed events that must be connected by the player. The player should discover a mystery, which makes the game built around a *quest*. Even though the designers have carefully planned the events that the player must connect, the player is not reduced to being led around as in a guided roundtrip for tourists. It is more appropriate to compare it to a *treasure hunt* where the participants solve a riddle at one place, and based on the knowledge gained from it are able to continue the hunt. The player of *BGII* must solve a number of problems in order to connect the scriptons, and the importance of player action lies within this problem solving process, and not in the fact that the scriptons that must be traversed are pre-constructed. Also, the player is *motivated* to follow the central process of problem solving in a number of ways, and since the game to a great degree manages to keep this focus, the player will fix his/her attention on this process and not concern him/herself upon the fact that the events are laid out as a path before him/her. In any case, we speak of *controlled navigation in a limited space*, which means that space and events technically and practically limit the player's actions to a certain degree. There seems to be some kind of *deceit* related to this: the player is fooled to believe s/he is not restricted more than what is necessary in computer games by a heavy focus on the central problem solving process. In reality the player is heavily restricted: the most important opponents have pre-scripted reactions and actions, and episodes happen at certain points and cannot be influenced by the player. Even though the player may

choose to skip many of the quests, and the main path at times forks, it is not possible to choose alternative routes outside the special paths designed.

HoMMIV has a very different logic concerning the structure of action and restriction on player action. Instead of winding up the pre-defined path towards the goal, this game focuses action upon *strategy* that is carefully, although not necessarily consciously, planned. The player always sees his/her own actions in the light of the goal somewhere in front of him/her. Actions taken early in the game may have far-fetched consequences that the player does not see when taking the actions. This requires *rational evaluation of the situation* in a different sense than *BGII*. Whereas *BGII* requires that the player rationally evaluate the situation *from the point of view of another individual*, *HoMMIV* lets the player take on the position of *strategic distance*. This means that although both games should be placed somewhere in between external and internal ontological interactivity (Ryan 2000:7-8), it seems that *HoMMIV* to a greater degree than *BGII* posits the player external to the game world. Even though both games give the player an extension of him/herself into the game world (Aarseth 1997:113) through the game characters, these extensions function in different ways. *BGII* gives the player control over a maximum of six characters, where only one is player generated and functions as protagonist. This creates a clearer identification between this character and the player than between the other characters and the player. The limited number of player controlled characters and the bond between protagonist and player have a certain influence on the relationship between the player and the game. The player seems to be *subject to the game world*; s/he has no control over other individuals or events, which seem to be dependent upon other forces. This is also due to the fact that the game has pre-defined many of its events and characters. However, the situation is very different from that in *HoMMIV*, where the player to a greater degree gets the *feeling of an overview*. The player is more external to the world since there are several units and heroes that the player may control, in addition to the fact that there is virtually no limit to how many units the player may control. There is neither a character that the player has a special bond to, even though game designers have tried to implement one based upon the information gained in displayed messages. Also, the externality creates a *feeling of responsibility* that is much greater in *HoMMIV* than it is in *BGII*. In addition to controlling heroes and units, the player is in charge of towns, and s/he has the power to conquer new towns, and otherwise manipulate the distribution of the environment. The personal engagement is thus limited, but the player receives the feeling of having the overview, even though it is restricted. By having an overview, the player feels free to develop far-fetched strategies, and thus s/he receives the position of strategic distance (*the God view* (Poole 2001:48-9)).

Whereas the player of *BGII* is subject to controlled navigation in a limited space, the player of *HoMMIV* is subject to a sense of *freer navigation in a limited space*. There are many reasons for this. *HoMMIV* is an example of a game of emergence, which creates courses of action on the fly during game play by combining simple rules into an unknown variation of events, while *BGII* is a game of progression, which has a newer logic of game action built around a puzzle where certain parts fit together in an already defined way. This is dependent upon how scriptons and textons function in each game. We may say that *BGII* has *static* scriptons, while *HoMMIV* has *dynamic* scriptons. In cases where the player *chooses* scriptons they are static, and when s/he *creates* them, they are dynamic³⁰. Scriptons in *BGII* are based upon a pre-defined combination of space and event, while in *HoMMIV* space and event are two separate layers. From my reading of Aarseth, since a scripton is a string of signs as it appears to the reader, it must consist of a combination of space and event. But there seems to be a crucial difference between scriptons that are predefined with such a combination and scriptons that come into being as such because of the player's actions. In cases where scriptons are predefined, it is more appropriate to label them textons, since they exist in the game in this form, independent from the player's actions. But when traversed by the player they also function in a more or less unchanged way as scriptons, even though there may be some dynamic information that changes them. An illustrating example is the event where the thief Gaelan Bayle approaches the group. This happens the first time the PCs enter the town district *the Slums*, which spatially could be seen as a scripton alone, separated from all other spaces³¹. But it is not *space* that is crucial at this moment; it is the fact that Gaelan Bayle approaches the group. And he does so in a special place at a special time; this will not happen anywhere else at any other time. Space and events are thus statically connected in this scripton. However, there is a dynamic feature in this scripton: the player may influence the scripton somewhat by accepting or rejecting the thief's offer, but event and space are still statically connected. In *HoMMIV*, on the other hand, events are more randomly generated by a combination of simple rules into huge variations and not to the same degree connected to a special place in this fashion. An enemy encounter is normally not scripted to happen in a certain space at a certain time, and events are commonly based upon the more or less independent moves of the player and the opponent. Textons and scriptons are thus to a greater extent separated in this game than in *BGII*, and seem to be so in games of emergence. Scriptons come into being as a combination

³⁰ See chapter 3.3.3 on the *configurative user function* (Aarseth 1997:64).

³¹ One could argue that this is to confuse what Aarseth calls *arenas* with *scriptons*. It should be kept in mind that arenas are time-space constructions (1995) while scriptons are informational strings of signs (1997:62).

of event and space, but the game designers do not generate them beforehand. Nevertheless, certain scenarios do to a lesser extent utilise scriptons based upon pre-scripted events. For instance, an enemy hero may be placed at a certain point on the map or in a town, and scripted to stand guard waiting for the player to approach.

Anyway, the observation above leads us to some conclusions. Aarseth claims that texts ‘in which scriptons are in part chosen or created by the user’ have a configurative user function (1997:62). This demonstrates that in order to be labelled configurative, the user function must allow the player to influence the relationship between space and event. However, it would not be entirely correct to say that *BGII* does not have this user function, since as demonstrated above the player has the power to somewhat define the content of the scripton by accepting or refusing Gaelan Bayle’s offer. This means that *HoMMIV* has a much greater degree of configuration on part of the user than *BGII*.

Another remark of interest is how player action in the two games relates to the actions we take when interacting with our own environment outside computer games. Both games invite player actions that are similar to actions taken in situations in which we interact, but the games visualise different aspects of these. It should be clear that the environments of computer games are much more restricted than the environments in which we live, and simulate only limited aspects of them. This limits the player actions possible, but the actions available do simulate actions that are taken in real life situations. As a role-playing game, *BGII* imitates social situations in which the player in the role of another individual must interact with other simulated beings. These beings react differently to the player according to many features related to the PCs personality, race, and profession. The player should therefore make similar assessments of the social situation as s/he would interacting with living beings, since the beings will react in a fashion similar to that of social situations. However, the player soon learns that the situation is not quite the same as interacting with living individuals; since their behaviour is scripted, the beings of the game are quite predictable. Also, regarding problem solving, it is arguably not very common to solve problems of the quest type in our daily life. *BGII* simulates a life that is more exciting than what we normally experience, and this is also a feature that makes the game attractive in the first place. Anyway, many of the problem solving situations may be recognised as resembling situations from social life. For instance, we know that people in certain situations may yield to pressure of different kinds. This also goes for *BGII*, which means that *persuasion* may be a possible epiphany for several aporias. *HoMMIV*, on the other hand, does not have a social aspect of this kind. Of course, any strategy is developed and executed in a social situation, but the assessments made are not similar to those we

use in standard social interaction. It is only the rational and calculable actions of strategy that are implemented in the game, and this makes such games quite suitable for computer environments. The interaction happens between rational opponents instead of emotionally motivated social beings. The action in *HoMMIV* is thus similar to those situations in life where we act rationally, without being guided first and foremost by our emotions. Problem solving can be seen as similar to how we solve relatively complex problems in our daily life, but most of all it simulates problem solving in mathematical or logical problems or games such as chess. It seems to be very much in touch with all our intentional actions, even though the problem solving process perhaps is not very complex. We still evaluate a situation and figure out how to reach some goal or otherwise solve some problem. We make attempts related to this until we succeed, and this happens in different stages. We may thus say that both games relate differently to actions in the environment with which we interact, although *BGII* and *HoMMIV* emphasise and simulate different features of a real world environment. It is first and foremost an *imitation* of certain aspects of real life, however predictable and scripted.

As a last note, it is obvious that both games of this study include what we may call computer game agency. Nevertheless, there seems to be different ways that this is realised and secured. It becomes clear that the two games utilise different types of actions, and also strategies of action. This demonstrates that we cannot say there is a certain class of actions labelled agency, and others that are not (cp. Davidson 1971). *Computer game agency is dependent upon the situation in which the action is performed.* It must be related not only to intention or meaningfulness, but also to the process that leads to a goal of some kind.

Well friends, the world that you are adventuring is a strange one. There are many things to learn, particularly if you haven't been here before. - Volo
(*Baldur's Gate II Manual*: Bioware 2000b:36)

Chapter 6: Conclusions

Task accomplished. Problem solved. Ending this thesis is in many ways similar to ending a computer game. Not prematurely as when the avatar dies, but in the sense of having been able to solve all central aporia-epiphany pairs and accomplish the very last problem and reach the goal of the game. Concluding this thesis is the goal of my game.

This thesis investigates how the player engages in the structuring of courses of action in *Baldur's Gate II: The Shadows of Amn* and *Heroes of Might & Magic IV*, with particular focus on the interplay between player and game, and on the problem solving processes central to these games. It has been argued that it is the possibility for *solving problems* set up by the game that allows the player to participate in the structuring of courses of action in games such as these. The player is not a co-writer of the work, nor the protagonist of an interactive film, but a co-operator, an organiser, or more specifically a problem solver. Computer games present the player with a certain limited environment, and throw problems into the path in front of him/her. It is then up to the player to be able to overcome these. The game again reacts in a certain sense to the player's actions, and it is this *chain of events resulting from the interplay between game and player that progresses the action* in the game. The *role* of the player is to engage in an interplay that realises courses of action. It should also be kept in mind that it is a *player role* like those we know from traditional games, and this role implies *demonstration of skills in a challenging environment*.

6.1 Observations

Certain interesting issues have been discovered through the interplay between theoretical and analytical discussion. By utilising prospects from action theory, I have further developed the notion of *agency* that Laurel (1997) and Murray (1997) introduced to the field of digital aesthetic genres. The concept of agency has been fruitfully coupled with Aarseth's dialectic between *aporia* and *epiphany* (1999), which has been illuminated by cognitive psychology's view on problem solving. This coupling has contributed to a deeper understanding of player action and problem solving in computer games, in addition to a better theoretical background

for the terms agency, aporia and epiphany. Concerning player action in computer games, agency does not only refer to diffuse descriptions as ‘meaningful action’ or the feeling that one’s actions have an effect on the system (Murray 1997:126-129). Computer game agency has a very special effect on the problem solving process. By adding the idea of the aporia-epiphany pair to the concept of agency, I have emphasised that computer game agency is knowing and feeling that player actions have a certain impact on the progression of the game. Thus, in order to be labelled computer game agency, the action taken must in some sense *take the player a step ahead in the progression of the game by replacing an aporia with an epiphany* in the central problem solving process. The central aspect of the player’s engagement in the structuring of courses of action in computer games is then to take actions labelled agency, and thus *identify and solve aporias by executing the epiphanies*.

Another important discovery concerning agency is the fact that a high level of user influence is not necessarily an indication of agency. As the discussion of Aarseth’s user functions and Ryan’s descriptions of interactivity shows, the player’s possibility to add own features to the game does not mean that the player also has the power to make courses of action progress. What makes player action in computer games interesting is not the possibility for exploring, configuring or adding new elements to the game environment; but the possibility for taking action that somehow progresses the game. In order to clarify, this does not always mean taking action that moves the game *towards the goal*. As long as the player sees that his/her actions have an effect on the progression game, positive or negative, s/he experiences agency, regardless of the player’s ability to modify the environment.

It is also important to see the relationship between the concepts *activity*, *action* and *agency*. This is a better separation regarding player action and problem solving in computer games than Aarseth and Ryan’s overviews. The lowest level of participation that must be taken in order to traverse a work is 1) *activity*, which may be exemplified by turning the pages of a novel, or the mere physical movement of the hand when playing computer games. These are prerequisites for completing the task of the game, but these activities do not progress the work themselves. Activity also implies mental activity, such as interpretation and making hypotheses, and is then a feature of both computer games and more traditional aesthetic forms. One step up there is 2) *action*, which denotes exploration, manipulation, modification, configuration and all actions that do not progress the game forward, but are more meaningful and conscious than mere activity, and preformed as physical actions in the game environment. In the strict sense, all levels in Aarseth and Ryan’s models, except from the interpretative user function and the reactive interaction, should be placed here since their importance to the

course of action is not stated explicitly. 3) *Agency* is the highest level, which concerns actions important to the progression of the game. An example is an action that executes an epiphany and solves an aporia. The actions taken may be physically the same as those on the second level, but to be labelled agency they must have a certain effect on the course of action. It is thus the *situation* in which the action is taken that is of importance to agency, and this makes it hard to separate certain actions labelled agency from actions that cannot be labelled such.

6.2 Baldur's Gate II & Heroes IV: Different Forms of Problem Solving

As cognitive psychology suggests, there are different kinds of problems that need different solving processes. This thesis demonstrates that computer games are no exception from this. Even though both *HoMMIV* and *BGII* to a great extent rely on step-by-step problem solving, the process works differently in the two games. While *HoMMIV* demands a player that plans ahead and sees that his/her initial moves are important to the outcome, *BGII* builds the problem solving process on a successive chain of aporia-epiphany pairs. *BGII* demands that the player focuses on one problem at a time, which makes it possible to delay the full presentation of the final goal, while *HoMMIV* expects the player to see that all problems are intertwined by allowing the player to focus on the goal from the very beginning when it is presented. In *BGII*, aporias are often given as tasks, and the player must solve one task in order to be given another one. Thus the PCs are sent around on missions that resemble those of an errand boy. In *HoMMIV*, aporias are often contained within each other like a Chinese box, and even though the player in many cases must go from one place to another and back again in order to solve a task, this is not what characterises the problem solving process.

It is also shown that there are different types of problems at different points in the games. *BGII* has different types of quests that may or may not be linked to the central process of problem solving: in broad terms there are *quests* the player may take on or is forced to do, and the quests may or may not be directly connected to the central problem solving process. In addition there are *events*: problems thrown upon the player that s/he needs to immediately understand in order to solve. Thus, *BGII* has different kinds of problem solving in different *encounters*. *HoMMIV*, on the other hand, expects a focus on different kinds of actions related to which phase of the problem solving process the player is in. Yet, there are quests and events in this game, although these are encountered more randomly than in *BGII*. It is thus clear that *HoMMIV* to a greater extent relies on different types of problem solving in different *phases* than in different encounters. However, it should be mentioned that in both games,

combat situations also represent an own form of problem solving that relies on *tactics*. Also, the fact that the games focus on different kinds of problem solving is related to a feature concerning the game genres. As a CRPG, *BGII* focuses the motivation to solve problems on *role-play*. The player should solve problems in a sense that reflects the main character's personality. Being a TBS, *HoMMIV* focuses problem solving on *strategy*, which colours the whole gaming process by encouraging different actions in different phases.

In order to generalise, it seems reasonable to suggest that on the path from aporia to epiphany, the actual process of problem solving may appear at two different places. Some game sequences seem to identify the process *before* the epiphany: Problem solving is centred on *finding the epiphany*. This is exemplified by the sudden revelation of the epiphany demonstrated by *Doom*. Other sequences identify the problem solving process *after* the epiphany: Problem solving is centred on *executing the epiphany*, exemplified by the case from *HoMMIV* where the player knows that the epiphany is getting past the thunderbirds, but does not know how. However, this is not another feature that demonstrates the difference between step-by-step and sudden problem solving; although sudden problem solving seem to always place the problem solving process before the epiphany, step-by-step problem solving may place the process both before and after.

It should be noted that problem solving might be different in other games. The conclusions drawn in this thesis are based upon *Baldur's Gate II* and *Heroes IV* in particular, and may perhaps also apply to similar CRPGs and TBSs. However, we should not assume that the types of problem solving identified here suit all game genres. As a matter of fact, some games may not include what we commonly recognise as problem solving at all. It is important to keep in mind that both games of this study are *competitive* games, or *agon* in Caillois' term. Focus on a goal enhances problem solving, since reaching the goal becomes a problem regardless of how difficult it is to reach it.

Also related to problem solving, Juul (2002b) separates two types of games that expect different behaviour from the player, at the same time as they construct courses of action in different ways. *Games of emergence* are similar to classical gaming by focusing on strategy and thus leading to complex game play, while *games of progression* focus player action on a predefined path of events and constructs thus games out of a *quest* paradigm. This illustrates the difference between *HoMMIV* and *BGII*, since *HoMMIV* generates courses of action on the fly based upon game rules and variables, and *BGII* lets the player traverse a chain of events already planned by the game designers. Games of emergence thus have what I above labelled *dynamic scriptons*, since they come into existence by a combination of variables, while games

of progression have *static scriptons* since events are tied to specific places at specific times. However, it should be noted that *BGII* also has moments of emergence, for instance in combat, and that *HoMMIV* has progressive features, for instance demonstrated by the sequence analysed above where the player first needs to find a way to get past the thunderbirds before being able to conquer a town and start developing.

As a concluding remark, it should be noted that *BGII* and *HoMMIV* are constructed according to different logics of problem solving. The games set up different roles for their implied players. Although both games give many hints to the player about the epiphanies, and aporias often are instinctively comprehended since they are closely related either to the epiphany or the goal of the sequence, it seems that *BGII* with its focus on role-play expects the player to play the game out of the perspective of one who knows the paradigm of tabletop role-playing games. Similarly, the implied player of *HoMMIV* must take on the logics of playing a game of strategy. Thus, *BGII* also is more dependent upon a player that is willing to immerse into the game and accepts to take on the role of another individual, while the implied player of *HoMMIV* is more willing to break the immersion and regard him/herself as posited somewhere more external to the game.

6.3 ... and the Road Goes On

Studying player action and problem solving in computer games is an interesting issue, not at least because we deal with a somewhat different user role than what we are used to from other aesthetic genres. However, what this thesis does is to study the role of an implied, ideal or theoretical player, and not an empiric player. There are a couple of reasons for this: first, including observations or interviews with empirical players would be very extensive work that would go far beyond the scope of this thesis. In addition, it is noted that players do not evaluate their moves and actions to a great degree when playing games. Second, since computer game studies is a very young field of research, there is an urgent need for theoretical-philosophical considerations. It may be wise to start by creating an analytical and theoretical framework based upon thorough investigation of the objects of interest before doing empirical research. Therefore, this thesis is a mixture between a theoretical discussion and an analysis, where the theoretical assumptions are outlined alongside the development of a method to analyse player action in computer games. Alongside theory associated with computer games and other digital genres, theoretical assumptions not commonly associated with aesthetic genres at all have been utilised, and this has made a thorough theoretical outline necessary. Thus, this

thesis may be viewed as a first attempt of making theoretical and analytical assumptions that may be further illuminated by future empirical research. However, it is my hope that this analysis may inspire other academics with an interest in computer games to do the empirical research that is the next step on the ladder of understanding the essence of problem solving on part of the player in computer games.

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Appendix: List of terms

- Accordion effect:** Effect that illustrates how an action may be described as both a complex chain of actions, and a compact and simple action.
- AD&D:** Abbreviation of *Advanced Dungeons & Dragons*, the second edition of the popular tabletop role-playing game *Dungeons & Dragons*.
- Aesthetic work:** A work is a descriptive piece of aesthetics, and an aesthetic work is the term used in this thesis to give a general term of such pieces that is less biased than the term *text*.
- Agency:** A term adopted from the philosophical based action theory, which implies intentional, meaningful action that has a certain effect. In this thesis it is applied to computer games, and denotes player action that has a meaningful effect on the system in that it takes the player a step further in the process of problem solving.
- Agon:** Caillois' term of the game genre competitive games.
- Alea:** Caillois' term of the game genre chance games.
- Alignment:** In *D&D* games, it is a general way of describing a character's personality according to nine categories. The character's alignment will create different reactions with different groups of people and different situations.
- Aporia:** Aarseth defines it as a localisable problem in a computer game that must be overcome by some uncertain actions. In this thesis the term implies any problem in a game that the player needs to comprehend and solve by a combination of actions.
- Appreciator:** Term describing the user of an aesthetic work used by Marie-Laure Ryan in order to avoid the bias of literary theory and the notion of static activity proposed by the terms *reader*.
- Avatar:** The word *avatar* is originally Sanskrit and denotes the incarnation of a Hindu deity. It is used to mean the personification of a concept, or the version of a continuing entity (Wilhelmsson 2001:167). The term denotes the controllable visual personification that a player has in the game (Murray 1997:113).
- Bug exploitation:** When a player finds programming errors and other logical failures and utilises them to solve problems in unintended ways and take courses of action that were not implied by the game.

- Campaign:** In *Heroes IV* ‘a campaign is a series of scenarios tied together by a single storyline, and often by a single character as well’ (New World Computing 2002b:22). When playing a campaign, the player cannot go on to the next scenario without having completed the one before it. Campaigns are typically found in games of emergence.
- CRPGs:** Abbreviation of computer role-playing games. Computer games with focus on an individual character, its development, and deterministic actions related to the character. The adaptation of RPGs to computer games differs from the tabletop RPGs by not having a game master that dynamically adjusts the environment according to the players’ actions. Instead, all such functions are governed by the computer programme.
- Cut-scene:** Episode that halts the player’s possibilities for taking actions and presents him/her for a cinematic sequence that often conveys narrative information or increases the player’s knowledge in other ways.
- Emergence, games of:** Games where simple rules and several variables combine into unpredictable courses of action. Emergence is found in most classical card and board games, and other games that rely on strategy on part of the player.
- Epiphany:** Aarseth defines it as the sudden solution of an aporia (see above). In this thesis it denotes any solution to an aporia, whether it is revealed suddenly or not.
- Ergodics:** Denotes action that comes into being while the user of the aesthetic work experiences it.
- Event:** An episode that suddenly places the player within a problem solving process, without the player initiating it, as for instance an ambush.
- Fabula:** In narratives, *fabula* denotes the content level, or the reconstruction in the reader/viewer’s mind of how the story happened.
- Game:** A game is ‘an exercise of voluntary control systems in which there is an opposition between forces, confined by a procedure and rules in order to produce a disequilibrium outcome’ (Avedon & Sutton-Smith 1971:7).
- Game master:** The participant of a tabletop role-playing game who administers the environment and creates enemies and allies for the players to interact with, in addition to creating a quest for them to solve.
- God games:** Category of computer games where the player takes on the role as the administrator of an environment, such as a city or a kingdom. The player situates

him/herself not as a character in the environment, but outside from an omniscient perspective, hence ‘god’ games.

- GUI: Abbreviation of graphical user interface, which is the graphical menu that one meets when interacting with a computer.
- Ilinx: Caillois’ term of the genre of vertigo games.
- Immersion: Derives from the physical sensation of being submerged into water, and describes the experience of being absorbed in a completely other reality. Implied player: The entity studied in this thesis, which denotes the ideal player as constructed by game design. It is tightly connected to the course of action that guides the player through the central process of problem solving as set up by the game.
- Implied reader: A reader position cued by the text. It ‘designates a network of response-inviting structures’, and constitutes the role that the real reader is offered to play when reading a text (Iser 1978:34-35).
- Interaction: Implies a two-way communication in which the parts also have the opportunity to react to each other’s actions.
- Interactivity: According to Ryan, interactivity is when input of the user determines changes in conditions. Interactivity is a term much associated with computer environments, but has gained somewhat different meanings in different academic fields. In this thesis it is therefore avoided, but used only in connection to the different types of interactivity Marie-Laure Ryan distinguishes ‘on the basis of the freedom granted to the user and the degree of intentionality of his interventions’ (2001:205).
- Interface: The communications surface between two different systems, here between the computer game and the player.
- Ludus: One of Caillois’ two forms of play. This mode of playing requires a great amount of effort, patience and skill on part of the player who utilises purposefully the knowledge, experience, and intelligence s/he is in the possession of.
- Material: Juul’s term of the surface layer of visuals, opposed to *programme*.
- Mimicry: Caillois’ term of the game genre of role-play and make-believe.
- NPC: Abbreviation of non-playing character, all characters in an RPG that are controlled by the game master. In CRPGs, it denotes all characters that are not controlled by the player.
- Narration: 1) The act of telling a story.

2) A way of structuring events in the mind after the events have happened; it is a kind of cognitive schema that must be clearly separated from the narrative as an aesthetic object.

Narrative: 1) An aesthetic structure primarily found in literature and film, which denotes a certain progression from equilibrium via disequilibrium towards a new equilibrium. Important features in a structural narrative are the division between the story as it is told (*syuzhet*), and the reconstruction of how the story happened in the reader/viewer's mind (*fabula*). Cp. the *universalist* view.

2) Prose fiction including individual and mental events. Cp. the *relativist* view.

PC: Abbreviation of player character. In role-playing games, it denotes all characters controlled by players.

Paidea: One of Caillois' two forms of play, which is dominated by carefree gaiety and free improvisation.

Playground: Konzack's term of the interface, control and game console, opposed to *virtual space*.

Programme: Juul's term of the underlying computer programme in a game, opposed to *material*.

Progression, games of: Games that have predefined courses of action that must be followed as serially introduced challenges in order to complete the game. This is a newer form of game logic typically found in adventure games and other games that demand that the player solves a specific task before going on to the next.

Quasi-cause: Player action that is first believed to be the epiphany, but instead leads to no effect at all, or an effect that is not wanted by neither the player nor the intentions of the game designers.

Quest: A goal-oriented species of narrative that typically includes hunting for a treasure or rescuing a princess, and killing a dangerous monster. It is a kind of narrative structure that easily is transferred into games because of the goal-orientedness, and is often found in both tabletop role-playing games and computer games.

RPGs: Abbreviation for role-playing games, most commonly referring to tabletop RPGs. Led by a game master who administers the game environment, they imply a social situation in which players take on the role of another individual by telling the game master and the other players the actions that the character takes based upon the character's personality and skills.

- RTS: Abbreviation of real-time strategy games, often seen as opposed to turn-based strategy games (TBS).
- Scenario: A scenario is a game session that is limited by time and space, by being played within the boundaries of a certain area until a certain win or loss condition is met. Scenarios are commonly found in games of emergence.
- Scriptons: In an Aarsethian text, strings of signs as they appear to the reader.
- Step-by-step problem solving: A kind of problem solving that demands that the solution must be described as a series of instructions and solved through the use of strategies.
- Sudden problem solving: A kind of problem solving where the solution is not found through careful studying the problem in question. The solution strikes down suddenly, often after the problem solver has left the problem for a while, because solving such a problem requires a restructuring in the mind of the problem solver.
- Syuzhet: The level of expression in a narrative, or the story as it is formally structured in the narrative.
- TBS: Abbreviation for turn-based strategy games
- Text: 1) *Text* denotes traditionally ‘any communication that temporally controls its reception by the audience’ (Chatman 1990:7).
2) Aarseth’s view is that a text is ‘any object with the primary function to relay verbal information’ (1997:62), and adds that a text is not equal to the information it holds, and is dependent of a medium that influences its behaviour
- Textons: Strings of signs as they exist in the Aarsethian text.
- Transformation: The ability to morph into multi-perspective, simulated worlds that can enhance immersion and agency.
- Virtual space: Konzack’s term of setting, adventure and characters, opposed to *playground*.