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Object Oriented Story Construction
in
Story Driven Computer Games

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Masters Thesis, spring 2002
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Abstract

The most commonly used storytelling method in story driven computer games is using a mulitlinear hypertextual model. In combination with vast geographical landscapes this generates a high level of complexity between the casual relations governing the possible chronological sequence of story elements. A consequence of this is that the game developers either force the player to experience false choices that from a player perspective seem illogical or in which false casual relations occur.

This thesis presents a story construction methodology for computer games that allows false casual relations in game stories to be minimised or eliminated. The methodology consists of two main components: object oriented story construction and casual normalization. Causal normalization minimizes or eliminates casual dependencies within story logics and therefore eliminates unintentional forms of casual coupling (casual dependencies). Object oriented story construction involves objects in the game world maintaining autonomous integrity by containing their own stories, functions, conditions, possible developments and counter reactions. Another effect of this, besides minimizing the risk of false casual relations originating from the framework describing mechanisms of the world and the biotope, is that the time planes and the chronotope function in a more consistent and unified way.

For analysis of story driven computer games it is necessary to map the different levels of text and interpretation in the game. It is not possible to disregard the fact that the largest amount of text in a computer game consists of program code. The purpose of this thesis is partly to do such a mapping, and partly to offer perspectives and methods that when applied can create better games. The material which is the basis for the thoughts that are brought forth in this thesis consists of works within the area of narratology, hypertext theory, ludology and computer science. An equally important basis for the work is practical experience of having played and programmed story driven computer games.

The thesis also discusses and presents central terms like games, gaming, gameplay, genre definitions and ludology. In addition to this the communication structure, chronotope and text layers of the story driven computer game are described.

Contents

1. Introduction

1.1 Problems

The worst thing that can happen when one plays a story driven computer game is getting stuck. One thinks one has found all the things and clues one needs to go on to the next phase of the narrative, but regardless of what one tries one is helplessly stuck. The pleasurable experience of playing turns into frustration. Maybe one asks someone, who can look at it with fresh eyes, for help. If that does not work maybe one looks for a "walkthrough" on the Internet, follows the instructions and plays on knowing that one has cheated.[1] An alienation between the player and the game has appeared. As a player one has been jerked out of the pleasurable excitement of the game and gone off hunting, outside of the game, for a way to understand its rules. It is a failure on the behalf of the developer of the game. But the failure is even greater if the player gives up without caring about the game or walkthroughs.

Symptomatic of this is that walkthroughs are written for all narrative games that reach the larger market. It has become a great part of the game culture and there are many players who spend an enormous amount of time carefully playing through their favourite game in all kinds of different ways and then describing the way it can be played in the most profitable way.
There are two main reasons for getting stuck. It might be that one as a player is not able to solve the riddle or manage the level of difficulty of that particular part of the game. When one eventually does understand what to do one has won a part of the way and feels satisfaction. If one reaches the solution with the help of a friend or a walkthrough
one experiences a feeling of seeing the light, experiencing another way of thinking to solve a problem. In both cases the credibility of the game is till intact for the player.

The other reason for getting stuck is that the reason is not a problem that should be solved but a logical lapse on the behalf of the game developer. The cause and effect correlation is not valid. To make the experienced story, the discourse, fit with the underlying story one has by necessity connected an effect to a cause that to the player has no relevance. One has created a technical solution through necessity. In some cases the player is forced into making a certain choice, actually being a false choice, which appears as incomprehensible, to be able to move on. In other cases the player gets stuck. S/he cannot move on if s/he does not see the game developer's problem or if s/he does not read a walkthrough. In either case the player has been alienated and lost confidence in the game.

The problem of invalid causal correlation is so common that it is easy to suspect that it is an innate problem in the genre. Story driven games are acted out in large geographical landscapes. Only a small part of the geography is available to the player at a time. What is available in the geography and how it looks depends upon where the player is in the overall story. To be able to continue to the next part in the geographical landscape the player has to make certain choices. The player also has to make certain choices for the story to continue. The player must not only go on to the next place but also has to move on in the story. In a typical story driven game the geographical movement and the movement along the narrative axis are closely linked. The problems occur when the these two structures meet, on the one hand a world based on environments and objects that the player moves among and on the other hand an overall story which in most cases is linear.

At the point of intersection of these structures it is difficult to get the cause and effect correlation to fit. I think that one way of getting closer to a solution to the problem is to adjust the narrative to the medium and, without forcibly changing the narrative aspect of the game,

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[1]A walkthrough is an instruction describing exactly how the player should play the game, level by level.

use a narrative structure which is more closely connected to the game world's other basic structures.

1.2   Starting-point and tools

The basic starting-point for this work is to combine narratology, semiotics, hypertext theory, ludology and computing science with practical experience from having played and programmed story driven games.

Within this broad area I have swung back and forth between different stances and different question issues. My personal driving-force in this work has been (and still is in other contexts) to work out how one could achieve really good narratives in a story driven computer game without having the gameplay pay the price for it.[2] One might also turn the question around and ask how one could put a rich narrative into a game that has really good gameplay. In the ideal case the gameplay and the narrative are so closely linked that they cannot be separated, having become a unity.

The basic structure of a story driven computer game consists of a program code. It is in this layer of text that it is possible to create methods for avoiding false causal relations. In the fourth chapter of this thesis Dr. Craig Lindley and I together exemplify this problem and suggest a method, causal normalisation, derived from traditional problem solving within the development of computer software, which may serve as a solution to this problem.

In the fifth part of the thesis I will introduce a concept that I call *object-oriented story construction* as a possible way of creating a synthesis between the narrative elements and the world that the player moves in.

Because of the nature of the problems and the medium, I have also supported my ideas on other disciplines than those within the science of literature. The theoreticians I have chosen to support my ideas of the thesis can be divided into four groups:

1. *Literary theory*: narratology, structuralism and semiotics: Slomith Rimmon-Kenan, Gérard Genette, Vladimir Propp, Algirdas Julien Greimas, Roland Barthes, Ferdinand de Saussure, Therese Budniakiewicz, Johan Svedjedal, Maria Nikolajeva, Seymour Chatman and Michail Bachtin.
2. *Theories about the nature of hypertext*: Thedore Holm Nelson, Jay David Bolter, George P Landow, Anna Gunder, Markku Eskelinen and Espen Aarseth.
3. *Ludology*: Johan Huizinga, Jonas Carlquist, Jesper Juul, Patrick Mount, Julian Kücklich and Ragnhild Tronstad.
4. *Computing science*: G. Booch, C. A. Lindley, E. Yourdon, L. L. Constantine, E. F. Codd, C. J. Date, J. K. Debenham, T. De Marco, C. Gane and T. Sarson.

1.3   Conclusion and purpose

A common problem in story driven games with a multi-linear narrative structure of a hyper-textual type, combined with large geographic landscapes, is that the game developer, because of the complexity that appears between the conditions that govern the possible chronological sequence of the story elements, either force the player to make false choices or that there are false casual relations. One way of minimising these false causal relations, without forcibly changing the narrative aspects, and without for that matter in detail steering the player's way through the game, could be to use an object-oriented narrative model combined with causal

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[7] The concept of gameplay is discussed in chapter 2.3.

normalisation. For the analysis of story driven computer games it is necessary to map out all the different levels of text and interpretation of the game. One cannot disregard the fact the largest amount of text, which is written in a computer game, is the program code. The purpose of the thesis is partly to make such a mapping and partly to offer a method, which in the long run could create better games. I think that through object-oriented story construction and causal normalisation it is possible to avoid causal relations in story driven computer games and thereby create better gameplay.[3]

The material that the ideas, brought forth in the thesis, are based on, are works within narratology, hypertext theory, ludology and computing science. Another, equally important base for my ideas is practical experience gained from having played and programmed computer games.

The thesis starts with pinning down the main problems, background and starting-points and goes on by giving a basic structure of concepts around games and game playing. This is also where an outlining survey out of the area of game research is presented as well as a discussion around this new discipline.

In the third part the genre of story driven computer games is studied. I there divide the text layers, which story driven computer games consist of, into three overall levels; the code level, the narrative level and the discourse level. Then I describe and identify some key characteristics that are specific for this genre.

The fourth part of the thesis outlines a picture of how problem solving has developed within software development and a design method of narrative logic is presented, referred to as causal normalisation. Also in this area the need for a more layered model of the levels of interpretation that exist in story driven computer games is identified.

In the fifth part of I describe and define object-oriented narration, and with this as a background I describe three of the mentioned text levels.

The sixth part describes through examples a spectrum of different types of discourses, from games whose main driving-force is the handling of resources to games that could be called interactive cinema.

In the seventh part there is a study of the features of object-oriented narrative method in three story driven computer games and the eighth part is a summarising conclusion and the ninth and last part is an epilogue.

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[8] Further on in the thesis the terms object-oriented story construction, story-driven computer games, causal normalisation and gameplay are defined.

2 About games, hypertext and game research

2.1 Games and Computer Games

According to the Swedish National Encyclopaedia a game is:

> A name for a pastime, usually in the form of competition, for one or several people, practised in accordance with certain rules and usually with some kind of tools or properties. Depending on the type of the properties, games can be divided into board games, moving-games, drop-games, stick-games and dice-games. Games, which require physical performances or skills, are usually considered to be sports.[4]

A game that uses a computer as a tool is therefore, naturally, called a computer game, the same way as a game using a playstation sometimes is called a playstation game. But I will use the word computer game consistently regardless of whether the tool for playing the game is a console, as a Playstation, Playstation 2, a Dreamcast, or an Xbox.[5] If the console-type is not mentioned in any other way, the type will be stated in the belonging footnote or in the ludography. The games are presented in the footnotes and in the ludography using the following model: *Title*, developer, publisher, platform, media-storage device, year of publishing.

For those interested in a historical overview of computer games and computer gaming I recommend the second chapter, "A history of the computer game", in Jesper Juuls' masters' thesis; *A clash between game and narrative*.[6] A basic overview of the genres of computer games and of the computer game industry is presented in the report *Interaktiv underhållning inför framtiden* by Erik Fjellman and Jan Sjögren (in Swedish).[7] For non-Swedish readers I recommend the website *Game Research* for an overview of computer game genres (http://www.game-research.com).

2.2 To Play

In his book *Homo Ludens,* Johan Huizinga carries out a broad sociological study of the concept of game and gaming and these elements significance in culture.[8] He thinks that the activity itself is something so special and so far from everyday life that it is not something you "do" in the ordinary sense of the word and that this also is reflected in the use of language. The idea expressed by the noun is repeated in the verb: "Playing is no 'doing' in the ordinary sense; you do not 'do' a game as you 'do' or 'go' fishing, or hunting, or Morris-dancing, or woodwork – you 'play' it."[9]

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[9] *Nationalecyklopedin* seventeenth volume, (Höganäs 1995), p. 121.
Text in swedish:
"benämning på tidsfördriv, vanligen i tävlingsform, för en eller flera personer, utövade efter vissa regler och vanligen med någon sorts hjälpmedel eller rekvisita. Allt efter arten av dessa kan man dela in spelen i bl.a. brädspel, flyttspel, kortspel, läggspel, stickspel och tärningsspel. Spel som kräver kroppsliga prestationer eller färdigheter (biljard, kägelspel m.fl.) brukar räknas till idrotterna." Translation from Swedish: Suzan Olsson

[5]A console is in this context a machine that can be attached to a television or a projector in order to show the game. To the console one or more input units are attached. The player uses the input units to interact with the game.

[11]Jesper Juul, *A Clash between Game and Narrative - A thesis on computer games and interactive fiction*. (Institut for Nordisk Filologi, Københavns Universitet 1999). URL: http://www.jesperjuul.dk/thesis/

[12] Erik Fjellman and Jan Sjögren, *Interaktiv underhållning inför framtiden,* (Translates "Interactive Entertainment for the Future")TELDOK report 133 (Stockholm 2000). The report is available, in Swedish, in PDF format at the URL http://www.teldok.org/dataspel/index.html.

[13]Johan Huizinga, *Homo Ludens – a study of the play elements in culture* (Boston 1955). The edition is a compilation partly of the German version published in Switzerland 1944 and partly of the English version written by the author shortly before he passed away.

[14] Huizinga, p. 37.

The Swedish equivalent, which is inherited from the Germanic root *spil, spel,* is "att spela ett spel", just as in the German "spielen ein Spiel", and here it is not only the idea, but also a word, a noun, which is repeated in the verb.

Huizingas' definition of what it is to play is the most relevant one I have found in any literature. It reads as follows:

> "[...] play is a voluntary activity or occupation executed within certain fixed limits of time and place, according to rules freely accepted but absolutely binding having its aim in itself and accompanied by a feeling of tension, joy and the consciousness that it is 'different' from 'ordinary life'."10

2.3 Gameplay

In this text the word *gameplay* is often used for referring to the quality and nature of the playing activity, which the player conducts when he or she plays a game. What is gameplay then? In his masters' thesis, *Gameplay: The elements of Interaction,* Patrick Mount describes gameplay as:

> *A set of basic elements, which – when implemented in an interactive environment,*
> *ensure that the end-user can make interesting choices, thus leading to a vicarious*
> *experience which is both memorable and fun.*[11]

He narrows down what gameplay is used for, partly to bring forth interactivity with an emotional content and partly to give the user control by some kind of physical input device. Furthermore he describes the group of basic elements, which, according to him, is what gameplay consists of. The angle of approach is instructive, the headings form a manual describing what a developer of games ought to take into consideration.

The first element he describes is the balance between *challenge and frustration* that needs to be maintained in the player, so s/he does not give up because it is too difficult, but difficult enough to be challenging and interesting. The second element is called *risk versus reward*, and stresses the importance of the rewards in the game being proportionate to the risks. Under the third heading, *realism versus abstraction*, he makes a statement to the effect that exaggerated realism can lead to boring and time-consuming details and that if the fiction is abstract there will be a need for a framework of rules for possibilities and rules which is similar to a real system.

In the fourth element, *domination*, he warns against letting one or several possible functions of the game become so dominating that they are used all the time and in that way making the other functions less important and less used.

The fifth element, *repetition*, is important for giving the player time to master the game. The amount of learned repetitive game elements must also be in proportion to the game's size. If it is a game that takes a short time to play the player has to have time to learn to master the game's rules and possibilities faster than in a more extensive game to make it worthwhile playing. The sixth element, *polymorphism*, stresses the importance of there being enough possibilities for the player to develop different styles of playing, in other words different methods for successfully getting through the game (see Lindley's concept of gestalt presented in part 2.4).

The seventh and last element is *balance.*[12] What the developers of games need to achieve is a handling of resources such as makes it possible for the player to manage playing the game at the same time as it offers a challenge. If the objects that the player needs, to be able to go

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[15] Huizinga, p. 28.

[16] Patrick Mount, *Gameplay: The elements of Interaction,* (Liverpool 2001). The part of the thesis that the above quotation originates from was published on April 3rd 2002 at the Webiste Gamasutra: URL: http://www.gamasutra.com/education/theses/20020403/mount_01.htm

[12] The heading of the element has number six, as in the previous part, but is the seventh in order.

through a certain level of the game, are symmetrically placed just when the player needs them the excitement of playing is lessened and the game might be experienced as too adjusted. The most effective method for balancing the resources, according to Mount, is giving the player the possibility to choose from a wide spectrum of assets and at the same time making sure that each player has the same chance to succeed in the game even if they choose different assets.

When one in daily speech describes computer games the word gameplay is used as a concept of value. Those elements in the game that are of less quality are often separated from the concept of gameplay.
"The gameplay was good but the story was lousy."
The user interface was lousy, but the gameplay was good after all."
The opposite is true when the game is generally of less quality but there is a feature in the game that stands out for its good quality.
"The graphics were great but the gameplay was poor"

Gameplay is a concept that says more than just how playable the game is, it represents the structure between all the elements that the game consists of and whose interactions create a high quality game experience.
In a really good story driven game one cannot, as I see it, separate story and gameplay. Today many game critics separate the concepts because they appear to be two different units. It could be compared to a graphical users interface or a resource handling system. If the elements are good they become parts of good gameplay. The developer has in the ideal situation created transparency between the elements so that they synthesise. A badly handled element will on the other hand not be seen as a part of good gameplay.
  Michail Bachtin describes a mechanical unit, as opposed to a synthetic one, with the following lines:

> A unit is called mechanic if its separate elements are only united in time and space by an outer connection and is not pervaded by the inner unit's meaning. The parts of such a whole are foreign to each other even when they are lying next to each other, touching.[13]

In his description of gameplay (see above) Patrick Mount also points out that the elements that are implemented make sure that the player can make a choice that leads to a memorable and enjoyable experience. I, on the other hand claim that *gameplay is a synthesis that comes out of the game's different elements while it is being played.* The elements that the player experiences as inferior do not become synthesised, and will therefore be seen as separate from the gameplay.
  I believe that the reason for the lack of synthesis between the narrative and the gameplay present in many story driven games is that one in many games tries to force a linear or multi-linear narrative method onto a system that is meant to be object-oriented.[14] By this statement I do not mean to say that a game with a multi-linear narrative method as a rule has inferior gameplay. There are numerous examples of strictly multi-linear games that reach artistic heights, where the main example in my eyes are the games in the Final Fantasy series, which were published in 1997 and make a milestone in the historical development in story driven games.[15]

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[13] Michail Bachtin, *Det dialogiska ordet*, "Konst och ansvar" [1919], (Sweden, Gråbo 1988) p.5. Translation from Swedish: Suzan Olsson
[14] The term object-oriented is explained in chapter 4.1.4
[15] *Final Fantasy VII*, Squaresoft, Sony Computer Entertainment Europe, Playstation, CD-ROM, 1997.

2.4 Gestalt - the individual player's pattern of interaction

In a game there is usually room for the individual player to use different strategies within the game to be able to plat as successfully as possible. These strategies in their turn shape different patterns of interaction between the players and the game, called *gameplay gestalt*, by Dr. Lindley.[16] In this context, playing a game is to perform a gestalt. As Lindley writes this gestalt can take on several forms within the same game, and just like in gameplay, also become more than only the sum of the different parts:

> A gameplay gestalt can have many forms for a particular game, capturing different playing styles and approaches to progressing through the game structure. In general, it is a particular way of thinking about the game state, together with a pattern of perceptual, cognitive, and motor operations.
>
> […]
>
> A *gestalt* may be understood as a configuration or pattern of elements so unified as a whole that it cannot be described merely as a sum of its parts. [17]

Hereafter I will be using the term gestalt when referring to the individual player's interaction patterns.

2.5 The theory of hypertext –the inheritance of ludology

I am under the impression that a large part of the game oriented research that has been carried out in the last years has been focused on the narrative aspects of the games. This impression might depend on the fact that the focus of my research is in the same area. Proving this would be futile since also the collected knowledge bases I would refer till, such as conferences on the same theme, or for example the magazine *Game Studies* also focuses on the mentioned area.[18]

A fact though is that in the research, which is carried out on the narrative aspects of computer games, a large part of the theoretical foundation has been taken from the theories that have been created around hypertext and its nature. This is natural because of the similarities between the narrative structure of hypertext and the type of narration used in story driven computer games, especially in that the overall stories are multi-linear, i.e. it is possible for the player or reader to go through the work where the order of the narrative elements are dependent on which way is taken and what choices are made by the player or reader.

In many story driven computer games the narrative structure is built in a way that is similar to the structure of a hypertext. If the game is extensive and contains many narrative elements, has large geography and many objects in its world, this often leads to difficulties. The outside structure that holds the causal relations then becomes complex, resulting in many possible relations between the different objects. The developer then has to use constructed and technical solutions to keep the narrative stringent or false causal relations will occur.

Nonetheless the theories around hypertext make an important base in the research that is carried out around the narrative aspects of computer games and it is necessary to, in short, present them here before looking closer at the game research, or the ludology.

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[16] Craig Lindley, "The Gameplay Gestalt, Narrative, and Interactive Storytelling", *Computer Games and Digital Cultures Conference*, June 6-8th 2002, Tampere, Finland

[17] Ibid. p. 4.

[18] *Game Studies*, available at the following URL: http://www.gamestudies.org. The editorial staff consist of, among others, Espen Aarseth and Markku Eskelinen who both in their research in different ways have studied hypertext from a human perspective.

2.6 Hypertext and multi-linear narration

The first published seed for thought treating the subject of a large continuous hypertext can be traced back to Vannevar Bush's article "As We May Think" in *Atlantic Monthly*, July, 1945. He there sketched out a system of information that, except for using the traditional indexing used in libraries, also contains connections, or links, of information. As a contemporary reader of the article it is easy to see it as a prophecy, predicting the World Wide Web.

The term hypertext was coined by Theodor Holm. In Literary Machines (1981) he defined hypertext this way:

> "Well, by "hypertext" I mean non-sequential writing – text that branches and allows choices to the reader, best read at an interactive screen. As popularly concieved, this is a series of text chunks connected by links which offer the reader different pathways."[19]

Nelson's vision was a global network of linked information, Xanadu. It was a program, which was to create a new united literature, linked and available to everyone.

When the discussions around hypertext went from being visionary around a possibility, to becoming theorising around an existence Nelson's definition of the hypertext was discussed. Especially the notion of a non-sequel, or non-linear text especially, has been discussed. George P Landow, and several others, instead use the term multi-linear. Nelson, as did Bush, imagined networks of information which, just like databases, do not contain the type of linearity that one finds in stories. Later active theoreticians like Landow and Jay David Bolter have, when they have used the definition, added a more literary perspective to analyse hyper-literary works and offer tools for the analysis of them.

In *Hypertext: The Converge of Contemporary Critical Theory and Technology* (Baltimore and London, 1992) and in *Hypermedia and Literary Studies* (London 1990) Landow refers to Barthes and Derrida and what effect it has on the theory of literature that theories, a few decades old, about deconstruction and inter-textuality materialise.[20]

Bolter investigates the aspect of room in the hyper-textual writings in *Writing Space: The Computer, Hypertext, and the History of Writing* (New Jersey 1991). This work has had great influence, though it is, as Raine Koskimaa points out in his thesis, about conceptual space.[21] Espen J. Aarseth is a researcher who has widened the perspective and whose theories around hypertext also are useful for analyses of computer games. In his thesis *Cybertext, Perspectives on Ergodic Literature* he introduces his concept of ergodicity:

> During the cybertextual process, the user will have effectuated a semiotic sequence, and this selective movement is a work of physical construction that the various concepts of "reading" do not account for. This phenomenon I call *ergodic*, using a term appropriated from physics

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[19] Nelson, Theodore Holm, *Literary Machines* (Swarthmore, published by the author, Ed. 87.1, 1987)

[20] George P. Landow, "Whats a Critic to do: Critical Theory in the Age of Hypertext", *Hyper/Text/Theory* (London 1994), red. George P. Landow, s. 1.

> Hypertext (...) has much in common with recent literary and critical theory. For example, like much recent work by poststructualists, such as Ronald Barthes and Jaques Derrida, hypertext reconceives conventional, long-held assumptions about authors and readers and the texts they write and read. Electronic linking (...) also embodies Julia Kristeva's notions of intertextuality, Mikhail Bakhtin's emphasis upon multivocality, Michel Focault's conceptions of networks of power, and Gilles Deluze and Félix Guattari's ideas of the rhizomatic, "Nomad thought". The very idea of hypertext seems to have taken form at approximately the same time that postsructuralism developed, (...) both grow out of dissatisfaction with the related phenomena of the printed book and hierarchical thought.

[21] Raine Koskimaa, *Digital Literature. From Text to Hypertext and Beyond* (Jyväskylä 2000) Chapter 2, part 3. On the subject of space Mark Bernstein has in "Hypertext Gardens: Delightful Vistas" taken the metaphor of roominess in hypertext far. The authorship of writing hypertext is compared to creating (planning) a garden. URL: http://www.eastgate.com/garden/Enter.html

that derives from the Greek words *ergon* and *hodos*, meaning "work" and "path". In ergodic literature, nontrivial effort is required to allow the reader to traverse the text.[22]

Aarseth's thesis constructs, in my eyes, a bridge from the theory about hypertext to the game research, which is enriched with a relevant set or tools for analysis. He makes a strategy for the categorizing text, which is built upon seven parameters; *dynamics determinability, transience, perspective, access, linking* and *user functions*.[23] An example of how these parameters can be applied for analysis of story driven computer games with strong elements of character building can be found in Jonas Carlquists paper "Att läsa ett dataspel" ("To read a computer game").[24]

Also Anna Gunders research, focused around the hyper textual work *Afternoon* by Michael Joyce have resulted in tools which I think can be of use also in game research.

Parallel to the building of theories around hypertext, studies have been made about text-based story driven games of adventure type. In the part "Some Issues in Adventure Game Criticism" in *Cybertext*, Aarseth discusses the earlier criticism of text-based adventure games.[25] He thinks that within literary criticism there have been two common attitudes; the excusing and the trivializing. Neither of these attitudes are in themselves valid as they are based on ideals fetched from another genre, the novel. The excusing attitude is that one day the adventure games might, when the right author puts his/her hand to it, reach its true potential. The trivializing attitude is that this will not happen as adventure games are games, and that they will never become as sophisticated as novels. Aarseth thinks that the later group in a way are right, in that adventure games are not novels, but that this is irrelevant:

"The adventure game is an artistic genre of its own, a unique aesthetic field of possibilities, which must be judged on its own terms."[26]

He goes on to say that during the last decade several studies of adventure games have addressed them as a literary genre without for that matter treating them as literary works. Correct historical facts are neglected and Aarseth suspects that it is due to it being a new type of literary artifact. Another reason might be that the first text-based adventure game *Adventure* was not sold commercially and therefore the analysts who were unaware of the mechanisms around freeware have missed it because it was nor charted in the sales catalogues. Compared to the younger genre of hypertext the adventure games have not been studied to any great extent. Aarseth thinks that it is probably closer at hand to study hyper-textual works because of them being associated with post-modernism and post-structuralism, as well as the seriousness of their contents. It is easier to recognize it as experimental literature than as adventure games, which are considered to be entertainment. Aarseth's opinion is that there being differences in the adventure games, compared to the types of texts, is what make them interesting to study:

"What above all makes them worthy of study is the fact that they present an alternative mode of discourse; a different type of textual pleasure. By investigating this we may be able to extract knowledge of a more general kind, which may tell us something about discourse itself and which we could not have learned from our previous, more restricted horizon."[27]

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[22] Espen Aarseth, *Cybertext: Perspectives on Ergodic Literature,* (Baltimore & London 1997), p.1
[23] Aarseth, p. 62ff.
[24] Jonas Carlquist, "Att läsa ett dataspel - Om digitaliserade rollspel som berättelser", *Human IT* no 2/3 2000
[25] Aarseth, s. 106-109
[26] Aarseth, p. 107.
[27] Aarsteh, s. 109.

2.7 Ludology

The term that has developed to label the science of games is ludology, derived from the Latin word ludus, which means play or game. Earlier in this part we have with the help of the Swedish National Encyclopaedia and John Huizinga defined what a game is and what it means to play. I also suggested an interpretation of the term gameplay, and with the help of Craig Lindley we have obtained a term; gestalt, to define the individual player's pattern of interaction.

But what does the study of games entail, and how do we go about studying them? Is it plausible to consider the development of games as a commercial enterprise in itself and the ludology as the science of its products? What would the key questions of ludology be?

Games can have many appearances and can contain many types of elements, which together make up the game. A computer is just one of the tools we may use when we construct and play games. Live role-play and table role-play are often story driven, but are more dependent on their game masters than on a computer.

At Gotland University, in Sweden, there is a new, three-year university course called GAME, and when the students investigate and interpret the concept of playing games they spend a large amount of time during the first year actually constructing analogue games.

2.7.1 Creations of many forms of art

When it comes to analysing computer games it is rare that one gets a complete insight into what the production process has looked like. As a player one only experiences the end product, one sees the graphics, hears the sounds and experiences the game's mechanisms and rules, but one does seldom get access to the massive amount of program code which has constructed it.

We can establish the fact that the type of games, which is the focus of this thesis, the story driven computer games, are made up of many collaborating forms of art.

The following list is a general division of the tasks and elements in the production of such a game. How the tasks are divided in the production group depends on how the group looks and on what platforms have been chosen for production and for target unit.[28]

- **The whole picture**
  o Game designer, who is responsible for the overall game and gameplay

- **Narration**
  o The construction of a potential overall story and the deep structure of the narrative
  o The writing of dialogues and other typographic text and texts which have to be read by actors

- **Graphics and geography**
  o Environmental graphics
  o Graphic design of separate objects
  o Animation of separate objects
  o Camera angles
  o Construction of the graphic interfaces with which the player communicates with the game

- **Acting**

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[28] My thanks to Mattias Gustavsson, programmer at Deep Red Games, UK, for proof-reading

- o Actors (voice), who record the voices that the player hears speaking in the game
- o Actors (physical action) who do the patterns of movement that are transposed to the characters in the game (recorded with the help of motion capture equipment)

- **Music and sounds**
    - o Composing the music, which is used in the game
    - o Producing of the music, which is used in the game
    - o Sounds for effects
    - o The recording of lines, sounds for effects and music

- **The development of systems**
    - o Construction of new, or the integration of purchased or earlier developed game engines (the basic software systems that execute the game)
    - o The construction of a new, or the modification of existing frameworks (that constitute an abstraction of the game world and its rules)
    - o The construction of specialised tools (software that can be used by other members in the production group in the implementation work)

- **Implementation,** either with the help of tools or programming
    - o of dialogues. The implementation of dialogues ensures that the right character says the right thing under the right circumstances (right in an overall narrative perspective)
    - o of interfaces. The implementation of ensures that the player's commands have the intended effect in the game system's different parts.
    - o of music and sounds. The implementation ensures that the sounds are played at the right moments and in the right situation, as intended.
    - o of graphics. The implementation ensures that the geography is consistent; that the environments are shown as intended and that the objects' graphical representation including their animation (synchronised with for example dialogues) are shown to the player as intended. Among other things this work also includes implementation of game specific camera systems.
    - o of the game's elements carrying the narrative. The implementation ensures the stringency in the overall story and the deep structure of the narrative

As we can see there is a lot of expert knowledge and also many different forms of art that together constitute a story driven game. All these knowledge that by themselves can be seen as crafts or arts in this context together strive to create as good a game as possible. This is why it seems reasonable to me that when one studies an individual task in this complex one ought to do so keeping in mind that that the end product is a game.

The largest conference whose main interest is games is Game Developers Conference, which is held in San Jose in California every spring. There the items on the programme are divided into eight tracks: *Visual Arts, Game Design, Programming, Audio, Production, Business & Legal, Level Design* and *General Interest.*[29] In the autumn of 2002 the same conference was held for the first time in Europe, containing the same headings that refer to the same tracks that the items on the programme are divided into. The subjects that are suggested as subjects for the programme give a good idea of the amount of specialised craftsmanship that is needed

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[29] The documentation of the conferences is available at the following URL: http://www.gdconf.com

in different types of games. I include this in appendix 2. As we can see the heading "Storytelling" under the main heading "Game design" is only a fraction of all the other areas that are considered interesting to discuss in the conference.

2.7.2 Knowledge spread out

Now that we have an idea about how diverse the area is it might be relevant to again ask the question if it is possible to incorporate all these areas into a new discipline. When it comes to the aspect of production there is no question. Just as the film industry grew during the 20th century the game industry has come about during the last decades. There are no institutions though for the science of games as there is for the study of film. The present game research found in the academic world is usually carried out within disciplines that in some way are connected to games of one kind or another. One of the advantages of this model is that the individuals who make the studies have access to the expertise in that particular area of research and that they themselves are well briefed in one or several fields of knowledge relevant in connection with games. A disadvantage in the system is that there is no co-ordinated base for the basic research that needs to be done to be able to bring about more specialised studies. The main part of the practical research carried out today takes place in game production companies of various sizes. The results of this research are seldom available to other groups of researchers but are incorporated into future games or become the base for new patents, products or companies.

It is important though to keep in mind that, despite the relatively short history of computer games being as a mass media, the theories that have been created around playing are not as new. They have not yet, as far as I know, been applied to computer games to any large extent but quite often in the mathematical, economic area for analysis of situations where many participants in charge of decisions interact. John von Neumann and Oskar Morgenstern laid down the foundation for the game theories, and for their application in their book, *Theory of Games and Economic behaviour* (1944). [30] The individual players are assumed on their own part strive for a good results as possible. From the start game theory was constructed for the analysis of parlour games such as card games and chess, and my assumption is that it could be of good use for the analyses of computer games whose main elements are the handling of resources and gaining advantages, especially if it is a network game or a game that in some other way has several players.

A summary of what we have now: A growing industry of game production developing, which since the end of 2002 is comparable to the Mecca of the film industry, Hollywood. [31] Within this industry of production highly specialised experts work in an area that spans over all kinds of areas within the arts. What unites them is the nature of the end product being a game. We also have a formation of game theories, which is used within economic sciences, and other sciences to do with society, generally in situations that are game-like, but which, from Huizinga's point of view, are not games. Then we have the inheritance from the theory of hypertext, which at a quick glance seems possible to use. As well as all these there are also individuals who, within different disciplines, institutions and production companies around the world, use their expertise and test different perspectives on this new mass media.

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[30] These facts and references to Neumann's and Morgenstern's book are fetched from the Swedish National Encyclopaedia 17th book. (Höganäs 1995), p. 121.

[31] According to a survey by NPD (URL: http://www.npd.com), the American game industry sold game consoles and games for 9.4 billion US dollars while the turnover from for movie tickets from films produced in Hollywood was 8.4 billion US dollar.

2.7.3 A new discipline

The comparison to the film industry is rewarding in that there also in the production of film is a need for a production group where the individuals have special competencies within various areas but who all strive toward the same goal; film making. The science of film is also, because of it, a multi-disciplinary science. It is also a young science:

> **The science of film,** an academic discipline that enfolds includes the study of and the formation of theories around film media, as, among other things phenomena of society and its historic, technical and aesthetic development. The only professorship in Sweden in the subject is at the Institution for theatre- and film science at Stockholm University and was created in 1970.[32]

The science of games would, if it were to become a discipline of its own, probably also need to be of a multi-disciplinary type.

What would the main questions in such a discipline be?

Let us compare it to one of the oldest academic disciplines, literary studies. In *Narrative Fiction* Shlomith Rimmon-Kenan quotes Benjamin Hrushovski on what poetics; the theory of poetry, is:

> Poetics is:
> the systematic study of literature as literature. It deals with the question 'What is literature?' and with all possible questions developed from it, such as: What is art in language? What are the forms and kinds of literature? What is the nature of one literary genre or trend? What is the system of a particular poet's 'art' or 'language'? How is a story made? What are the specific aspects of works of literature? How are they constituted? How do literary texts embody 'non-literary' phenomena? Etc.
> (Hrushovski 1976b, p. xv) [33]

If we were then to try superimposing this description of poetry onto the area of games we would get something similar to this:

> Ludology is the systematic study of games being games. It is about asking the question 'What is a game?' and all sorts of questions that spring out of that, such as:
> 1. What is art in the expression of the game?
> 2. What are the different forms and types of games?
> 3. What nature does a certain genre or trend have?
> 4. What do the systems and patterns look like, that a particular game developer uses?
> 5. How is a story built?
> 6. From what specific angles can one look at a game?
> 7. How are these constructed?
> 8. How can a game incorporate, or embody, 'non-game' phenomena?

I think that all these questions and the series of other possible questions are highly relevant when it comes to the study of games. All the questions except possibly number five can be applied to all types of games, not only of the story driven type. It is probably advantageous to use questions from other disciplines as well.

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[32]*Nationalecyklopedin* sixth volume, (Höganäs 1991), p. 249 Translation from Swedish: Suzan Olsson
[33]Shlomith Rimmon-Kenan, *Narrative Fiction: Contemporary Poetics* (London and New York 1998 [1993]), p. 2.
The quote is taken from Benjamin Hrushovski's, "poetics, criticism, science: remarks on the fields and responsibilities of the study of literature*", Poetics and Theory of Literature*, I, iii-xxxv (Tel-Aviv 1976)

If we now take a look at the analyses of story driven games we already touched upon we see that these questions are topical in the studies.

One of the largest tasks is answering the last question, number eight, and to be able to do this we need to have an idea of what it means that the phenomena does not have the characteristics of a game.

Jesper Juul's master's thesis *A Clash Between Game and Narrative* could be used as an illustration of that particular question. In his thesis Juul argues that games and narration basically are not compatible. He brings out a few arguments as to why games so seldom tell stories of high quality. Juul's opinion is that the more narrative there is in a computer game, the less freedom and experiences the player has. The game also becomes less interesting to play again and again.[34] If Juul's thesis could be looked upon as an example of how it is possible or impossible to incorporate narration into games, maybe Aarseth's paper, mentioned earlier, could be seen as a way of looking, from different angles, at the constitution of, using Aarseth's term, the cybertext in story driven computer games, and to connect it to question number seven.[35] To continue along the same line, the fifth question could be associated to Carlquist's study of three games with a character of role-playing where he among other things uses Aarseth's strategy for categorising text.

The list of comparing examples could be made even longer, but I believe that what I have written above does illustrate the relevance of the central questions of poetics being transposed onto what we could call the *poetics of games*.

But how deep can an analysis of the narrative aspects in a story driven computer game get if the analyst only has access to the text layers visible to the player? I am convinced that analyses of the top text layers of story driven computer games are of great relevance, but I also believe that analyses of the underlying text layers of programme code are necessary to be able to reach a deep understanding of the text as a whole. I also think that this is not unique for the analyses of a game's narrative aspects but can be transferred to other areas such as the areas of sound and pictures. Along with the construction, in these and other areas, of systems specific for computer games the need for knowledge around these systems also increases for those who are to analyse the end products. If one, for example, were to decide to study the music in a game it would be necessary to understand the system that brings it about.

(Suppose for example that a system had been used that changes the musical themes depending on the level of dramatic excitement in the game is at a particular moment.) The poetics of the game also includes the layers of text that are made up the programme code.

At the beginning of this part of the text a question was asked regarding what main questions a discipline focused on games would have. I believe that the questions above could make up the nucleus of such a discipline, but would, to become really meaningful, have to be cross-fertilised by the main questions that need to be put regarding other aspects than the narrative.

If we, to again widen the perspective and to continue our thought experiment, ask ourselves what science is, we could read the following description in the Swedish National Encyclopaedia:

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[34] Juul, p. 85.

[35] Espen Aarseth coins the term cybertext in *Cybertext: Perspectives on Ergodic Literature,* (Baltimore & London 1997). On page 1 he writes:

> The concept of cybertext focuses on the mechanical organization of the text, by positing the intricacies of the medium as an integral part of the literary exchange. However, it also centers attention on the consumer, or user, of the text, as a more integrated figure than even reader-response theorists would claim.

On page 3 there is another specification: "A cybertext is a machine for the production of a variety of expressions."

> Science (know-how, knowledge), organised knowledge; as an activity it is the systematic and methodical collecting of knowledge within a certain area.
>
> This can be done by collecting and classifying data, making observations and experiments or interpreting and analysing available material (for example documents, objects) and then drawing general conclusions and formulating the results. One of the main tasks of science, especially the science of nature, are usually said to be to *explain* reality in order to *predict* future occurrences. Within the human sciences it is rather more about understanding human behaviour to be able to comprehend patterns in society and in the individuals.
>
> [...] Method-wise the sciences are usually divided into rational and deductive science (for example mathematics and logic) and empirical or inductive science (for example biology and history). Another type of division is to make a difference between the science of nature and humanism, but with more and more specialising it is becoming more common to use a more specific division (for example the science of computers, the geo-science and the social sciences.[36]

I think time will show how the science of games possible could be classified, as it has potential to span over so many areas and include so many methods. A classification will in that way be dependent on the nature that the continued game research in practice develops.

I would like to point out four main questions, which to my way of thinking are of utmost importance for the game industry, the players and the game research:

1. How can we study games to gain understanding of their nature?
2. How do games affect society and our culture?
3. How can existing forms of games be improved and renewed?
4. How can the production processes in the game industry be improved?

During the year of 2001 two platforms have been created, on (in) Gotland, for the research of games, as well as the course for game development, mentioned above. At the Gotland University there is a newly initiated group of researchers, at the CfS, a centre for game research, led by Thomas Bay. The overall purpose of the work at CfS is the study of the playing human to in this way be able to construct a complete picture of this "total activity" which is the game - a game being an elementary human (cultural, social and economical) form of expression and understanding. The Interactive Institute has initiated a research studio, Zero Game Studio, focused on computer game oriented research.

Emma Westecott, studio manager at Zero Game Studio, said in an interview that it is not enough to play the games to be able to analyse them, the study has to go deeper. The playing of games and the creation of these need deconstruction. There is at the moment a gap between the research and the game industry, which historically has been obsessed by technical development. The next step necessary in the development is a focus on the experience of playing the game and the nature of the gameplay. The playing of games is an activity. To be able to understand and develop the foundation for this activity it is necessary to speak the language of the game, and to do this it is a condition that one makes games. The method for reaching and presenting results, new forms of games and experiences of playing are implicit in Zero Game Studio's applied and project oriented context of game building.[37]

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[36] The Swedish National Encyclopaedia 19th volume (Höganäs 1996), p. 393. Translation from Swedish: Suzan Olsson.

[37] The interview was made on the April 25th 2002 and Emma Westecott has permitted the reciting of the material.

In England there are two research groups that focus on games. At the University of Wolwershampton the group at Multimedia Technology & Intelligent Systems Technology Research Group has a subgroup who focus on games called Games Simulation and AI, and which consists of eight people.[38]

Digiplay Initiative is a project where some of the researchers connected to it come from ESRC Centre for Research on Innovation and Competition at the University of Manchester and some from The Department of psychology at the University of Central Lancashire.[39]

Digiplay Initiative has taken an initiative to create an international society for game researchers. The discussions around the society started at a conference, which took place in Manchester in April of 2002, Playing with the Future. The purpose of the society is in short:

> One of the important functions of such an organisation would be to develop a network of computer game researchers through which a yearly gaming conference/event could be organised. Such a network of researchers could also facilitate the development of collaborative research projects and funding, provide a database of resources for new and experienced games researchers, and develop a meaningful dialogue with games developers and other industry relevant bodies. These activities would help to raise the profile of the emerging field of computer game research. This is the most initial stage and further consultation is required, but we would like to able to develop an international organisation similar to those of other academic fields of study.[40]

As we have seen there is a great need for a society of this kind. There is already a formal society for game developers, International Game Developers Association (IGDA).[41]
Also in Finland, at Hypermedia Laboratory at the University of Tampere there is ongoing game research.[42] This group also organised the conference of Computer Games and Digital Cultures Conference, June 2002.[43]

When reading theoretical material and other material with a connection to the narrative aspects of computer games I have noticed a tendency among many writers to construct models that describe how the utopian game could be constructed.[44] I am no exception. It seems as if it is common that people who have an analytical interest and play games a lot sooner or later form theories about *how it ought to be instead.* This tendency shows, to my way of thinking, the widespread need for new methods and models. Hundreds of instructive books have been written about game design during the course of a few years, and the want for more does not seem to have ceased.

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[38] More information about the group at Games Simulation and AI is available at the following URL: http://scitsc.wlv.ac.uk/~cm1822/mistgames.htm

[39] More information about Digiplay Initiative is available at the following URL: http://www.digiplay.org.uk

[40] The complete text is available at the following URL: http://www.digiplay.org.uk/dga.php

[41] Detailed information is available at International Game Developers Association's home-page, URL: http://www.igda.org

[42] More information about Hypermedia Laboratory is available at the following URL: http://www.uta.fi/hyper/projektit/index_en.html

[43] Information about the conference of Computer Games and Digital Cultures Conference is available at the following URL: http://www.gamesconference.org

[44] Jesper Juul's och Patrick Mount's theses could be mentioned as examples within the academic world. The list of books about game design could become very long but, but an example is Neal Halford and Jana Halford, *Swords &Circuitry: a Designer's Guide to Computer Role Playing Games* (California, 2001).

3 Story Driven Games

When I use the term story driven game I mean epic games; games where the driving force of the player wholly or partially is to further unravel a story. The notion of story driven games is thus possible to apply to games of different genres such as role-playing games or adventure games.

In this thesis I will mainly study and show examples from computer games, which are story driven, but exceptions will occur in cases where the use of examples from games not within the frame of story driven games, can be fruitful.

The dividing of games into genre and the classifications of games of different genres are often problematic in the area of computer games. Publishers, production companies and developers continually develop new genres and transfer elements between genres. The reasons for doing so are many, partly because there is room for experimentation, partly because there in marketing often is a will to claim that something is new, and partly also because there are not enough prevalent divisions of genre, or that the borders between them are so fluid that they not are practical. There are certain elements that are indisputably tied to a genre, an example being that a 'shoot-them-up' game should involve a lot of shooting, or that an adventure game should contain a tale of adventure. Therefore the prevalent genre definitions are useful in many cases. In their report, *Interaktiv underhållning inför framtiden,* Erik Fjellman and Jan Sjögen, define the difference between "adventure games" and "role playing games":

> The difference between is usually defined in that one in role playing games can choose to develop certain abilities and traits in the character or characters one controls during the game, while in the adventure games the person one acts as is more static, and the structure of the game is more like that of a film.[45]

The area of game development is so new that it is not possible to sure about what is what when talking about genres. There is still room for making new genres. A game that is good enough and reaches a large audience will probably have copies and a new genre is born.
One example is the Dungeons and Dragons' system, marketed in 1974 in the game with the same name. Its system for building of character has been copied by almost all computer games where a character can be developed. This is why these games have a set of rules that are very similar to each other. One can even go so far as to claim that this successful framework of rules from the seventies makes up the foundation for the role-playing genre. The main advantage is that it is easy for the players to understand the game, the framework of rules for the building of character is known and the problems of learning how to play another such game are few. A possible disadvantage might be that the player gets bored because of the lack of variation in the genre of computer role-playing games.

When a new game appears on the market it is not always possible to make a clear-cut distinction as to what genre it belongs to because many games are combinations of many elements. When one in everyday speech tries to describe or define genre of a game to someone who has not played the same game one gives different descriptions depending on what one focuses on in the description. For example, if one is interested in describing the narrative aspect one judges that particular element of the game, and if one concentrates on survival or battle the description will look different which is based on the actual system for the handling of resources or the battle system.

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[45] Erik Fjellman and Jan Sjögren, *Interaktiv underhållning inför framtiden,* TELDOK report 133 (Stockholm 2000). Translation from Swedish: Suzan Olsson

My opinion is that the existing definitions of genre are not practical for the classification of games. I think that a definition of genre based on components and driving-force, in their turn based on what functions, systems and main features are offered to the player, would work better. On the level of components one would for example be able to look at the degree of handling of resources, building of character, frequency of battle and narrative aspects there is. On the level of driving-force one could examine to what extent the game and the player are motivated by the building and optimization of a character, the unravelling of the narrative, handling of resources and the conquering in war(s). This is a side-track though. In the thesis I will be using the concept of story driven game in the cases where it fits better than the usual definitions of genre.

What is then specific for a story driven game? In the following parts I will, without any claims of making a complete description, identify some of the main features of the story driven game, which are relevant for this study; its time, its chronotope, its invisible narrator and the visible player, the structure of quests based on performance and how the chronological order of the narrative discourse emerges one step after the player has performed an action. In this context it is also necessary to discuss what can be considered to be text in a game.

3.1 Game and text

3.1.1 The concept of text

Johan Svedjedal maps out the text concept in *The Literary Web.*[46] Even if he limits his arguments to the use of typographical text it is so detailed that it is useful to us here. As Svedjdal writes, the theorists of literature have excelled the different definitions of the context of text. In handbooks about the theory of literature text can mean discourse, or an arbitrary system of signs. This mirrors a conception of that there are no autonomic works, no organised forms, but that everything created by man are flows of signs. Svedjedal further refers to Roland Barthes "From work to Text" and his distinctions between the work and the text:

> the one is displayed, the other demonstrated; likewise, the work can be seen (in book shops, in catalogues, in exam syllabuses), the text is a process of demonstration, speaks according to certain rules (or against certain rules); the work can be held in the hand, the text is held in language, only exists in the movement of a discourse (or rather, it is Text for the very reason that it is knows itself as text); the Text is not the decomposition of the work, it is the work that is the imaginary tail of the Text; or again, *the Text is experienced only in activity of production*.[47]

Svedjedal continues by writing that the most useful definition of what the context of text is can be found in: "[...] textual criticism, where the main accepted distinction is between 'work' and 'text' – that is, between the abstract artistic entity and its appearance or realization."[48]
 This description of the concept of text could in our case, when applied to a story driven computer game, stay intact. The text is the appearance of the game, or realisation.

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[46] Johan Svedjedal, *The Literary Web. Literature and Publishing in the Age of Digital Production. A Study in the Sociology of Literature* (Stockholm 2000, Kungliga biblioteket) p. 51 - 52.
[47] Roland Barthes, "From Work to Text", *Image, Music, Text: Essays*, Edit. and transl. by Stephen Heath (London:Flamingo, 1984), 155-164, p. 157.
[48] Svedjedal, p. 52.

3.1.2 Text in story driven computer games

What is text in a story driven computer game? Is it the discourse that emerges during the playing of the game? Or is it the dialogue text that is visible on the screen? Or is it the framework of code, which constructs the game logics?

These questions were discussed at the conference, *Cosign2001 – Ist Conference on Computational Semiotics for Games and New Media,* which was held in Amsterdam 10th–12th of September, 2001. In the documentation of the conference one can read about Julian Kücklich's thoughts around what it is in a game that makes up the text. Kücklich's looks upon the programme code; the framework of rules that govern the fictive world of a computer game, as the actual text.[49] He quotes Ted Friedman, who in his thesis, "Making Sense of Software: Computer Games and Interactive Textuality" (1993) writes that to learn and to win a computer game is a demystification process in which the player learns to decipher the signs that make up the manifestations of the game.[50] These manifestations are in their turn governed by the programme code. The act of playing would therefore be a reading process perfomed in reverse ("reversed reading").

In the same conference Ragnhild Tronstad took part with her paper on "Semiotic and nonsemiotic MUD Performance". She has investigated the distinction between theatric (semiotic) and performative (non-semiotic) verbs in MUDs, Multi User Dungeons/Dimensions.[51] She sees theatric as synonymous to the communication between players, which affects the players more than it affects the game world and the character. The performative is the interaction that affects the state of the MUD world.

Tronstad reflects around the nature of quests from that starting point. She sees a quest as performance only. A quest promises meaning, and the finding of this meaning, most often an object, ends the quest. It is at this point, when the quest is completed, that the retrospective becomes a narrative, a tale. Tronstad comes to an important distinction in her article: Actions that are performed actively by a player are in a fundamental way different from retold fictive events.

> The paradox of questing is that as soon as meaning is reached, the quest stops functioning like a *quest*. When meaning is found, the quest is *history*. It cannot be done again, as it is simply not the same experience to solve a puzzle quest for the second time.
>
> In this, quests differ from ordinary, non-ergodic stories. The experience of re-reading a non-ergodic story isn't necessarily fundamentally different from the first time experience of reading it. This is because stories in general belong to the order of meaning, together with the constatives, and not to the order of the act. Quests, on the other hand, are basically performative: they belong first and foremost to the order of the act. As soon as they're solved, though, they turn into constatives. The reason quests can easily be confused with "stories" is that we are normally analyzing the quest in a retrospective, after we've already solved it. To ignore the performative aspect of quests this way is fundamentally to misjudge questing as a practice. Being acts before they are meaning, we must focus on the way quests *act* to understand the way they work.[52]

I think that Tronstad's arguments are valid also in other types of story driven games than MUDs, and I agree concerning the importance of in connection with analyses making clear

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[49] Julian Kücklich, "Literary Theory and Computer Games", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001), p. 51 - 58
[50] Ted Friedman, "Making Sense of Software: Computer Games and Interactive Textuality", 1993 URL: http://www.duke.edu/~tlove/simcity.htm
[51] Ragnhild Tronstad, "Semiotic and nonsemiotic MUD Performance", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001), s. 79 – 82. Tronstad used the term "theatric" for "semiotic" and for "non-semiotic". The translation to "theatric" and "performative" are made by the author of the thesis.
[52] Tronstad, ibid. s.81

distinctions between retold events and actively performed actions. It is the action that actually gives the story driven *game* its special status. In this it does not only differ from the non-ergodic narratives, as Tronstad points out, but also from literature in hypertext. The following of hyperlinks, however complex the system is, cannot be seen as the equivalent of the active quest based patterns of problem solving present in the story driven game. Where the receiver of a literary text *reads,* the equivalent activity of the receiver of the story driven game is the *playing*. In literary works in hypertext of the type that *Afternoon* is, there is an alternation between reading and clicking on hyperlinks, there is no quest to be solved and no actual playing as such; it is merely reading. There is a large but limited number of, using Anna Gunder's terms, real stories and real discourses.[53] It is not possible for the reader to mould a *gestalt* with the same degree of complexity as the player of a game can when playing a game.

Mikael B. Skov and Peter Bøgh Andersen's paper "Designing Interaction Narratives" is based on two interviews; one with a writer of multimedia productions and another with writers of computer game manuscripts.[54] They suggest that the writer of a computer game is more like a builder of game worlds than a writer in a traditional sense. The narrative is instead created through the player's interaction with the world and can be considered to be a completed narrative when the game is finished. They also came to the conclusion that most story driven computer games only allows the player to change the sequential order of the presentation of existing events in the story, but not to change the underlying story itself.

3.1.3 Levels and layers of text in story driven computer games

In my opinion it is both the geographic world that makes up the game's micro cosmos, the overall story, the driving-forces of the characters taking part, and the player's ergodic movement through the game that is *text*. This is so assuming that the concept of text is used to mean a system of signs where the text makes up the appearance of the game, or realisation.

To be able to look at this text with clear eyes it is first necessary to break this great amount of collaborating systems of signs into different levels and layers.

I think it is works well to divide the story driven computer game into three levels which in turn can be divided into text and structures:

1. **Code level**, containing engines, framework and game programming. These together manifest the geographic structure as well as the conditions for the deep structure of the narrative and overall story.
2. **Story level**, which consists of the overall story (if there is one), the deep structure and the individual story-carrying objects, who in their turn can manifest the overall story and possible side-stories (side-quests) as well as separate independent stories.
3. **Discourse level**, which consists of the states of the individual elements in the now of the playing, and the sequential order created between the different parts of the narrative simultaneously with the movements of the player through the game. It is in this layer that the surface structure of the narrative is visible.

I will be giving a closer description of these levels in chapter 5. I will then describe what the distinctions between the different levels and layers of text could look like in a general model of a story driven game.

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[53] Anna Gunder, "Berättelsens spel - berättarteknik och ergodicitet i Michael Joyce'safternoon, a story", *Human IT* 3/1999. (Borås 1999) URL: http://www.hb.se/bhs/ith/3-99/ag.htm.
[54] Mikael B. Skov and Peter Bøgh Andersen, "Designing Interaction Narratives", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001), p. 59 – 66.

3.2   Time in story driven computer games

In story driven computer games the action generally takes place in the *now.*

When Jesper Juul in his thesis *A clash between game and narrative* describes three different sorts of time; *the narrative time, narrator time* and *reading time,* he has looked at games like *Space Invaders, Doom II* and *Myst* which are all more oriented toward action than toward narrative.[55] The narrative time takes place in the now. Juul's opinion is that in these games nothing *is*, everything *happens*. He means that because of this continuous now narration and interaction cannot take place at the same time.

In his article, "Att läsa ett dataspel" (Translated: "To read a computer game"), Jonas Carlquist has examined three computer role-playing games that all have overall stories, *Planescape Torment, Fallout 2* and *Baldur's Gate*.[56] He has also come to the conclusion that, with exception of a few flashbacks, the action takes place in the now:

> In computer role-playing games the action also takes place the whole time, there is so called real-time to take into consideration. (27) In all the games examined here there is day and night and if one carries on with a search for too long the reading character as well as the NPSs complain that they are tired and need a rest. The action is in other words limited by time. If one for example needs to change weapons this takes a certain amount of time and gives the opponent an advantage, if the reading character is going to throw an advance spell it takes time to read the magical words etc. The story is in many ways isochronal, that is, a certain period of time in the story is equivalent to a certain amount of text.[57]

Also my experience of story driven computer games that contain overall narratives is that the played time is generally meaningless to the course of events. It is not the speed of the playing that is relevant (unless it is smaller separate arcade like parts which now and then exist in for instance the Final Fantasy series) and it is not the amount of days either, if there is system of day and night, which goes by in the time of the game. Instead it is usually the fact that the player reaches the points of intrigue in the story that decides if the action moves along its axis. As Carlquist points out: "Thus there is time, but it is not a narrative variable that one needs to take into account."[58]

3.3   The chronotope of the story driven game

Chronotope is a term that has been brought to the field of literary studies by Michail Bachtin:

> "The most important mutuality existing in the relationship between time and space (room) and which literature has taken on artistically will be called *chronotope* (which literally means "timespace").[59]

He also writes that: "a genre and its sub-species are defined by the chrontope".[60]

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[55] Jesper Juul, *A Clash between Game and Narrative - A thesis on computer games and interactive fiction*
(Institut for Nordisk Filologi, Københavns Universitet (Copenhagen)1999).
URL: http://www.jesperjuul.dk/thesis/
[56] Jonas Carlquist, chapter 6 "Struktur, berättare och tid i datorrollspel" in the article "Att läsa ett dataspel - Om digitaliserade rollspel som berättelser", Human IT no 2/3 2000.
URL: http://www.hb.se/bhs/ith/23-00/jc.htm
[57] Ibid. Note no. 27, the quote refers to the following text: "27. Something that for example differs from a computer game like *Myst,* where time stands still as long as the user does not act (compare Juul 1999:68)."
The abbreviation NPC refers to another character in the game which in turn is not controlled by another player , an object which is usually called Non Player Character. Translation from Swedish: Suzan Olsson
[58] Ibid.
[59] Michail Bachtin, *Det dialogiska ordet*, (Uddevalla 1998), p.14. Translation from Swedish: Suzan Olsson
[60] Ibid.

In the chronotope of the story driven computer game it is the wandering between and the interaction with the story-carrying objects of the game world that create the narrative. The narrative time is brought forward by the movements of the player in the geographical room, as well as through her interaction with the story-carrying objects.

The knowledge about specific objects can be the foundation for the player's personal choice and strategy to be able to successfully get through the game.

Instead of being a stretch of events taking place, one after the other, like in the Greek adventure novel whose chronotope Bachtin describes, where a writer steers the character which the reader identifies with, it is the player that steers the character toward a goal which wholly or partially answers to the player's own goals or curiosity.

Usually there is a coherent chronotope in a story driven computer game, even if it in its turn is divided into different environments, in which it is different from fantasy literature, which it is normally thematically close to. As Maria Niklajeva writes in *The Magic Code*, in fantasy novels there are usually two chronotopes that exist parallel to each other; on the one hand the daily life of the main character, and on the other hand the fantastic world to which they are taken through a magical passage of some form.[61]

Also in games where there are side-stories in other geographical places in the game world, other than where the main action takes place, they take place in a world that follows the same rules. This is the case in *Final Fantasy VIII* where the player during the main character Squall's fainting attack instead controls Laguna Loire and his friends in another geographical place.[62]

To make a complete description of the typical story driven computer game's chronotope is not possible because of the wide definition I have chosen to use for the story driven computer game. But it is possible though to make a distinction of the characteristics typical for the genre:

- *The player's movements through space and story are governed by conditions.* The player character has lesser or greater freedom to move within the geography. The freedom of movement is limited partly by how the geography is constructed, that is, how many parts of the world are available at the same time, and partly by possible conditions which govern if the player may move on in the geography, and therefore also in the story.
- *It is only the time axis which consists of the sequences of experienced narrative elements that is relevant.* The played time and the time in the game are relatively irrelevant as steering factors when it comes to the players object's movements through the room and through the narrative elements that together shape the overall story, possible side-stories and independent stories. As an example of this relative irrelevance *Shenmue* and *Shenmue II* could be mentioned.[63] In them time based on day and night goes by regardless of if the player moves the player character or not, but the overall quest has to be carried out before summer according to the calendar of the game (the games starts in February).

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[61] Maria Nikolajeva, *The Magic Code* (1988 Göteborg, Almqvist & Wiksell International)
[62] *Final Fantasy VIII*, Square Co. Ltd., Square Europe Ltd., Playstation, CD-ROM, 1999
[63] *Shenmue*, AM2 of CRI, CRI, Sega Corporation, Dreamcast, CD-ROM för PAL E, 1999, 2000
Shenmue II, AM2 of CRI, CRI, Sega Corporation, Dreamcast, CD-ROM för PAL E, 2001

3.4 How the discourse, the chronological order of the story sequence, emerges simultaneously with the player's actions.

The internal sequential order, as the player experiences the parts of the narrative, emerges simultaneously with the player's movements through the game. This experienced order I will be calling *discourse.* The discourse is only complete after the game is finished, and thereby the story which has been unravelled or created, depending on the nature of the game.

When Anna Gunder discusses the hyper textual work *Afternoon* by Michael Joyce she uses the term discourse to signify the narrated sequential order of events.[64] She has in her turn taken the term from Seymour Chatman.[65] This as a contrast to the overall story, that is, the actual events, possibly in chronological order. As the subject of the study is a hypertext where the text is read on a screen, the representation of the narrative elements differ from story driven games (except those that are text based) I would like to point out that when I use the term, the narrated (told) sequential order also includes other narrated elements than those that are typographically expressed, in writing on the screen.

When Gérard Genette uses the word narrative he means "the signifier, statement, discourse or narrative text itself".[66] The French word that he uses for narrative is *récit* and is the equivalent of what Rimmon-Kenan calls *text.*[67] Only a few story driven computer games contain a discourse in the form of typographical text, a narrative about travel, which emerges one step behind the player.

Gunder further divides the discourse into real discourse and omni discourse:

> [...]*omni discourse* and *real discourse*, where the omni discourse are all fields of content with links and barrier conditions and thereby generates all kinds of discourses. The real discourse is the discourse of the separate reading, that is, a choice of fields of content which is organised in a certain order depending on links, barrier conditions and the reader's choice.[68]

The omni discourse would, if one applied the same terminology onto a story driven computer game, correspond partly to the parts of the game's programmed framework that govern the causal connections and partly by the story-carrying object's features and contents. In the example of *Afternoon* the framework consists of the programme *Storyspace* that has been used as a narrator's tool and as an interface to make the work available to the reader.[69]

Sometimes parts of this discourse are manifested by, for the means, specific functions. In some story driven computer games information about the experienced narrative elements are stored in a chronological order in the form of typographical text. The picture below is fetched from *Planescape Torment,* on the fourth day in played time.[70]

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[64] Anna Gunder: "Berättelsens spel. Berättarteknik och ergodicitet i Michael Joyces afternoon, a story", *Human IT 3/1999.* URL: http://www.hb.se/bhs/ith/3-99/ag.htm
[65] Seymour Chatman, *Story and Discourse* (Ithaka & London, 1989)
[66] Gérard Genette, *Narrative Discourse – an Essay in Method,* transl. Jane E. Lewin (New York 1983) p.27 The text was first published in French, then as a part of, "Discours du récit", in the work *Figures III*, Editions du Seuil 1972.
[67] Rimmon-Kenan, p. 3.
[68] Gunder, part 3. "Historia och diskurs i *afternoon*"
[69] The programme *Storyspace* was developed and distributed by Eastgate Systems Inc. and is available on the following URL: http://www.eastgate.com/Storyspace.html.
[70] *Planescape Torment*, Black Isle, Interplay Productions, 1999, PC CD-ROM

Day 2 : I met a diseased storyteller in the Hive, a foul-smelling man by the name of "Reekwind." When I spoke to him, he warned me of the danger of names, saying that when you carry a name, that it somehow allows you to be tracked, seen... hunted. For some reason, that thought chilled me. Is that *why* I'm nameless?

Day 3 : I spoke with a Vermin Control Inspector in the Hive, Phineas T. Lort, who said he was paying bounties on all cranium rat tails delivered to his office, at a rate of one copper per tail. I suppose a little copper is better than none at all... maybe if I bring enough rat tails to him, I can squeeze him for a better rate.

Day 4 : I returned with the three rings and handed them over to Rauk. A simple task for a simple person.

Day 4 : Is there anyone Krystall doesn't want dead? Now I'm to look for a vigilante named Blackrose and eliminate him as well. She has promised me coin and friendship for this task.

3.5   The invisible narrator and the visible player character

In most story driven graphical computer games the player can control one or several characters visible on the screen. This is usually called third person perspective as a distinction from first person perspective, which is mostly used in first person shooter games. In the first person perspective most often only the tip of the weapon, that the player character is holding, is visible. What the player's eyes can see on the screen is literally the same view that the player character has. When it comes to addressing the player using spoken or written language, the second person perspective is not commonly used in computer based story driven games, but it is common in live action role playing where the game master usually addresses the participants in second person ("You feel something slippery crawl up you neck")[71] As in many other cases this is only a general observation; in the game *Morrowind* the player is addressed in second person in the beginning.[72]

In this text I use the words player and player character to distinguish between the entity, which is the players representation in the game, and the player himself or herself.

3.5.1 The player character

In a story driven computer game the graphical representation of the player character/s is one or several characters that the player controls with some kind of input unit. The player character is, besides being a graphic representation, also the entity containing information about the players position in the game, both the geographical and the current point in a possibly chronologically ordered overall story. The player character also carries the state

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[71] According to Martin Ericsson, an experienced leader of live role playing.
[72] *Morrowind - Elder Scrolls 3*, UbiSoft, Bethesda Softworks LLC, 2002, PC CD-ROM

created by the player's previous actions and movements, as well as actions not carried out and actions conducted by other objects in the game which concerns it. This variable state forms the status of the player character, and depending on the game's other mechanisms and rules, it governs what the player can and cannot do, and how it can be done. For example a player character's strength can decide how much it can carry in the form of weapons, armour, water, magic potions or food while its intelligence level can be decisive for what kind of questions can be put to the other characters in the game.[73] Depending on how the code level is constituted the actual constitution of the player entity varies. When I call the alter ego of the player a player character I assume that it has a fairly object oriented constitution. But even if the underlying code layer is constituted in another way there is always some kind of storage of the data that contains the information about the player's position and other variable states.

3.5.2 The implied creator

While the player character usually is graphically represented on the screen, and thereby fully visible in a story driven computer game, the narrator on the other hand is usually invisible. Exceptions occur of course, for example in *Riven* where, in the introduction, a graphically represented elderly man explains the background story.[74] This type of introduction is relatively common; that either a voice or a text briefly describes the circumstances in the game-world and the quest of the player. After the introduction, when the actual game-playing can start, it is unusual that there is a graphically represented narrator. Obviously there is still a sender, even though it is an implied one. In *The Rethoric of Fiction,* Wayne C. Booth describes the concept of an *implied author*, the author's second self; the consciousness governing the norms of the work and shapes its wholeness.[75] In story driven games there is seldom only one person who originates the work, but more often a group of specialised people who all put a personal touch to that part of the game-production, which they are responsible for. If there is previously developed technology used in the development of the game bought by another party this also leaves its mark. It is the synthesis of these mutual efforts that constitute the implied sender, or creator, of a game.

It is this implied creator who, in the form of an invisible narrator, gives the player information that is not possible to bring forth in any another way. In the story driven games that Jonas Carlquist has analysed he identifies an invisible all-knowing third person narrator:

> But there is also a more all-knowing third-person narrator who has knowledge about all the characters inner feelings and features. This narrator is usually invisible but shows himself in certain sequences of the game. When the reader character gets stuck in an ambush it is this narrator that tells the reader that one has been attacked on the road (both in F2 and BG). The all-knowing narrator also works as a game-leader, that is, he who throws the dice, informs when some NPC fumbles with the gun and shoots itself in the leg (F2), decides if broken arrows hit the target or not (BG), if one escapes a magic spell or not (PT) etc. It is also the narrator that retells the reader characters dreams (BG), gives him his memories back (PT), and is responsible for the main intrigue. The video sequences that the reader cannot control also have to stem from this narrator.[76]

As Carlquist states it is also this invisible narrator who has picked out the alternatives of dialogue that the player has a choice between, when he or she has a conversation with an NPC, for example in *Planescape Torment*.

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[73] This is the case in *Planescape Torment*, Black Isle, Interplay Productions, 1999, PC CD-ROM
[74] Riven, Cyan, Ubisoft, PC, CD-ROM, 1997
[75] Wayne C. Booth, The Rethoric of Fiction (Chicago 1961), s. 67 - 76.
[76] Carlquist, part "Berättaren" (Translates: "The Narrator") Translation from Swedish: Suzan Olsson

In the screendump below I, as a player, have chosen to greet the character writing in the big book with the word "Greetings". In the same picture we can also see how the invisible narrator relays information that is not given by any of the other mechanisms in the game, for example that the character in the focus of the player's view coughs and has wrinkled skin. The border between what is told by the invisible narrator and what is told by the implied creator is fluid, because it is a matter of interpretation whether for example the available dialogue alternatives originate from the implied narrator or from the invisible narrator, while the information about the coughs of the NPC more clearly originates from the invisible narrator. Despite this fluid border we can establish the fact that both entities do exist.

Screendump from *Planescape Torment*

In a later game, *Baldurs Gate - Dark Alliance,* from the same developer, Black Isle, this type of descriptions mentioned does not occur, instead it is possible to zoom in on specific objects and the sounds are implemented. [77]

In *Story and Discourse,* Seymour Chatman states that the implied author is the equivalent of the implied reader:

> The counterpart of the implied author is the implied reader – not the flesh-and-bones you or I sitting in our living rooms reading the book, but the audience presupposed by the narrative itself. Like the implied author the implied reader is always present. [78]

Chatman uses the following diagram to show the whole narrative situation of communication.

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[77] *Baldurs Gate: Dark Alliance,* Snowblind Studios, Black Isle Studios, Interplay Entertainment, Playstation 2, DVD-ROM,2001

[78] Seymour Chatman, *Story and Discourse – Narrative Structure in Fiction and Film* (1978 Ithaka and London) p. 149-150
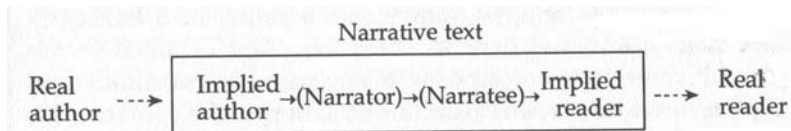
The picture is copied from Story and Discourse by Seymour Chatman (1978 Ithaka and London) p. 151

3.5.3 The implied player

Just as a literary work has an assumed implied reader, each game has an assumed implicit player. The greater the freedom an implied player has in a game the less predictable the real players' reactions and actions are within the game. In game productions the development team work for the implied player, but most often, at some stage of the production, they have to bring in a group of real players, as a test-group, to compare their way of playing with the playing the development team has assumed. That knowledge is at best used in the continued production work.

3.5.4 The communication structure in the story driven game

In *Cybertext,* Aarseth studies the discourse and the communication structure of a text-based adventure game, *Deadline.*[79] The perspective is a comparative one and Aarseth studies which planes of discourse there are in a traditional text, in a hypertext and in an adventure game. In a traditional text, or as Aarseth puts it, in a narrative, the discourse consists of a plane where the events take place and also of a plane of progression, which contains the order in which the events are revealed to the implied reader. In this case the planes are identical; the steps of reading follows the sequence of events. In a hypertext these two planes are separated since the reader actively must discover and create meaning in the plane where the events take place. In adventure games the relation between the plane where the events take place and the plane of progression are defined by a third plane; the negotiation plane, where the intriguee confronts the intrigue to accomplish a desired revealing of the events. Aarseth exemplifies this negotiation by showing a dialogue between the player and the voice the player communicates with in the text-based adventure game *Deadline.* The player navigates through the game by making text inputs to communicate with the voice that in turn allows movement in the geography.
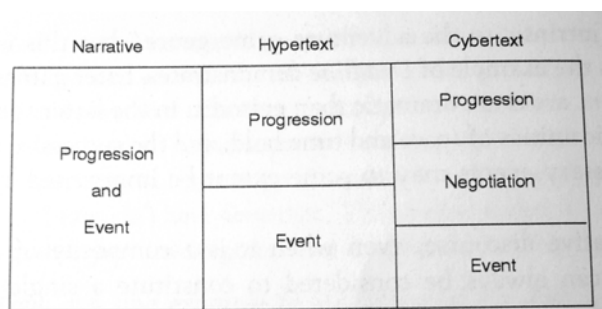
Picture from *Cybertext* by Espen Aarseth, p. 126

The terms intrigue and the intriguee, which are used above, are defined by Aarseth in the section "Intrigue, Intrigant, Intriguee".[80] He suggests the term *intrigue* as more adequate than the term *plot* when discussing a cybertext:

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[79] Aarseth, "Intrigue and Discourse" p. 124 – 127. When Aarseth uses the term discourse he does so in accordance with Chatman's description of it.
[80] Aarseth, p. 111- 114.

Instead of a narrated plot, cybertext produces a sequence of oscilliating activities affectuated (but certainly not controlled) by the user. But there is nevertheless a structuring element in these texts, which in some way does the controlling or at least motivates it. As a new term for this element I propose *intrigue* to suggest a secret plot in which the user is the innocent, but voluntary, target […] with an outcome which is not yet decided – or rather with several possible outcomes that depend on various factors, such as the cleverness of the player.[81]

To designate the user, or player, he suggests the term *intriguee,* the intrigued, which is parallel to the term *narratee* (se picture above by Chatman).[82] As an equivalence to the term narrator, or rather, the implied author, Aarseth suggests the concept *intrigant*; "[...] the mastermind who is ultimately responsible for events and existents but who is not motivated by a particular outcome."[83]
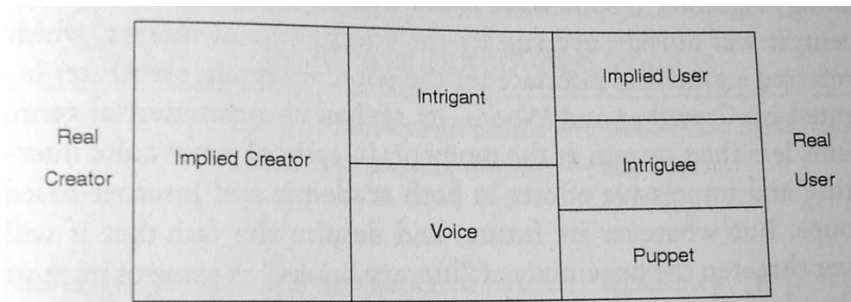
Picture from *Cybertext* by Espen Aarseth, p. 127

Aarseth sees the three-armed structure of the cybertext's discourse that he sketched, as corresponding to the three levels for the users position in the text based adventure game. He makes a model of the communication structure and explains what distinguishes the implied creator from the implied author:

> Unlike the implied author of narratives, the implied creator or programmer is not the instigator of a finite train of events but someone who must expect the production of unintentional signifiers [...][84]

The intrigant in Aarseths model is neither author nor narrator but rather a direct opponent who more inhabits than transcends the game. [85] The voice, or voices, he refers to originate from other entities than the intrigant.

   As we can see in the third part of the model there is a marionette, or a puppet, that Aarseth describes as an empty body:

> [..]The puppet is not a character or a narratee but an empty body, a contested ground zero of both the discourse and the intrigue. And the intriguee, like the intrigant, represents an immanent position but one that must be (re)constructed by the implied user and not by the voice of the event narrator. The implied user, on the other hand, is both responsible for the action and the game's outcome […][86]

Aarseth wrote *Cybertext* 1997, and the material for his analysis is text based adventure games. Since then the story driven games have developed, and the equivalence to the empty body is seldom empty. It is unclear if when writing about this "ground zero of both the discourse and

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[81] Aarseth, p. 112.
[82] Aarseth, p.113.
[83] Aarseth, p. 114.
[84] Aarseth, p 127.
[85] Aarseth. p. 114. " The intrigant is neither implied author nor narrator but an immanent adversary who inhabits rather than transcends the game."
[86] Aarseth, p 127.

the intrigue" means that the emptiness of the marionette is a basic state throughout the whole game, or if it is, as the player character I previously described, becomes a container for a changeable state, which is dependent on the previously experienced discourse. The state is the implementation of the collected data contained by the object.

A general model of the communication structure in a story driven computer game could have the following appearance:

The story driven computer game				
Group of game developers	Implied creator	(Story- teller, seldom graphically represented)	Player character (most often graphically represented)	Implied player	Real player
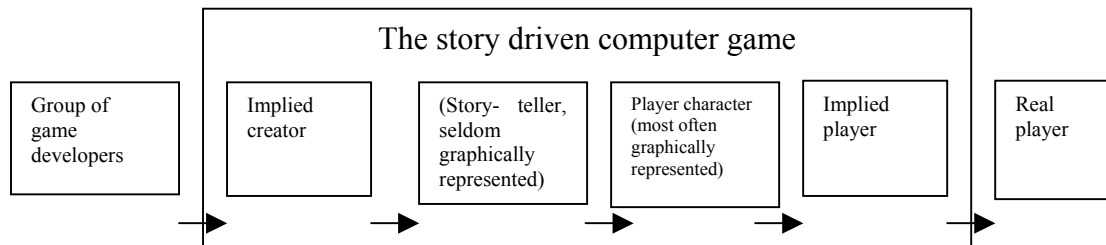
In the model above the absence of brackets enclosing *player character* hints that it always exists, however it does not always has a visual graphical representation on the screen. The brackets enclosing *narrator* signals that this does not always exist. As for the previously mentioned game *Baldurs Gate: Dark Alliance* there are no signs of even an invisible narrator. In many games there are more simultaneous player characters than one. When analysing such a game the choice of which object to define as the player character in a communication structure, which involves the teller of the overall story, is therefore dependent on the perspective of the analysis. The model above concentrates on the relation between the creators of the game and one player. A model also including other players in multi-player environments would be more extensive.

In the case where structuralistic concepts are the tools for an analysis, where the player and the player character are seen as actants, it is plausible to assume that the player character constitutes the subject. See further discussion in section 5.3.2.2.

4 The Complex of Problems Regarding Casual Relations in Story Driven Games

In the introduction I wrote that the worst thing that can happen when playing a computer game is to come to a dead end. A common experience of playing story driven games is to move through a complex environment just to realize that a quest can not be carried out, or that a goal is impossible to reach. To progress one needs to load a previously saved game state and try other paths and chronologies of actions through the narrative. This is a typical unforeseen side effect caused by that the player moving through a sequence of events in a way which is different from what the game designers have assumed.

Similar problems and their effects exist within the area of software development. In "Causal Normalisation: A Methodology for Coherent Story Logic Design in Computer Role-Playing Games" Craig A Lindley and I examine the story logics in a simple and stereotypical game quest. [87] In the same paper we propose a design methodology for story logics, referred to as Causal Normalisation, which minimizes some forms of casual functional dependencies and therefore eliminates some unintentional forms of causal coupling. This can reduce the type of dead ends in play which lead to the player perceiving the game as badly designed. It is possible however that causal normalisation is not enough. As an extension of the principle of minimal coupling we propose an object orientated approach to story logic and relate this to principles for normalization and game architecture. Section 4.1 with sub headings which are referred to below is though mainly authored by Craig A Lindley and gives a historic overview of problem solving in software development.

A big part if the text which is authored when creating a computer game consists of program code.
 In order to design narratives for computer games, and in order to analyze narrative in computer games, understanding the mechanisms which makes narration possible in them is necessary. These mechanisms exists within the code level.
 Software developers wrestle with the same types of problems concerning logic couplings as theorists active within the area of semiotics and structuralism. Although, these methods for problem solving are practiced daily by hundreds of thousands of developers, which is not the case within semiotics and structuralism.
 There is much to learn from the methods which have been developed for problem solving within computing science. It is therefore necessary to, at least in short, describe how problem solving have developed in software engineering.

As earlier stated can side effects analog to the casual problems in story driven games be observed within the area of traditional software development. One then refer to data coupling and control coupling in database design. This in relation to unnormalised relations and in design of knowledge bases, in the form of unnormalised relations truth function dependencies between declarative rules.
 In all cases good design is about minimizing functional dependencies and thereby coupled relations between different parts of the structures of the system and deriving system design from minimized relations of dependencies.

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[87] Craig Lindley and Mirjam Eladhari, "Causal Normalisation: A Methodology for Coherent Story Logic Design in Computer Role-Playing Games", *Third International Conference on Computers and Games*, 25-27 July 2002, Edmonton, Canada.

4.1 Coupling, Dependency, and Normalisation in Software Engineering – Problem Solving in Software Development

The analysis of dependencies underlies methodologies for system development within a variety of programming and development paradigms. This includes:

- structured development (analysis and design) for procedural software systems[88]
- normalisation of relational database systems[89]
- normalisation of rule-based knowledge systems[90]
- object-oriented software development methodologies[91]

This section as a historic overview of how problem solving concerning causal relations in software development have developed form the seventies to the nineties.

4.1.1 Structured Development

Structured development for software systems is based upon an analysis of the data flow relationships within an application, as captured by hierarchical data flow diagrams.[92] A data flow diagram is a representation of the data within a system, and how data flows between different transforming processes. Structured software development methodology has traditionally used DFDs to represent data flow as part of the analysis of a system, and the resulting DFDs have then been used as a basis for hierarchically defining program modules. In developing this approach, Yourdon and Constantine (1979) articulate the concept of *coupling*, as the degree to which one functional module of a system must know about another, which then amounts to the likelihood that modifications to one module will effect the operation of another in some way. Coupling can be further classified into *data* coupling and *control* coupling, where data coupling involves a data dependency between modules (modifying a data value in one module changes the data outputs of another), and control coupling involves a control dependency (the behaviour of one module influences the control sequencing of another). A good structured design amounts to creating system with a minimum of coupling between modules, so that future modifications to a module will have a minimum impact upon the operation of the rest of the system. Structured analysis and design techniques focus on data flow relationships, and seek to minimize data functional dependencies between modules by defining systems having a structure that reflects data dependency.

4.1.2 Normalisation of Relational Database Systems

Database normalisation involves constructing relations for relational databases that reflect the functional dependencies within the data domains. A functional relation from a domain A to a domain B means that a value within domain A uniquely determines a value within domain B;

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[88] E. Yourdon and L. L. Constantine, *Structured Design: Fundamentals of a Discipline of Computer Program and System Design*, Prentice-Hall 1979.

[89] E. F. Codd "A Relational Model of Data for Large Shared Data Banks", Comm. ACM 13 (6), June 1970, p. 377-387.

"Normalized Data Base Structure: A Brief Tutorial", ACM SIGFIDET Workshop on Data Description, Access, and Control, Nov. 11-12, 1971, San Diego, California, E.F. Codd and A.L. Dean (eds.).

"Further Normalization of the Data Base Relational Model", R. Rustin (ed.), Data Base Systems (Courant Computer Science Symposia 6), Prentice-Hall, 1972. Also IBM Research Report RJ909.

C. J. Date, *An Introduction to Database Systems* (third edition), Addison-Wesley 1981.

[90] J. K. Debenham, *Knowledge Systems Design*, Prentice Hall Advances in Computer Science Series. 1989.

Knowledge Engineering: Unifying Knowledge Base and Database Design, Springer-Verlag 1998

[91] Booch G, *Object-Oriented Analysis And Design With Applications*, 2nd Ed. Benjamin Cummings, 1994.

[92] Data flow diagrams are abbreviated DFD. See further:

T. De Marco, *Structured Analysis and Systems Specifications*, Yourdon Inc. 1978

C. Gane and T. Sarson , *Structured Systems Analysis*, Prentice-Hall 1979.

values within domain B can have more than one determinant in A, but each value in A has only one dependent value in B. Database normalisation is a process of eliminating redundancy and inconsistent dependencies within relational database designs by following the patterns of functional dependency within the data domains (see Date, 1981). This can be seen to be a very similar process to the minimisation of coupling in structured analysis and design (or identical at an abstract level), the difference being that in pure database systems, values are explicitly represented rather than being calculated dynamically.

4.1.3 Normalisation of Rule-based Knowledge Systems

Normalisation theory is extended into rule base systems by Debenham (1989, 1998), in this case dealing with the same or similar kinds of functional dependencies, expressed in terms of abstract declarative relations, as well as database tuples. These dependencies are truth-functional dependencies, and normalisation amounts to the minimisation of truth-functional coupling. These dependencies can be relations between statements or between predicates (the meaning of a statement). By knowing one truth one can deduce another truth. For example, if Paul is in the boat he is not swimming in the water. The fact that Paul can't be at two places at once is a rule that we know. A practical example that explains this procedure by separating repetitive subgroups of premises into distinct rules, analogously with Codd's first normal form for database systems, is presented in "Causal Normalisation: A Methodology for Coherent Story Logic Design in Computer Role-Playing Games", pages 5 and 6.
 In brief; normalisation of truth-functional dependencies is about minimizing truth-functional couplings.

4.1.4 Object-oriented Software Development Methodologies

Object-oriented software development methodologies (see Booch, 1994) have superceded many of the earlier methodologies, as a more coherent and universal method of addressing the standing issues of minimizing modular coupling and providing a principled approach to system development. Object-based approaches provide a consistent methodology through all phases of software development, since objects identified during analysis may provide the foundation for objects in the design and implementation of systems.
 An object encapsulates both data and control, and provides what should be well-defined interfaces through which other modules can use their functionality. Object-based systems typically also use the concept of inheritance, allowing system constructs to be defined as classes at various levels of abstraction, with lower level constructs inheriting features, data, and/or functions (methods) from higher abstraction levels. An object is then an instance of a class, having it's own internal data (state information), and interfaces defined as methods by which other objects can interact with it. Ideally, a system composed of a set of interacting objects has minimal control and data coupling between its elements.

4.2 A Sterotypical Quest

In the following sections a simple example of a stereotypical quest is presented, together with two undesirable results. The same example was used in the paper *Causal Normalization.* The example is made up, but is based upon two cases of false causal relations. One is from *Konung – Legends of the North,* where the player character after having freed a boy from captivity gets the quest to liberate him. Since this liberation is already performed it is not

possible to move forward in the game. [93] The other case is from *Icewind Dale* where the player character finds an empty lair.[94] After that the player character has received the quest of finding and killing a creature. The player assumes that the lair continues to be empty, but it becomes obvious later that the game has been programmed so that the creature only is present in the lair after that the player character has received the quest.

Here we consider the extent to which problems in story logic can be attributed to design characteristics that can be analysed in software engineering terms, ie. in terms of dependency relationships among story elements. We present a semi-formalised representation of the causal relationships involved in the quest and the problematic situations. We then review the concepts of coupling, functional dependency, and normalisation theory as they have been used in the history of software engineering methodologies, and explore the applicability of these concepts to story logics. A number of principles for normal forms for story logics are presented. We also consider the applicability of object-oriented concepts to storytelling, and what this means in terms of system architectures for games.

The game logic in story driven games runs on a scale form a strong narrative experience at one extreme (much narrative and little playing) to strong playing experience at the other extreme (only playing and no story). Games oriented to narrative can be branching narratives based on a hyper textual model (se picture in section 5.3.2.1, this thesis) while strong playing experiences often include very abstract games without story at all, such as traditional puzzle games. Problems in the game logic of the type discussed here lay in intermediate forms, where the game designer wishes to incorporate a specific series of points of intrigue in order to create a specific narrative structure where players are given a high degree of freedom in the interaction, especially in relation to exploring the landscape in the game world.

A common strategy for imposing a specific story sequence within a highly interactive game is to make progress in the game conditional upon completing a specific sequence of actions or plot points. This is where design problems may arise. Consider, for example, the following clichéd scenario. The player plays the part of a fantasy protagonist (the player character) moving through a medieval world inhabited by various helpful or enemy non-player characters (NPCs). The designers have created a quest: an ailing wizard will give the player character a key to an underground cave system in return for killing an old enemy dragon that the wizard has failed to destroy in time before his own death, and which therefore now threatens the local town. This is programmed into the game. However, as a function of the virtual geography of the game, the player character's interactive possibilities for traversing this geography, and the way the quest is imposed upon the player character, several story outcomes are possible. First, the outcome intended by the designers:

1.
   - The player character meets the wizard and is given the quest.
   - The player character follows the wizard's instructions, finds, battles and defeats the dragon, returns its head to the wizard, and is rewarded with the key.
   - The player character can now continue in the game by seeking and entering the underground cave system to further her higher level quest.

As a simple example of a design problem, however, we consider the case when the player character has enough freedom in the environment to go to the dragon's lair before going to the

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[93] *Konung – Legends of the North*, Infinite Loop, PAN Interactive Publishing, PC, CD-ROM, 2000.
[94] *IceWind Dale*, Black Isle, Interplay Productions, PC, CD-ROM, 2000.

wizard's lair. This occurs in part due to the game designers attempts to simulate a world, since one solution for the dependency problem (generally undesirable for players) is to restrict freedom of movement in the world to enforce the required sequence of events. One design solution for imposing the intended story without restricting freedom of movement is to not instantiate the dragon until the wizard has been encountered. This leads to the following possible outcome:

2.
- The player character goes into an empty lair (no dragon yet).
- The player character goes on to receive the wizard's instructions.
- The player character is now looking for a dragon in a lair, but does not go back to the lair because it was previously found to be empty. The player character searches through all reachable but previously unexplored parts of the terrain. No dragon is found.
- Either the player character must revisit all previously visited areas of the map just in case one of them was the lair which is now by chance inhabited, or will give up, having no options to go anywhere new, and the player not understanding why the dragon is not to be found.

To avoid this, designers allow the dragon to be in its lair before the player character visits the wizard, leading to another possible outcome:

3.
- The player character goes into the dragon's lair, battles and defeats the dragon.
- The player character then goes on to meet the wizard and is given the quest.
- However, the quest cannot be completed, because the dragon no longer exists.
- The player must reload a game state prior to the point of defeating the dragon, and go through the battle again, this time after visiting the wizard. If no suitable state has been saved, the player must restart the game, or stop playing.

Of course, there are solutions that avoid these outcomes. For example, to avoid outcome 2, the wizard can explain where the lair is, and the designers can hope that this can be related to the player's memory of the lair if it has already been visited. This can however detract from the fun element of finding the lair as part of the quest, and also raises the question of why the player didn't run into the dragon along the long and winding route from the lair to the wizard. The solution violates the expected existential logic of the world for the sake of a specific story sequence.

Outcome 3 can be avoided by having the wizard reward the player's action of killing the dragon even though the action was performed before the player was instructed to do it, so it is no longer necessarily a quest. This is a matter of weakening the imposition of the designer's desired story sequence, for the sake of a more plausible simulation of a world.

While these solutions are possible, they and the situation leading to them raise the question of whether there is a more general and coherent method for understanding and resolving this kind of problem in story logic.

4.3 Causal Modelling for Game Logics

The story example above can be represented in the following way. We use the notation:

$\qquad$ E1(P meets W and receives Q) -> E2(P goes to L)

to represent a causal relationship, where:

$\qquad$ E1 and E2 denote events 1 and 2, respectively
$\qquad$ P refers to the player character
$\qquad$ W refers to the wizard
$\qquad$ Q refers to the quest instruction
$\qquad$ L refers to the dragon's lair
$\qquad$ -> is a causal relationship, where the event(s) on the left hand side of the arrow causes the event on the right hand side of the arrow.

We have not completely formalised this notation, nor adopted an existing causal logic, but Lindley and I find this level of formalisation sufficient for the analysis presented here, ie. as a tool for the analysis of patterns of causal dependency.

Using this notation, we present outcome 1 above in terms of the following sequence of causal dependencies desired by the game designers.

Sequence 1:
$\qquad$ E1(P meets W and receives Q)
$\qquad$ -> E2(P goes to L) $\qquad\qquad$ where L denotes the dragon's lair
$\qquad$ -> E3(P meets D) $\qquad\qquad\quad$ where D denotes the dragon
$\qquad$ -> E4(P defeats D)
$\qquad$ -> E5(P returns victoriously to W)
$\qquad$ -> E6(P receives R) $\qquad\qquad$ where R denotes the reward

A crucial issue in game design is whether or not to impose these kinds of causal relationships as rules that the player must obey. This becomes very complex, since a decision to impose causal rules raises the need for desirable formal properties, such as soundness, completeness, decidability and consistency. [95] The undesirable outcomes 2 and 3 above result from the lack of these properties for the causal system expressed in Sequence 1. For instance, the system is incomplete in the sense that E2 can be true without being derived from (or caused by) E1. The presence of the player character as an active causal agent in the game world, and the function of that world as a simulation, make it impossible to formalise all possible simulated causal relationships in that world, so a formal approach to proving desirable behaviour is generally not feasible.

Examining outcome 2 above, in which the user encounters the lair without the dragon prior to encountering the wizard, we find the causal sequence:

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[95] The quality of being valid is that all derivable things are true.
Provability is that it must be possible to reach a conclusion regarding a proposition from a serie of axioms and inference rules.
Completeness is that all propositions implied by a series of axioms are possible to conclude from them by the given rules of inference.
Consistency is that contradictory premises cannot be derived.
See further:
R. A. Frost *Introduction to Knowledge Base Systems*, MacMillan 1986.

Sequence 2:
    E2
    - > E1
    - > confusion!

Outcome 3 involves the sequence:

Sequence 3:
    E2
    - > E3
    - > E4
    - > E1
    - > E2
    - > E5
    - > dead end!

Since these problems arise from undesirable patterns of causal dependency, it may be feasible to apply systematic methods from software engineering practice, based upon dependency analysis, as an aid to story logic design.

4.4 Causal Normalisation For Games

Examination of sequence 1 together with outcome sequences 2 and 3 shows that these outcomes result from dependent and independent relationships that are not clearly represented in Sequence 1. In particular, outcome 2 results from a dependency between E1 and E3. That is, the player can only meet the dragon if she has first encountered the wizard. Outcome 3 results from a dependency between E4, E5 and E1; the player can only return to the wizard after killing the dragon and receive a reward if the wizard has been visited before the dragon was killed. In both cases, the ability to enter the sequence at E2 undermines the intended story logic.

This kind of causal influence resembles control and data coupling phenomena in software engineering, and unnormalised relationships in databases and rule base systems. In all cases, there are dependencies that cut across the intended, explicit, or modelled dependencies of the system. For story logics we can refer to this as *causal coupling*, informally understood as a causal relationship that is excluded from a high level causal model of the story logic. If causal coupling is ignored, sequence 1 could be represented by a sequence of separate causal steps, as follows.

Sequence 4:

E1(P meets W and receives Q)	->	E2(P goes to L)
E2(P goes to L)	->	E3(P meets D)
E3(P meets D)	->	E4(P defeats D)
E4(P defeats D)	->	E5(P returns victoriously to W)
E5(P returns victoriously to W)	->	E6(P receives R)

If each step is treated as a causal rule within the system, then the occurrence of a cause event must be followed by the occurrence of an effect event. This allows sequence 1 to be sidestepped to different degrees. For instance, the player might remotely defeat the dragon by magical or other indirect means, without ever having met either the wizard or the dragon.

Then E4 is satisfied, and by the steps E4 -> E5 and E5 -> E6, the player receives the reward from the wizard.

If the designers wish to impose the strategies that lead to outcomes 2 and 3, we can explicitly represent what were the hidden dependencies between E1, E3, and E5 in sequence 1 by modifying the causal steps of sequence 4 as follows :

Sequence 5:
E1(P meets W and receives Q)   -> E2(P goes to L
E1(P meets W and receives Q) and E2(P goes to L)   -> E3(P meets D)
E3(P meets D)   -> E4(P defeats D)
E1(P meets W and receives Q) and E4(P defeats D)   ->E5(P returns victoriously to W)
E5(P returns victoriously to W)   -> E6(P receives R)

Now it is possible to see that the causal relations expressed within the second rule include a hidden relation within the causes analogous to that addressed by Boyce-Codd Normal Form (BCNF) in database theory (see Date, 1981). This is because E3 is caused by E1 and E2, while E2 is an effect of E1. The hidden dependency creates precisely the kind of anomaly observed in outcome 2, that if E2 occurs without E1, there is no specified outcome. Similarly in rule 4, if E4 occurs without E1, there is no specified outcome, although in this case there are no dependencies between E1 and E4.

Modelling the previously hidden dependencies clarifies the existence of undesirable game states. It can also be asked if there is a methodology analogous to normalisation that can be applied to causal models of this kind that might prevent or help to prevent these anomalies from occurring. Applying the principle of BCNF to the second causal step of sequence 2, we could break it down into the first two separate steps of sequence 4:

E1(P meets W and receives Q)   ->   E2(P goes to L)
E2(P goes to L)   ->   E3(P meets D)

These relationships are normalised in a form analogous to BCNF, eliminating interdependencies between the causes within a single relationship. Now we are back in the situation of no longer imposing the logic that leads to our earlier outcome 2. It appears that the imposition of a desired story sequence creates the unnormalised story structure responsible for the undesirable outcome.

This analysis suggests that it may be possible to define a general set of normal forms for the causal relationships in story logics. Assuming a representation of causal relationships that links a set of causes to a specific effect, such normal forms for story logics should at least:

-   extract recurrent subsets of causes representing independent events as separate cause-event relations (an analog of Codd's first normal form for relational databases)
-   eliminate irrelevant causes from cause sets (an analog of Codd's second normal form)
-   separate multiple effects of a common set of causes into multiple relations, one for each effect (an analog of Codd's fourth and fifth normal forms)
-   eliminate interdependencies between causes within any single relation (an analog of BCNF)

Developing these ideas into a more precise, extensive, and formalised list of normal forms for causal relations was beyond the scope of the paper, and is also beyond the scope of this thesis. Such a task will depend upon settling upon a specific representation for story logics. This would require a more detailed causal or temporal logic and from the game developers point of view something more simple is necessary.

Story logic is in general not complex enough to justify a complete causal logic, and narrative structures are often sparse in relation to the size of the game world and the overall cognitive density of the game experience. Also, while rule two in sequence 5 seems to be a normalisation problem, rule 4 in sequence 5 doesn't seem to be a problem of the same kind. In this case there is a straight forward stipulation that the player cannot have the reward without visiting the wizard *before* the dragon is killed. This can be the designer's interpretation of the personality of the wizard. Alternatively we can seek a better method for minimizing complex chains of dependencies in order to achieve a more flexible game play.

4.5 Object Oriented Story Construction and minimizing casual couplings

For story logics within highly interactive game worlds, the concept of normalisation is not as clear as, for example, the case of database systems. Database normalization theory derives from the relational formalisation of database functionality. Relational databases are designed in accordance with this model, so the abstract method has a deep relation to the operational semantics of a relational database. In a typical game world, on the other hand, an abstract story logic has a more ambiguous relation to the overall semantics in the world. To use a normalization method for the story logic in a computer game demands a mapping from a representation that is suitable to normalize to the semantics of the representation in terms of the simulated events and the players experience in the game world. What is needed is therefore a mapping between different levels of interpretation of the game. In a story driven computer game there are three levels that internally constitute text layers and structures. These, the code layer, the story layer and the discourse layer, are briefly presented above in section 3.1.3. How these can be constituted in a story driven game with an object oriented narrative structure is described below in section 5.2.

Under these circumstances, given a game engine and a framework constituting the code layer, the story level can be of primary interest for the persons responsible for the game design, thus having the overall responsibility for the players experience of the game. Game designers can control the level of data which through the game programming or via implementation tools is fed into the code level. The discourse level is the game experience and the experience of the game as a narrative from the players perspective. Causal normalisation is a method to use in the story level to make sure that the data fed into the code level creates a coherent experience of the narrative in the discourse level. Efficient normalization must be treated as a question of defining a coherent and useful method for the story layer together with a clear way of transmission to the semantics of the narrative representation in the code level, just as a normalised logic model of a relational database has a clear mapping to table structures. Before this is possible it is necessary to define clear representations for the story level and its semantics. The question becomes: which is the deep structure in a minimally coupled story space? Minimal coupling suggests an object oriented approach to narration, so the deep structure needed is the one present in object oriented narratives.

5 Object Oriented Story Construction

In the following definition I am not making a complete transferral of everything that the term object-oriented includes when it comes to the development of software onto the concept of Object Oriented Story Construction. Instead I am borrowing certain features that I believe to be useful when creating and analysing story driven computer games.

Object Oriented Story Construction is to let all objects in the world have integrity and contain their own stories, functions, conditions, possible developments and counter reactions.
 If there is a story teller in the world it too will be a story carrying object, and not with necessity all-knowing.
 The player character, the player entity which the player controls, is the subject.
 Everything which is possible to name in the world is an object, may it be doors to open, characters to meet, boats to ride, monster to kill or things to find. .[96]

5.1 The object's integrity

That an object has its own integrity means that the information available in the object is only available via itself, and that the fetching of information can only be done on the object's conditions.
   Suppose that the player character, controlled by the player, is getting near another character in the game which is in its turn not controlled by a player, a so called Non Player Character, NPC. How the communication can take place between these two is defined by the features that objects of player type have, as well as by the features that objects of NPC type have. Suppose, to make it simple, that the form of communication is via dialogue written on the screen that the player sees. On the one hand we have the player character's features. Depending on what it has gone through earlier in the game it can ask questions which are governed by that which has become the object's past. On the other hand we have the NPC object's features and present state. Suppose that the information that it can give is dependent on the place that the player character has happened to find it in, or what status it has depending on what time of day it is in the played time (if there is day and night system implemented). In this way the contents and the amount of information of the dialogue are controlled by the combination of conditions that arise in the meeting between the player character and the NPC object.
   Through the objects' integrity being maintained problems do not arise in the intrigue. There is no risk that an NPC object spills information, which in a larger narrative perspective is not good that the player gets at that very moment, because the player character *cannot ask for it* and therefore the NPC does not tell. The other way around it works the same way, an isolated act or status variable that the player character carries can correspond directly with a possibility to activate a response from the NPC object. This is instead of using an overall narrative structure with a number of conditions whose internal relations *all* have to be correct to activate the specific response. The system that governs the narrative logic in this way becomes more robust. The advantages with this from a game developer's perspective is that one can, with the overall story at the back of ones mind construct an NPC and define exactly

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[96] All objects of a world are probably not carriers of narratives. For example a chair in a restaurant may not contribute anything of interest to a narrative. If this is not the case there might be other features of the chair that are of interest, like if It is possible to sit on it for example. In that case the chair object contains this information and acts accordingly.

how it ought to behave depending on its features, what operations can be made on it and what internal conditions it has for letting go of information. Thereby the overall narrative hopefully becomes more stringent. The advantage from a game play perspective is that the NPCs and other story carrying objects probably seem more believable and more intelligent, and that the player is affected by fewer false causal relations.

I think that this is a way of avoiding the feeling that the movements in the world and the communication with the objects in it is mechanical and sometimes sought after. Instead it becomes organic. Object-oriented programming is an organic engineering art, the patterns that are built are similar to the patterns present in nature, or rather in our way of describing and classifying nature.

An object-oriented story construction methodology combined with a framework of code, which has been adjusted to the narrative could probably become tools for creating very interesting work. In extension there could be changeable frameworks and generative narratives combined with virtually generated environments.

On top of the risk for false causal connections being minimised I believe that one effect of implementing story-carrying objects with integrity based on a framework that describes the mechanisms of the world and it's biotope is that the time-planes and the chronotope work in a better way. In the following two parts we shall look at what general effects this way of relating to it can have on the time-planes as well as on the chronotope in story driven computer games.

5.1.1 Time-planes

As we have stated earlier the action in the story driven computer game mostly takes place in the *now*.[97] In this now the player can only find out about those parts of an object's story that the object allows. The player can in this way in the game's constant now get glimpses of the past, which can become the base of her continued motivations and goals. Even if there are seldom flash-forwards in story driven computer games there is nothing in the genre that hinders the use of flash-forwards.

In many story driven games there are so called cut-scenes, films that have been shot beforehand. These are relatively short, seldom more than a few minutes long. The moment these are played usually depends on the player having got to a conditional point of intrigue. This usually works well in story driven computer games, partly perhaps because these cut-scenes often make up the spine in the overall narrative and therefore has been carefully planned into the narrative structure. What decides when one has got to a point of intrigue varies from game to game and from one point of intrigue to the next. Many conditions usually have to be met for the point of intrigue will be considered as achieved. As I have noted earlier these points of intrigue usually trigger cut-scenes. These points of intrigue often make up the vertebrae of the narrative spine. Nothing speaks against these points having the same dramatic weight in the narrative if they instead of being governed by an overall continuous structure were connected to specific objects. It is still a continuous and coherent system, and the same dramatic effect is achieved, but I think that the results could be apprehended as more dynamic

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[97] Jonas Carlquist, part 6 "Struktur, berättare och tid i datorrollspel" in the article "Att läsa ett dataspel - Om digitaliserade rollspel som berättelser", *Human IT* nr 2/3 2000
URL: http://www.hb.se/bhs/ith/23-00/jc.htm

if these cut-scenes together with the back or forward-flashes in the story instead were connected to the story-carrying objects.

One of the criterion that is often used for a game to be considered good is that the player feels that he or she has control.[98] One such way of giving the player control is to allow him or her to cancel cut-scenes that seem to long, but this is then at the expense of some of the story being lost to the player. In *Final Fantasy VII* there are very long flash-backs in the shape of cut-scenes, for example when the home village of the main character Cloud burns down. This cannot be cancelled. *Baldurs Gate: Dark Alliance* is built in another way, the flash-backs are short asked for by the player (often in a dialogue). In this way one is sure that the player takes part of the most important basic features of the narrative, but that he or she is not frustrated by not being able to interrupt and continue acting in the game.

Another way to give the player a feeling of control is to tie the flash-backs to a story-carrying object. Then one can be rather sure of the information that the players get hold of comes to them in what seems as a natural way, as they have got hold of it themselves. There is nothing that is opposed to the overall narrative, if there is one, being linear. The conditions that are put into the objects for the letting go of information could very well express an overall linear narrative. An example of this is *Shenmue ll.* In part 7.2 a study is made of how the story-carrying objects function in the game. All story driven games in the adventure genre have without exception an overall linear narrative. What I mean is with a focus on *overall*, because most of them have side-stories, which are up to the player to follow or not. The player gets, because of the overall narrative, a goal and a direction. For the direction to be maintained it takes that the world is not a chaotic wilderness of objects that one can do with as one pleases, but instead well-planned garden with carefully designed objects which makes the narrative keep its stringency. In this way the player does not become a confused wandering castaway but instead a decisive explorer.

At its best the design of story-carrying objects with integrity can create a balance between the time-planes that there are in computer games, as well as a balance in the story, which is continually created through the movements of the player character, and thereby become a way of creating better gameplay.

5.1.2 The player's wandering between objects - the synthesis of the chronotope

In the chronotope of story driven computer games it is the wandering between, and the interaction with, the story-carrying objects of the game world that create the narrative. The narrative time is brought forward by the movements of the player, in the geographical room as well as through the player's interaction with the story-carrying object.

So what effect does an object-oriented story construction method have on the game, and what does mean to the chronotope?

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[98] Tzvi Freeman, "Monitoring Devices in Games", *Game Developer*, April-may 1997, s. 22-31.
In *Game Developer*, a magazine for game developers, Freeman makes a list of good and bad features in computer games, where the three first are as follows:

1.	A good game empowers your imagination.	A bad game gets in the way.
2.	A good game makes you feel in charge.	A bad game restricts you with artificial restrictions.
3.	A good game is transparent. You only feel your own mind, the other players, the ideas.	A bad game keeps reminding you that a game is there.

It is not unusual that, when one constructs a story driven computer game that has an overall narrative, to make it easier, connect conditions that govern the player's movements in the geographical environment to conditions that govern the internal sequential order of the story. For example one way to make sure that the player in our example with the dragon and the wizard can not go into the dungeon until he or she has met the wizard and been given their quest. In this way one avoids killing the dragon before the player character has communicated with the wizard. The larger the world is and the more narrative conditions the developer thinks are needed, the more practical it seems to connect the player's freedom of movement to the chronological sequence of the narrative when ones starting-point is in a narrative structure that resembles that of the hypertext. It is one way of getting the system to appear robust and keep the stringency of the narrative. The disadvantage is that these combinations of conditions for the player can seem as mechanical and undermines the realism in the created micro cosmos. Why can I go into the cave now when it was impossible earlier? For each such limitation the developer has to come up with an explanation, more or less plausible.

By instead of starting from an outer structure of causal connections which among themselves are of equal weigh, and have to have the same internal order, instead placing these conditions in the objects which are affected it is possible to make a difference between the type of conditions that govern the geographical mobility and those that govern the chronological sequence of the narrative.

I believe that by forming the chronotope of the story driven game in an object-oriented way one can achieve a more synthetic and less mechanical chronotope than if one applies a whole narrative structure of internal causal dependencies on a game world. When I use evaluating terms like "more synthetic" and "less mechanical" I carry with me the lines by Bachtin quoted earlier (see part "2.3 Gameplay").

5.2 Object Oriented Story Construction in Different Levels of Text

In the part "Story driven games" I sketched a general model of what different layers of text a story driven computer game normally consists of:

1. **Code level**, containing engines, framework and game programming. These together manifest the geographic structure as well as the conditions for the deep structure of the narrative and overall story.
2. **Story level**, which consists of the overall story (if there is one), the deep structure and the individual story-carrying objects, who in their turn can manifest the overall story and possible side-stories (side-quests) as well as separate independent stories.
3. **Discourse level**, which consists of the states of the individual elements in the now of the playing, and the sequential order created between the different parts of the narrative simultaneously with the movements of the player through the game. It is in this layer that the surface structure of the narrative is visible.

It seems plausible to assume that if the code layer and the text layer that bring forth the overall narrative correspond closely this may lead to the narrative structure and the geographical structure also corresponding more closely. Below I will describe these layers and levels and the relations between them.
When I in the following parts describe these layers and levels I will do so based on a division and contents that presuppose an object-oriented story construction structure.

5.2.1 Code level: engines, framework and game programming

What I have referred to above as the code layer can generally be divided into three layers. The bottom layer is the engine which consists of very general functions, such as the rendering of the system's interface, sound system, the interface for animation, the handling of the terrain, the dialogue system, the media storage, the physics system which governs gravitation, forces, collisions and collision response.

Above this there is the framework of the game, a layer of abstract representations of the game's structures such as classes of game agents, classes of behavioural control as well as systems for action control and communication. The engine is general and may be used in various game genres, but the framework tends to be more specific for its genre.

Above the framework there is the specific game programming which mostly consists of data and the instantiated definitions specific for the game.

These layers are co-ordinated to bring forth the media that become visible and audible to the player, such as environments, characters, dialogues, music, sound effects and graphical user interfaces.

How the architecture is built up and where the borders between the different layers are differs from game to game, from developer to developer and from genre to genre. It also depends on what technical platforms and environments are used for the game. It does take an object-oriented and structured way of relating to it in the development of the game's software though, especially important in the layer which makes up the framework as it is this that describes the object's constitution and controls the practice of the game programming.

For the object-oriented story construction paradigm to work in practice the framework has to work as one of the starting-points during the production of the game, by the game designers, scriptwriters, graphic designers, system developers and other key members of the production team. In this way a co-ordination can be created between the overall design of the game and the actual implementation; the input data used at the programming become suitable for the unity of the game.

One of the starting-points for the development of the framework ought to be an already existing complete and detailed concept of how the game world should be constituted. The reference system that is to be depicted needs to be carefully studied so that one really can create an abstraction that make all the mechanisms of the system work the way one wants. In the abstraction one creates the objects have to have integrity to make the work of solving problems in the system easier. An error will only affect one part of the system and will be possible to solve as the error is, if the system is built in an object-oriented manner, easily accessible and encapsulated and therefore can be handled as an isolated unit even though it is part of something larger.

What the system developer builds is all the way to the execution an abstraction. The abstraction consists of a model, or a design of a system, which is to correspond to a reference system. From this model the classes are written to correspond to the model.

When the programme is executed it stops being an abstraction. Then the creation takes place of the myriad of interacting objects described in the framework which contain the features specific for the game which they have been instructed to in the game programming. These together create a system which hopefully corresponds to the reference system, but which is also something concrete in itself, a system of its own.

With a framework of this type it is possible to implement story-carrying objects in such a way that causal relations are minimised, and thereby the necessary conditions for creating a game where the narrative is synthesised with the gameplay.

The programming of the code layer is as well as being a craft also an art. In this thesis I have not to any great extent touched upon what criteria in a game, and the narrative of the game, make a work a great work. Instead I have looked into a structural problem that in many cases hinders a qualitative experience of playing. As we have seen it is possible to divide story driven games into three different text layers, which in turn probably are fruitful to study in different ways. One cannot ignore the code layer just because it is hidden. It also has to be seen as a part of the text, and the programming as an art form. The syntax is powerful in that it as well as shaping them also can trigger actions and events. Great creativity is needed in the individual developer or group of developers to create game worlds, in every way comparable to the creative work done by a writer of literature consisting of typographical text.

Layer 3	Game programming	Always developed in-house. Never reusable.	Detailed programming of individual objects specific for the game.
Layer 2	Framework	Usually developed in-house. Sometimes reusable.	- abstracted model of the game world and game system - the glue between the game programming and the engine(s)
Layer 1	Engine	Bought or in-house developed components. Always reusable	Includes - Physics system - Rendering system - Dialog system - Sound system - Media storage system

To illustrate the relations between the different layers in the code layer one can compare the building of virtual game worlds with the construction of our real world.

The engines are then the equivalent of the physical laws that rule on different planets, or game worlds. On one planet the framework would make the foundation for the biotope on the planet. The individual classes, in the framework, or in the descriptions of the object types would be the equivalent of the genetic codes. At the programming of the games these genetic codes are combined with data specific to the individual, comparable to individual DNA sequences.

## 5.2.2 Story Level

5.2.2.1   Story and conditions

All games contain a deep structure and a surface structure, but not all games contain an overall narrative even though most story driven games do.

When I use the term *overall story* I support it on Gérard Genette's definition of *histoire*, or on the English translation, story: "I propose [...] to use the word *story* for the signified or

narrative content"[99] Slomith Rimmon-Kenan uses Gennette's definition in her book *Narrative Fiction*, but accentuates the chronological aspect of the concept: "'Story' designates the narrated events, abstracted from their disposition in the text and reconstructed in their chronological order, together with the participants in these events." [100]

In story driven computer games in the adventure genre there are in all cases a chronological order in which the events take place. This sequence of the narrated elements is dependent on whether the narrative is linear or multi-linear more or less fixed though. In story driven computer games in the role-playing genre the narrative more seldom tends to be strictly linear but contains more or less possible chronological variations in what one, using Anna Gunder's term, might call the omni-story. The omni-story in its turn contains all possible real stories, that is the possible sequences of events in a chronological order. [101] If one was to draw a picture of the events that might occur and their possible order in a story that has a beginning and an end it might look like this:
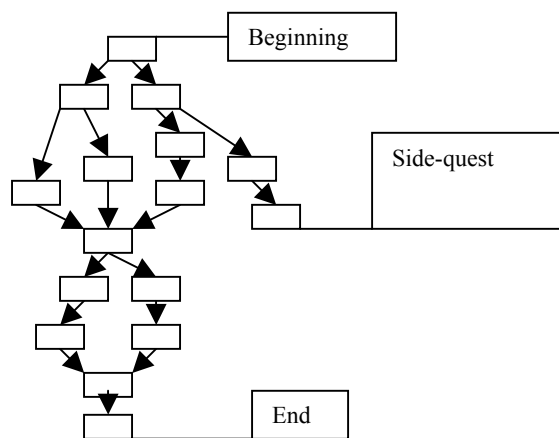
Each square in the figure above represents an event. The arrows represent conditional relations. For an event to occur it has to, or the events that are represented in the squares above whose arrows lead to *it*, must have taken place.

In a model like this all existing causal conditional relations are as important. Thereby the existing hierarchy order limited to three levels:

1) Mandatory relations to get to the end
2) Relations that are mandatory for going through a side-quest and
3) events that are not mandatory and therefore are not part of the model.

These conditions are in this type of model totally focused on the events, that something occurs. An event in fiction usually also has an affect on something else. In the case of this model the effect is that a barrier condition is removed and that one or several other events can take place. These barrier conditions are usually disconnected from the objects involved in the events as well as from the geographical place where the events takes place and the (played) time in which they occur.

In a game that uses object-oriented story construction such a model could be interesting at the planning stages if one is a game developer and perhaps as one of the tools if one instead is analysing a game.

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[99] Gérard Genette, *Narrative Discourse – an Essay in Method,* transl. Jane E. Lewin (New York 1983) p.27 The text was first published in French, then as a part, "Discours du récit", of the work *Figures III*, Editions du Seuil 1972.
[100] Rimmon-Kenan, p.3
[101] Anna Gunder, part "3. Historia och diskurs i *afternoon*" in "Berättelsens spel. Berättarteknik och ergodicitet i Michael Joyces afternoon, a story", *Human IT 3/1999*. URL: http://www.hb.se/bhs/ith/3-99/ag.htm

In this context I think that it is interesting to show it as a contrast to how one can treat the story if one uses object-oriented story construction.

If there is a story in a game there is also some kind of chronology. This chronology is governed by a cause and effect relation. These relations are, object-oriented story construction system, defined *in the story-carrying objects* which differs from the example above where they were connected specifically to the *events*.

How important a narrative is from an overall story perspective may vary. Depending on how detailed the framework is and how detailed the creation of the story-carrying objects is one might have a great many more levels of how obligatory it is in the game to go through a certain event, than in the hierarchy sketched above. The usually strict division between main quests and side-quests could work more dynamically and not necessarily be as fixed.

5.2.2.2   Story-carrying objects and narratives in hierarchies

In the part "Story and conditions" above, the hierarchical order between the conditions in a typical multi-linear hypertext was sketched up. In the same way that it is divided into three parts one could sketch a hierarchy for the narratives that are carried by the objects, but with a reservation that it is only a sketch and that *a much more divided hierarchy is possible* if it is needed for the narrative.

1) Part of the narrative that is necessary for a possible overall story.
2) Part of the narrative that is necessary to enable for the player to experience a sequence that in the story makes a side-quest.
3) Independent narrative.

This division, which is possible to refine, is built on the assumption that the game developer creates a story that has one or several possible chronologies and one or more predetermined ending/s. The beginnings are usually the same in story driven games, but there is nothing in the genre that is opposed to the possibility of having alternative narrative elements in the beginning.

A conditional hierarchy that is implemented in the story-carrying objects is possible to use also in stories that lack overall narratives. It is important though to note that the existence of causal conditions that govern the order of the sequences in the story depends on the need to be able to control the story's chronology. If there is no such story the conditions are not necessary for that purpose. Then it is instead the conditions that control a specific object (and its state) all the more important as a tool in the creation of a game.

5.2.2.3   The deep structure

Even if all games so not contain a story they all, just as films, plays and novels do, contain a deep structure. Also games like chess and solitaire contains deep structures.

The concepts of deep structure and surface structure are used by Algirdas Julien Greimas (*Sémantique structurale*, Paris 1966) and are concluded like this by Rimmon-Kenan: "Whereas the surface structure of the story is syntagmatic, i.e. governed by temporal and causal principles, the deep structure is paradigmatic, based on static logical relations among the elements".[102] In, *En väv av tecken, (a web of signs)* Sven Åke Heed describes deep structure as narrative, as opposed the surface structure being discursive:

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[102] Rimmon-Kenan, p. 10.

> "In other words, the deep structure is readable in the narration, that is in the basic narrative, the surface structure in the discourse, that is in the narrative itself.
>
> It is in the deep structure one can see patterns of definable units, that we call actants. With the help of the different functions of the actants one can in deep structure map out a force-field, which can be illustrated in an actant model, identifiable in every drama text."[103]

In *En väv av tecken,* Heed uses the actant model and the discussion around deep or surface structure to in this way offer tools, partly for those who are an audience watching a play, and partly for people who stage plays to be able to chose a reading before the staging of the different acts.

Greima's actant model can be used to describe the driving-forces in a whole computer game or for smaller sequences in it.

In a story, such as the one with our player and our dragon, it would be to divide the actants in the following way:
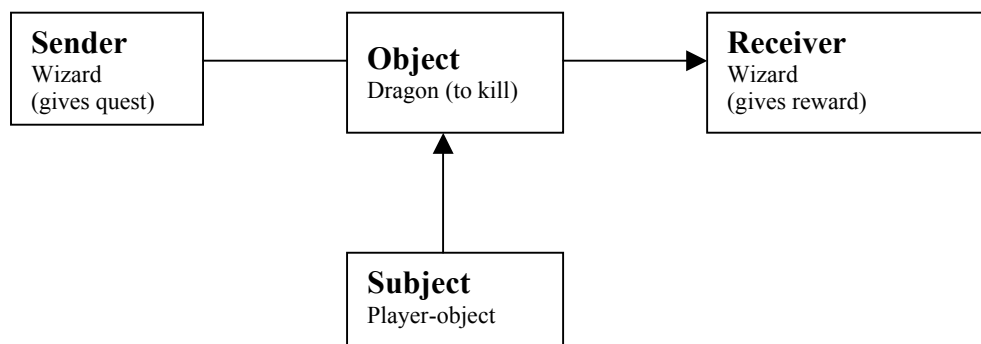
In *Fundamentals of Story Logic,* Therese Budniakiewicz points out that the position that the object in the model has double functions: "The positional value of the Object is doubly defined by the convergence of the actantial axes: both as an "object of desire" and as an "object of communication".[104]

Budniakiewicz reminds us that for Greimas the actant model and the actant grammar is foremost a way to extrapolate the syntactic structure. How can this then be of use when we discuss object-oriented story construction?

First of all it is a conceptualization that breaks down the parts of a story into the force fields that make it possible for the narrative to come into existence. By applying this way of looking upon story-carrying objects we can more clearly define the forces that the, in Greimas words, "the semantic syntax" that makes up the micro universe that a game world and the overall narrative consist of.

This perspective becomes especially interesting when applied to story driven games that lack an overall story, which could be organised in a chronological sequences, such as some live role-plays, MUDs or MMORPGs. In these games the discourse *is made up of* an execution of these interacting forces. The perspective of the objects and their direction can for the player vary depending on where she is in the game system but one can also see it as a given unit, if one has all the necessary information about the existing objects in the system.

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[103] Sven Åke Heed, *En väv av tecken – Teatertexten och dess betydelser*, (Lund 1989), p. 43. Translation from Swedish: Suzan Olsson

[104] Therese Budniakiewicz, *Fundamentals of Story Logic – Introduction to Greimassian semiotics* (Amsterdam Philadelphia 1992), p. 76.

Starting with this model one can then break the larger units into smaller components with clearly defined functions. Budniakiewicz speaks of two large classes: "The two big classes which make up the 'semantic syntax' are the *actants* and the *predicates*; they combine with each other to form the semantic and thematic kernel or nucleus of a textual micro-universe, The *predicates* are divided along the static vs. dynamic binary opposition: *Function* […] designates the dynamic predicate and *Qualification* […] the static predicate."[105]

In an object-oriented story construction model this would be translated into what functions are possible for a certain class, or type of object, and what state is necessary in the object to execute the function.

If this way of thinking would be applied to the text layers previously sketched up, it would be manifested in the framework layer as well as in the game programming layer. In the framework the objects' classes, or types, would be defined with their possible functions, while the conditions whose different combinations in the game create the states that make the execution of these functions possible, would be described in the game programming.

5.2.2.4 The Quest based action pattern and the antecedent driving forces of the object

Typical for the story driven computer game is that the player performs series of quests which one by one are added to the player characters story discourse when they have been performed. Most story driven games that have an overall story have about the same structure as the folktales Vladimir Propp has systematised. Usually it starts with something in the game's microcosm being out of balance. The hero of the story, or the subject, is given a quest and is thereby contracted to either solve the overall lack of balance in the world, or to take the first step on that path. Usually the hero is also put through a qualifying test to prove his worth in recreating balance. After this the hero may perform n number of minor quests before finally performing the main quest that restores the balance. In many story driven games this last quest consists of a final boss-fight. After this the microcosm of the game is saved, the hero has succeeded in performing the overall quest and the player characters, and supposedly also the player's, motivations are neutralised.

Vladimir Propps pioneer work *Morphology of the Folktale* was translated to English as late as in the sixties, despite him having finished the work already in 1928.[106] Propp compares the thematic content in a great number of Russian folktales in regarding their components.[107] He describes the result of this as a morphology: "a description of the tale according to its components parts and the relationship of these components to each other and to the whole".[108] The typical Russian folktale is built around seven types of persons (or more specific; to spheres of action which corresponds to performers), namely 1) the villain 2) the donor 3) the helper 4) the princess (and her father) 5) the dispatcher 6) the hero 7) the false hero.[109] The names of these people who contain these functions differ form tale to tale, but the actions they perform are always the same. A function is, in Propp's words:

> *Function is understood as an act of a character, defined from the point of view of its significance for the course of the action.*
> The observations cited may be briefly formulated in the following manner:

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[105] Budniakiewicz, p. 75.

[106] Vladimir Propp, *Morphology of the Folktale*, the second English edition, where Laurence Scott's translation from thefirst edition has been worked on by Louis A Wagner. (Austin 2000 [1968])
[107] Propp, p 19.
[108] Ibid.
[109] Propp, p 79 – 80.

> 1. *Functions of characters serves as stable, constant elements of in a tale, independent of how and by whom they are fulfilled.*
> *They constitute the fundamental components of a tale.*
>
> 2. *The number of functions known to the fairy tale is limited.*[110]

Propp further stipulates that:

> 3. *The sequence of functions is always identical.*[111]
> […]
>
> 4. *All fairy tales are of one type in regard to their structure.*[112]

The fixed amount of functions is thirty-one.[113] All of them are not necessary in the same story, but where they occur they always have the same sequential order. Rimmon-Kennon suggest that this determinism concerning the sequential order may depend on the nature of the material that was analysed, but may also be depended on Propp's method, as he defines a function on the basis of its contribution to the following function.[114]

In an appendix to *Fundamentals of Storylogics,* Budniakiewicz has formulated a model, "The 'Boolean Algebra' of Narrative Events" (see appendix 1, this thesis). She refers to it either as the functional analysis of Propp's sequence of events or as the structural semantics in a complete tale.[115] As we can see she has compared Propp's thirty-one functions with the actions she discusses using the Greimassian terminology, namely, injunction or acceptance of contract, communication, combat, presence and rapid displacement. In the table these are in chronological order depending on at which point in the story, or histoire, the function/action occurs; from the story's start, with the break-up of the order and the hero's alienation, to the hero's designation, his (its always a he in the folktales) qualifying test, the main test, the saving of the hero, the glorifying test and finally how he is reintegrated into his environment and how the balance in it is restored. Something that becomes obvious with all desirable clarity though is that the actions described with the Greimassion terminology *are not strictly bound to this chronology*, even though it in a chronological context might be rewarding to do so. Looking closer at the defined actions though a certain doubt may appear if they unambiguously can be described as actions and events, as a term as *presence* also describes a state in a wider sense.

In the discussed model it is possibly less relevant, but in an object-oriented story construction model it is necessary to make clear distinctions between these three notions; action, event and state, to in this way be able to distinguish what implications for example an action has for one or several states. What states are affected depends on the actions direction and sender.

Greimas defines the distinction between action and event in the following way in *Narrative Semiotics and Cognitive Discourses:*

> […] *event* was redefined to distinguish it from *action*. Whereas action is dependent only on
> the subject concerned with the organization of his activity, event can be understood only as the
> description of this activity by an actant external to action.[116]

An action is, according to these lines, in other words dependent on the subject that performs the action or activity. An event on the other hand is a description of the same event when the description is performed by an actant standing outside of the performed action.

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[110] Propp, p. 21
[111] Ibid, p. 22
[112] Ibid, p. 23
[113] Ibid, p. 26 – 65. A list where the functions are described.
[114] Rimmon-Kenan, p. 21 - 22.
[115] Budniakiewicz, p. 220 - 210.
[116] Algirdas Julien Greimas, "Ten years afterwards", *Narrative Semiotics and Cognitive Discourses*, translation: Paul Perron and Frank H. Collins, (London 1990) p. 176

A state is in an object-oriented story formation model something held by an actant, or with our term, a story-carrying object. The state is a result of all actions performed by the object itself and by the actions performed by other objects aimed directly or indirectly at the first object.

In the section "A Systemic Definition of Action" Budniakiewicz asks what we mean when we say that we *do* something. [117] She means that the use of a verb is not enough for us to draw that conclusion. Instead we "unpack" the verbs to become a description of the *antecedent states* when we contemplate the whole. This I will from now on call the *antecedent driving-forces*. Even though Budniakiewicz, just as Greimas, primarily studies syntactical structures I think that this terminology is useful in this context.

> These antecedent states are the wants, the goals, and plans of the agent which are interconnected in a peculiar pattern of reasoning used by the agent both before and during the performance of action, when the agent is said to 'be doing' something. The reasoning has been named in traditional Aristotelian commentary a *practical syllogism* or *inference*.
>
> […]
>
> Let us look at what a schema of this kind works out:
>
> Major premise: N wants to do O / bring about O.
> Minor premise: N considers that he cannot do O unless he does P.
> Conclusion: Therefore, N sets himself to do P / does P.[118]

It is worth noting what an application of our example with the wizard and the dragon would look like. The reward from the wizard is a key, which is needed to enter an environment that brings the player character closer to its overall goal. N (the player) wants O (reward from wizard). N realises that he cannot get O if he does not do P (kill the dragon). Therefore N decides to do P.

We can see here how the player character's antecedent driving-force consisting of a will to get further in the game results in a quest structure where he/she decides to kill the dragon. The concept of antecedent driving-force differs from what we so far have called state in that the antecedent driving-force represents the story-carrying objects *initial* driving-force, while what we generally have called state is a result of the conditions which are stored in the story-carrying object during the progression of the game that limits, gives freedom to act and possibly adds new driving-forces to the object.

In her article "Semiotic and nonsemiotic MUD performance", Ragnhild Tronstad, previously mentioned, discusses what constitutes a quest and how it only after its completion becomes a story. [119] Her angle on what constitutes the motivation for solving a quest is the search for its meaning: "To do a quest is to search for the meaning of it. Having reached this meaning, the quest is solved. The paradox of questing is that as soon as meaning is reached, the quest stops."[120]

In an object-oriented story construction model the story-carrying objects, usually the player characters, that perform quests within the rules of the game would be governed by the antecedent driving-force constituted by its long-term goals, plan or will. When the goal is

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[117] Budniakiewicz, p. 53
[118] Ibid.
[119] Ragnhild Tronstad, "Semiotic and nonsemiotic MUD performance", *Proceedings Cosign2001,* ISBN 90 6196 5047 (Holland 2001)
[120] Ibid. s. 81.

reached, or the plan is carried out, or its will is satisfied, the driving-force of the object is neutralised.

5.2.3 Discourse level: Resurrection of Discourse

In the section titled "Story driven Games" I described the concept of discourse, which in this context characterises the told order expressed by signifiers, emerging simultaneously with the players movement through the story driven game.

In an object-oriented story construction model it is not only the player character that contains a discourse but all story-carrying objects have their private story discourses.

If our player character, in the example with the wizard and the dragon, has already killed the dragon when it meets the wizard that story element, or action, will be added to the discourse of the player character in chronological order. Likewise the fact that the dragon has been killed becomes a part of the discourse of the object constituting the dragon.

It is in the discourse level the state of the object evolves. The class describing the type of the object describes what types of actions are possible for the object to perform and possible basic obstructions against performing them. When the object at the beginning of the game is instantiated, it contains its first conditioned state. The state of the object changes depending on what actions are aimed at it by other objects, and depending on what influences there are from other parts of the system.

5.2.4 Model of the three text layers

The figure below is a schematic model of the levels and layers that constitute the *text* in a story driven game with an object-oriented story formation structure. [121] The geographical structure in the game world is built in the code level, where the systems in the engines describe the laws of nature, the framework describes the species and the game programming populates the world.
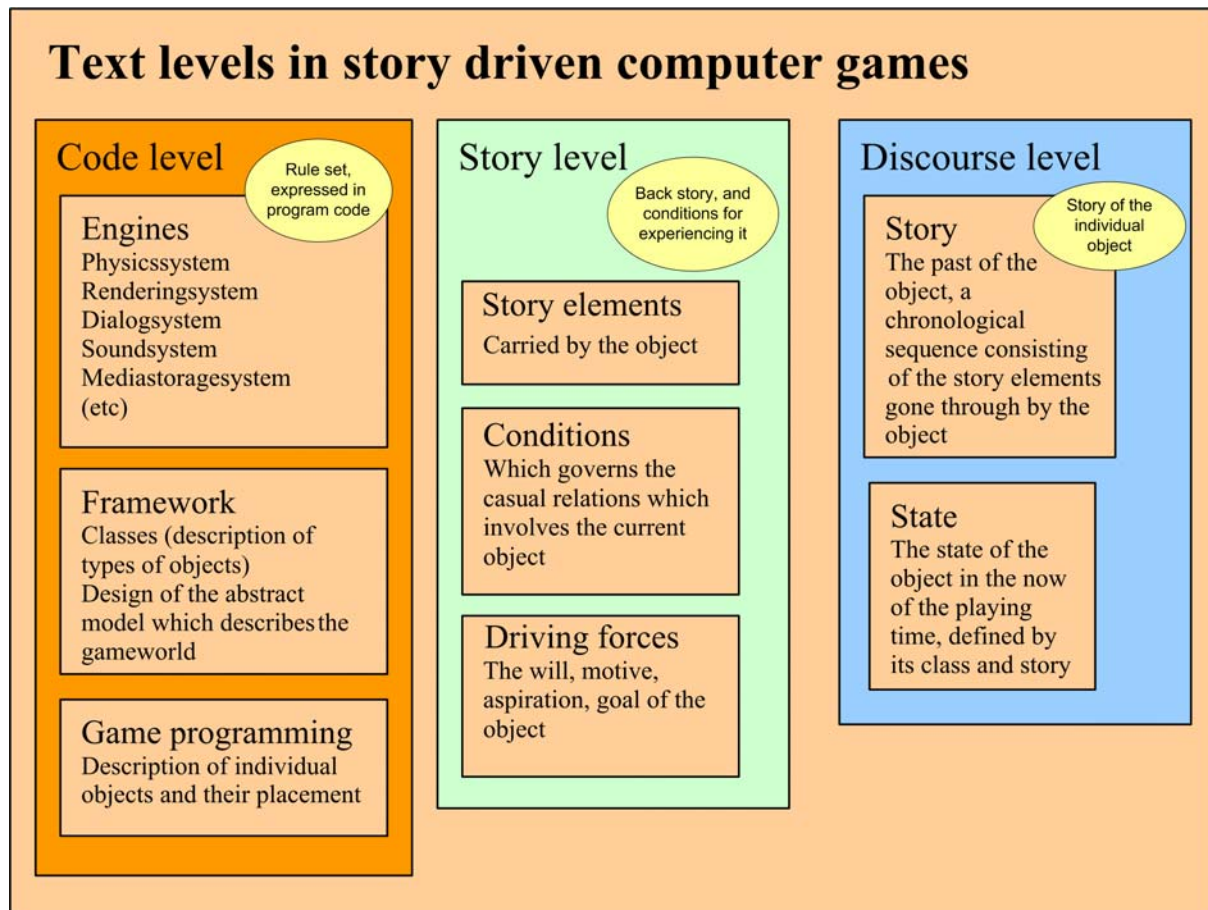
The model on the next page shows what type of text can occur in different layers of text in a story driven game where an object-oriented story construction model is applied. The example, the sun, Ra, is not taken from any existing game.

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[121] The model should therefore not be mistaken for system architecture.

A story carrying object, The Sun, Ra
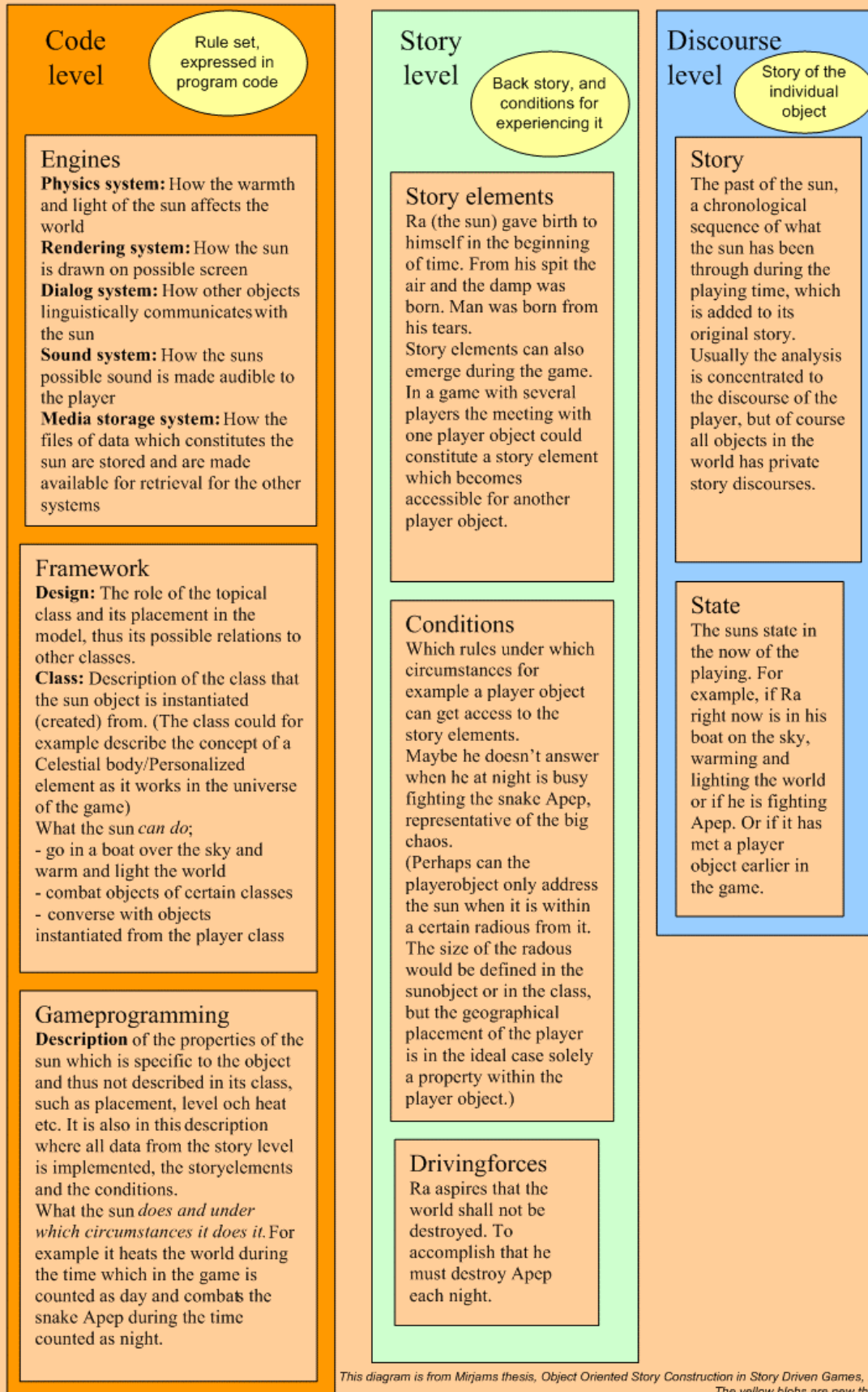
(Example from Egyptian mythology)

Code level

Rule set, expressed in program code

Engines

Physics system: How the warmth and light of the sun affects the world
Rendering system: How the sun is drawn on possible screen
Dialog system: How other objects linguistically communicates with the sun
Sound system: How the suns possible sound is made audible to the player
Media storage system: How the files of data which constitutes the sun are stored and are made available for retrieval for the other systems

Framework

Design: The role of the topical class and its placement in the model, thus its possible relations to other classes.
Class: Description of the class that the sun object is instantiated (created) from. (The class could for example describe the concept of a Celestial body/Personalized element as it works in the universe of the game)
What the sun *can do*;
- go in a boat over the sky and warm and light the world
- combat objects of certain classes
- converse with objects instantiated from the player class

Gameprogramming

Description of the properties of the sun which is specific to the object and thus not described in its class, such as placement, level och heat etc. It is also in this description where all data from the story level is implemented, the storyelements and the conditions.
What the sun *does and under which circumstances it does it.* For example it heats the world during the time which in the game is counted as day and combats the snake Apep during the time counted as night.

Story level

Back story, and conditions for experiencing it

Story elements

Ra (the sun) gave birth to himself in the beginning of time. From his spit the air and the damp was born. Man was born from his tears.
Story elements can also emerge during the game. In a game with several players the meeting with one player object could constitute a story element which becomes accessible for another player object.

Conditions

Which rules under which circumstances for example a player object can get access to the story elements.
Maybe he doesn't answer when he at night is busy fighting the snake Apep, representative of the big chaos.
(Perhaps can the playerobject only address the sun when it is within a certain radious from it. The size of the radous would be defined in the sunobject or in the class, but the geographical placement of the player is in the ideal case solely a property within the player object.)

Drivingforces

Ra aspires that the world shall not be destroyed. To accomplish that he must destroy Apep each night.

Discourse level

Story of the individual object

Story

The past of the sun, a chronological sequence of what the sun has been through during the playing time, which is added to its original story. Usually the analysis is concentrated to the discourse of the player, but of course all objects in the world has private story discourses.

State

The suns state in the now of the playing. For example, if Ra right now is in his boat on the sky, warming and lighting the world or if he is fighting Apep. Or if it has met a player object earlier in the game.

This diagram is from Mirjams thesis, Object Oriented Story Construction in Story Driven Games, 2002
The yellow blobs are new though

6 A spectrum of discourses

The object of this chapter is to show the high degree of variation between discourses in different types of games. Before looking into the some of the features of object-oriented narratives in a few games we will take a closer look at *Final Fantasy VII*. This is a game containing a tree-like structure spanning over a condition-based hierarchy of hypertextual type that combines a strong narrative with building characters and with battle-scenes.

These entities appear to the player as separate though, which is not the case in the games at issue in Chapter 7, "Features of object-oriented story construction in three games".

During my work with this thesis I have played numerous computer-games where the amounts of necessary points of intrigue vary. In this chapter we shall look at a spectrum of story discourses, from games whose main objective is the resource management to games that could be regarded as interactive movies.

6.1 Story discourses in games with a high degree of resource management

On the one extreme, where the points of intrigue are totally lacking, there are games that in a strict sense cannot be described as story driven, like *The Sims*, *Sim City* and *Civilization.* The main components in the activity of playing are instead the use of resources and the creation of a world according to specific rules.[122] In *The Sims* the player builds one ore more houses, in *Sim City* and in *Civilization* a nation is created on a planet and its civilisation ruled.

In the playing of these games story discourses actually do appear. In the cases where the discourses are expressed in words it is most often a question of the player telling another person about the game afterwards. Regarding myself, if the subject comes up, I usually talk about two of my families in *The Sims*. In one house I have placed a single man and in the other a traditional family containing a woman, a man and two children.

The two neighbours became friends and often had dinner together. The man in the traditional family fell in love with the single man and moved in with him. The economy of these two then became very good and they were able to furnish their home luxuriously.

The single mother lost her job and the children supported the family by obtaining good results at school for which they were rewarded with grants. The single mother then turned to crime and started working nights. This in turn enabled also this family to consume from the choices always available in *The Sims'* shop.

The story discourse in *Sim City* is not documented, instead the size of the city and its health status show the degrees of success. In *Civilization,* after finishing, the player of the game gets a summary of the story created with its civilisation in the inhabited world. The picture below portrays what happened in the year of 1500:

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[122] *The Sims*, Maxis Software, Electronic Arts Inc., PC CD-ROM, 2000
Sim City 3000, Maxis Software, Electronic Arts Inc., PC CD-ROM, 1999
Civilization III, Firaxis Games, Infogrames Interactive Inc., PC, CD-ROM, 2001
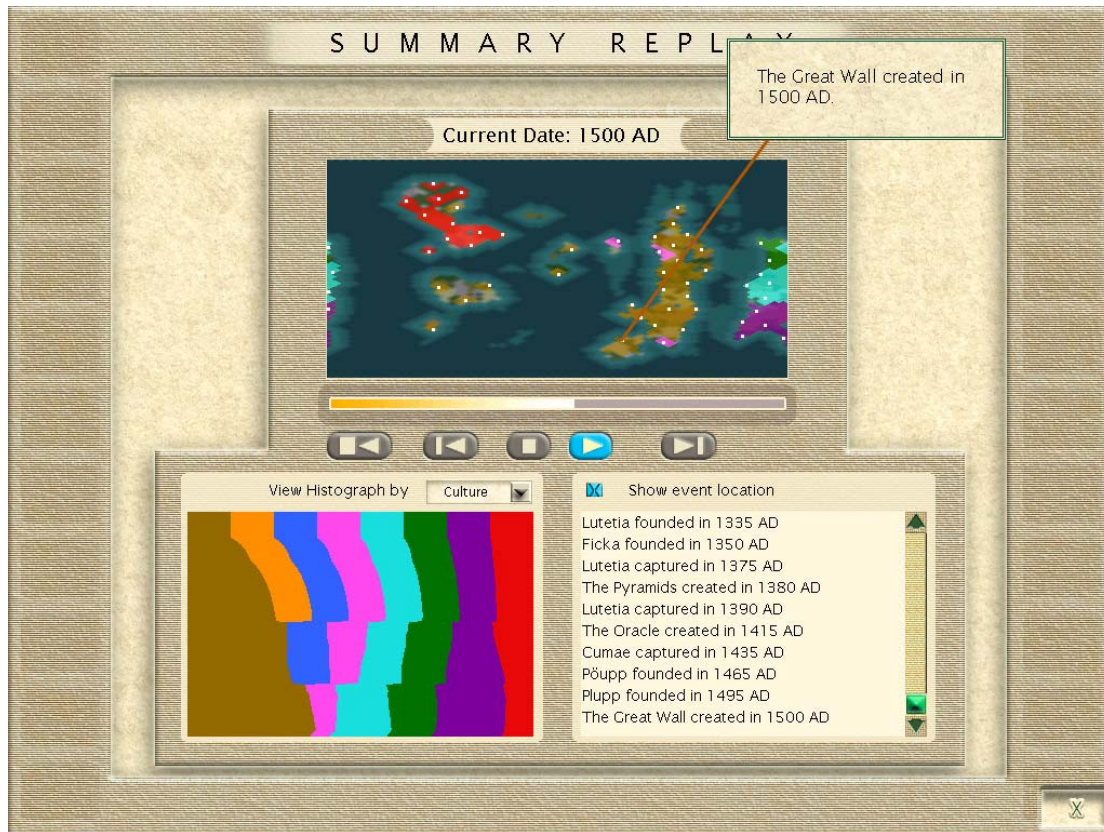
In *The Sims* the discourse is recorded in a photo album where the game automatically puts in screen-dumps of important (according to the creator of the game) moments, as well as giving the player himself the possibility to 'photograph' moments which are then put into the album.

In these games the player is not an object in the game, instead the player can be compared with a god, mayor or emperor, although limited by the rules of the game. It is the player who decides what is to be built and where, and who is going where and when. The basic driving forces present in this type of game mainly originate from the goals set up for the player by the constitution of the game. In accordance with these rules the single player moulds his gestalt

and creates his own pattern of game-interaction to enable him to play as successfully as possible. In *Sim City* and in *Civilization* it is possible to play the games in a network environment. The other players then assume the roles of mayors of other cities or rulers of other nations. These players then basically have the same driving force which is to reach as great success as possible, in accordance with the rules, but the player meets another type of character in the opponent than if s/he were to play the game alone, in which case the surrounding nations and cities are instead controlled by the game itself.

Even though the discourse is not governed by fixed points of intrigues it is controlled all the same. Instead of running along an axis of chronologically organised events the axis consists of an accumulated amount of resources.[123]

6.2 *Campaign- and level based narrative axes*

In games like *Heroes of Might* and *Age of Empires* the game is divided into chronologically organised parts.[124] These parts together make up campaigns with overall goals. Solving each part of the quest means getting to pass one of the intrigue-points. It is also possible to choose not to play a campaign, and instead choose between different scenarios. The main objective of these games is not the unfolding of a story either, instead the goal the player is assumed to have is the building of strong armies and conquering strategic goals and territories in war and finally winning it.

Another type of divided game-structure contains the games which are framed by a overall story but where the point of the playing is the collecting of objects and defeating creatures. An example of this is *Gauntlet – Dark Legacy,* a part of Midways' classic so called hack'n'slash series, which is divided into a number of worlds, each world in turn being more difficult.[125] These worlds are in their turn divided into levels. The main goal is in *Gauntlet* is to defeat an evil magician. Another magician tells you that to reach this goal you have to find a number of crystals of different kinds as well as gold-teeth. These are placed in the different levels. When the player or players have found all these items they are ready for the final battle and when it has been fought the order in the game-world has been restored and the game is over. The restrictive conditions in this game are related to the collecting of items of different kinds. This opens the gates to more worlds and the player can continue on his way to the final battle.

In *Heroes of Might and Magic* and in *Age of the Empire*, you can, just as in *Civilization*, play in a network where each player represents an opponent or enemy. In *Heroes of Might and Magic* the player controls a number of hero's that can find different types of items and build armies in their forts. In *Age of the Empire* the player instead builds armies containing creatures with different functions as well as weapons of different kinds that he or she then can use for the collection of resources and battles. The goal is the same as in the chess metaphor, to win the war, and the success depends on the efficiency in the handling of the gestalt. In *Gauntlet* on the other hand you can, if you are more players than one, become a team and on a divided screen guide your own player character towards the final battle.

As the existing intrigue points are effects of each other in this type of game, the story sequence on an overall level is very similar in the different playings of the games. The discourses within the various parts differ greatly though. Within the levels the points of intrigue are few and are not that dependent on each other and are not governed by definite conditions regarding the sequence of the story. *Dark Cloud* is an interesting hybrid of many

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123 *Civilization* does for example contain sequences of scientific discoveries that in accordance with a multi linear model have to be discovered in the right order.
124 *Heroes of Might and Magic III*, 3DO, Ubisoft, PC, CD-ROM 1999
Age of Empires II – the Age of Kings, Ensamble Studios, Microsoft, PC, CD-ROM 1999
125 *Gauntlet – Dark Legacy*, Midway, Midway Home Entertainment Inc., Playstation 2 DVD-ROM, 2001

different game elements tied together by story carrying objects where one of the main components in the playing activity is the handling of the resources.[126] In chapter 7 where features of object-oriented story construction are discussed more in detail this game will be more closely described.

6.3 Story Driven Games with a high level of ergodicity

Among games where set points of intrigues exist, but where the chronological sequence in the carrying out of the quests vary in level, there are *Planescape Torment*, *Asheron's Call, Baldurs Gate – Dark Alliance, Shenmue* and the games in Final Fantasy series.[127]

In these games one of the strongest driving forces is the unfolding of the story. Another powerful element in these games is the building of player character(s), which in turn is necessary to be able to unfold the story as the challenges the player character(s) meet become increasingly more difficult. To be able to handle the increasing level of difficulty an optimal player character is needed.

Before moving on to look at the features of object-oriented story construction let us focus on *Final Fantasy VII*.
 Final Fantasy VII is interesting to look closer at because when it was published in 1997, it became a landmark in the development of story driven games. It is also interesting in that it to the same degree that the narrative structure is quest-oriented it also creates a compelling story focused not only on saving the world but also intricate intrigue spun around the characters that the player controls. Yet another aspect is that this strong narrative in some ways appears as separated from the activity of playing, this not being a disadvantage but instead allowing many types of interaction patterns with the game without the main story suffering.

6.3.1 Final Fantasy

The first game in the Final Fantasy series came out already in 1987 based on an idea by Hironobu Sakaguchi.[128] The Japanese company Square Co. LTD, still small at that time,
was at the time in need of a sales success bet all their money on this one card. History shows us that what they did was right.

   In the spring of 2002 the tenth game in the series was published and the eleventh is planned to be a Massively Multiplayer Online Role Playing Game. Because of the series of games relatively long history and high quality it is suitable for study to get a view of how the different components that are usual in games of this genre, adventure games containing the building of characters, have developed from 1987 until today.
The first aim of my thesis was to do this very thing. Therefore I have spent about a thousand hours playing *Final Fantasy IV, Final Fantasy VII, Final Fantasy VIII* and *Final Fantasy IX*, but the lack of space does not allow for any extensive analysis of the development of the narrative techniques.[129] Instead we will look closer at *Final Fantasy VII*, a landmark in the

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[126] *Dark Cloud,* Sony Computer Entertainment Inc., Sony Computer Entertainment Europe, Playstation 2, DVD-ROM, 2001

[127] *Asheron's Call – Dark Majesty*, Turbine Entertainment Software, Microsoft Corporation, PC, CD-ROM och Internet, 1996 - 2001

[128] *Final Fantasy*, Square, Square Co. LTD, Famicom Nintendo Entertainment System (NES), Japan 1987, USA 1990.

[129] *Final Fantasy IV (Final Fantasy Chronicles),* Squaresoft, Square Electronic Arts L.L.C., Playstation, NTCS compact disc, 1995, 2001
Final Fantasy IX, Square Co. Ltd., Square Europe Ltd., Playstation, CD-ROM, 2000, 2001

history of the development of games. The game will show us how a complex intrigue can be brought forth in a game with a high level of ergodicity and what affect this has on the discourse.

6.3.1.1 Final Fantasy VII – cinematic RPG

Final Fantasy VII was the start of something new in the genre of story driven games. When Square in 1996 developed for a new console, Playstation, they were able to create bigger games. They also had a large budget, over thirty million dollars. A team consisting of 120 artists created a game that in dignity surpassed all earlier titles. The game carries a complex intrigue. The cinematic aspects were of a quality that had never been seen before, and the films were joined by over a hundred especially composed melodies. Square came up with a name for this; "cinematic RPG".

6.3.1.2 The Story

The reason for the imbalance in the game world in *Final Fantasy VII* is that Shinra Corporation drains the life force out of the world, "mako". The hero, Cloud Strife, becomes a member of the rebel force Avalanche. Cloud and a few of the other members of Avalanche leave Midgar, the capital, and then realise an even greater threat to the planet. When the life force is drained out of the planet the flow of life is disturbed on the planet. It also becomes known that Cloud's idol Sepiroth, whom he thought was dead, has been spotted.

The hunt for Sepiroth takes Cloud to his home village where the player gets to go back in time and sees how Sepiroth burns the village. The player is then thrown into the action taking part at that time, but there is no way via Cloud as a player entity to save any of his beloved. Later the group finds Seiroth's frozen body in a crater on the north side of the planet. Sepiroth calls for a lethal meteor that is about to collide with the planet. The planet feels the threat and lets out gigantic beasts to defend it. Our group of heroes then look for the only thing that can save the planet, the holy magic. The group defeat Sepiroth and bring forth, through the soul of Aeris, a member who sacrifices herself, the holy magic and the planet is saved.

6.3.1.3 Intrigue and characters

Typical for the games in the Final Fantasy series is that the characterisations of the player characters as well as the NPCs is that compared to other narrative games, made at the time, they are quite deep. In *Final Fantasy VII* this is particularly noticeable in the characterisation of the player character Cloud and in the characterisation of the NPC, which in Propp's terminology could be termed 'the false hero', Sepiroth.

When talking to other characters, Cloud is secretive about his past. The player finds out though that he was earlier a member of the special-force called Soldier where he worked with Sepiroth, who was his idol, or role model.

A large part of the objective of the game is to find out more about Cloud's background. At the beginning of the game the player is shown the past, where Sepiroth and Cloud go on a quest to Cloud's home village. Later in the game it becomes apparent that this is not a true picture but only a memory that Cloud wished to keep. Sepiroth on the other hand finds out that he is a scientific experiment, created from another biological form. This trauma is what triggers his destructive behaviour that drives him to the actions that Cloud makes his quest to avenge.

6.3.1.4 The narrative separate from the elements of the game

The chronological structure of the game is of multi-linear type, comparable to the traditional hyper-textual model shown in 5.5.2.1 above. In this respect it works as an interactive movie,

but it also has a system of rules, one example being a system called Materia System, which is linked with a system called Accessory System. Via this system the player can optimise her/his player characters by combining different types of weapons and accessories with magic and demigods. To enable the player to go through the series of intrigue points his or her player entity has to defeat obstacles like monsters or other opponents. The process of optimisation and the development of a character in the turn-based battle scenes becomes a process parallel to the unravelling of the story. Between the points of intrigue which finally enable the player, through the player character, to defeat the great evil that threatens the world there are many side quests and smaller game play elements.

Final Fantasy VII is an example of a story driven game that combine a multi-linear chronological sequence, which could be called interactive film, with elements from games that make the played discourse turn out in different ways depending on which type of character the player develops during the game. What characters the player chooses to play from the group of available player characters also affects what side-quests are possible to carry out.

Final Fantasy VII is as well as *Icewind Dale* and *Konung – Legends of the North* built around points of intrigues which, to be activated, are dependent on a number of conditions being fulfilled. Where *Final Fantasy VII* differs from the other two games, which formed the base for the problem created in chapter four, is that it is basically free from false causal relations, even if the relations in many cases are not altogether obvious.

For me as a player, this has led to many hours of wandering lost in the great world. But this confused wandering did not lead to the same lack of confidence in the group of game developers as it did in the two problematised games mentioned above.

Instead *Final Fantasy VII* proves that, if great care is taken, it is definitely possible to create a good experience playing at the same time as the story is built on a narrative structure, which is not completely incorporated in the story-carrying objects. An effect of this though is that the narrative and the act of playing appear to be separate units. If we compare *Final Fantasy VII* to *Shenmue* and *Shenmue II*, which are discussed in chapter eight we can see that in this case an object-oriented approach toward the narrative leads to a gameplay where the narrative and the act of playing appear as more integrated.

The six main activities while playing *Final Fantasy VII* are:

1. The moving of the player character within the geography of the game. From approximate directions the player takes the player character to the next geographical point that contains or leads on to a point of intrigue in the chronological story sequence. The player gradually unravels the story by leading the player character, or the subject of the story, toward saving the world from the great evil threat and to restoring the balance.
2. Having text-based dialogues with NPCs where the player can choose between different pre-defined dialogue alternatives. Clues and directions which lead to future points of intrigue are shown with light blue typographic text as a difference from the white text which is used in the rest of the typographic text.
3. Watching pre-made movies (cut scenes), which bring forth the story part by part.
4. Fighting in turn-based battles where the player entity and monsters take turns attacking each other. This interface is activated every time the player is thrown into battle with an opponent in caves and cities, as well as when the player character moves around without vehicles in the landscape between cities and villages. If the player character dies the player has to start again at the place where the player last saved. For

each battle that has been won the player entity gets experience points depending on how strong the opponent was, money and sometimes different types of objects that can be used for optimising the player entity.

5. The buying of different types of objects in different of shops specialising in these.
6. Optimising ones player characters by using different kinds of items, by giving them different types of weapons as well as loading them with different kinds of magic effective in the beating of different types of monsters. For example using a weapon loaded with ice is effective when fighting a monster whose characteristics are based on fire.

We can see that the main object of the activities in point one to three is the unravelling of the story. The activities in point four to six is instead elements of resource management and player character development.

6.3.1.5 A wide variety of possible gestalts with retained stringency in the story

The fact that the narrative elements and the elements that contain the game characteristics appear to be separate does not make *Final Fantasy V11* a bad game. It is possible for the player, depending on her/his personal preferences, to play the game without paying too much attention to optimising their characters, though ignoring it easily leads to death, which in turn might lead to the player losing interest in the game.

   The game does allow a variation though in how much time the player needs to spend on the optimisation, as the level of difficulty of the boss fights, which are the battles that in themselves make up the points of intrigue, are relative to the player entity's strength. It is necessary to win these battles to be able to go on in the story. In the walkthrough documents that are available on the Internet there is detailed advice about which patterns of interaction are successful in the battle scenes. For example a person called Arctic gives the following advice about how the player character Yuffie Kisaragi is best used in battle:

> I cannot stress how useful she is against Emerald and Ruby Weapon. Equip her with either Slash-All or Double Cut and keep her at the back (long range weapons) to make full use of her strengths.[130]

6.3.1.6 The size of the layers in the discourse and the narrative vary in different genres

If we compare different types of games regarding layers of text found in them, we can see that games of the types that *Shenmue* and *Final Fantasy* are have extensive story levels, while in games like *The Sims* this level is more or less non-existent. Where one does find narratives they exist in the layer of the discourse, where its sequence is less controlled. The sequence is instead dependent on the collecting of resources instead of passing through intrigue points. The same thing goes for *Dark Cloud*, which even more than *The Sims* can be regarded as story driven.

 If we look at campaign parts in games like *Heroes of Might and Magic* or at levels in games like *Gauntlet – Dark Legacy* we can see that within the quests, which in their turn are typical in that they are placed in different geographical areas in a world, the discourse layer is large while the story layer does not exist. This story layer is instead made up of the sequence that is

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[130] Arctic*, Final Fantasy 7 FAQ/Walkthrough v.1.3*, , 2001 – 2002, is available on the following URL: http://db.gamefaqs.com/console/psx/file/final_fantasy_vii_h.txt

the campaign or the levels with increasing difficulty. Within a campaign part of the goal is most often that through a quest in the world defeat an enemy army, which is part of winning the whole war. Within a level the goal is to find a certain amount of objects of different kinds and ward off attacks from hostile monsters. To be able to do this the player characters, the heroes, which the player controls have to be built up partly with the help of the experience points which are won in battles and partly through points which are given in the form of rewards when the player manages to find valuable objects which then are delivered to NPCs or used in some other way. This way of focusing on the collecting of magical objects is similar to how the narrative continues in literary works in the genre of fantasy, for example *The Dark is Rising* by Susan Cooper.[131] The narrative is focused around the main character finding object by object, which he uses. This type of narrative technique is common in story driven computer games. It is a very obvious mechanism that can be implemented which consists of different sequences of find-use, use-find. On the other hand the different sequences of finding and using do not have to come in the same order in a computer game, which is the case in a novel.

The story level in *Final Fantasy V11* is large because of the clever and complex intrigue, and allows many jumps from the chronological order of the sequence of the story. It also allows the player to put in different amounts of attention to the building of the character and on executing quests which result in more optimisation of the player character and which exists outside the narrative. What we have here is a large story level as well as a discourse level, which together allow for great variations in how different the playing of the game turns out from one time to another.

It will be very interesting to see how the narrative techniques will develop when/if the next part of the series, number eleven, is released. This is going to be a game for many simultaneous players who will be connected to the same central game servers.

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[131] Susan Cooper, *The Dark is Rising*, (Harmondsworth 1976).

7 Features of Object Oriented Story Construction in three games

Because the model for object-oriented story construction I have sketched is just a model it is not possible to find one game that "fits" the model, though this would be very convenient. Instead we ought to look at specific features that are fruitful for this discussion in some of the games mentioned above. The following three games are not chosen for their artistic level, though some of them are, to my taste, among the best that have been produced in the genre, but they are chosen for features that are interesting to analyse in this context.

Dark Cloud is, which has been stated earlier, an interesting hybrid between game genres, which are joined by story-carrying objects. Even if the game has weaknesses in gameplay it is interesting to study it further.

Shenmue is suitable for showing an example of how the integrity of the story-carrying objects can work. This is an example of when this way of relating to it results in good gameplay.

Asheron's Call is a game that thousands of players can play at the same time, where each player controls a player character that can communicate and co-operate with other players' characters. In the world there are also NPCs who assign quests in more or less the same way quests are assigned in narrative games that are not made for multiple players. The chronotope in *Asheron's Call* is dynamic to a high degree, partly because of that the topology and the main story is always developing and partly because the players in the world can co-operate and that they have very active roles.

In the study of these games there is a problematic situation in that we do not have access to the underlying code level. We are limited to draw conclusions about the mechanics from what we see at the discourse level.

Because of size limits in a thesis such as this the analyses cannot be too extensive but hopefully it does not make them superficial. My focus is mainly on the constitution of the story-carrying objects and on the chronotope.

The object of looking closer at the games is partly to look at how my reasoning around object-oriented story construction can be exemplified and partly to see if it is possible to come to any further conclusions.

7.1 Dark Cloud

Dark Cloud is an interesting hybrid between different game genres. [132] In the game there are three different interfaces;
- one where the players guide their player character through levels of labyrinth-like dungeons where monsters have to be killed and objects of different kinds have to be found
- one where the players can build a village
- one where the player character can be steered through the village which is being built and communicate with the inhabitants who give the player new quests.

Dark Cloud here serves as an example of how story-carrying objects are used as components in different types of interfaces as well as showing a dysfunctional object hierarchy.

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[132] *Dark Cloud,* Sony Computer Entertainment Inc., Sony Computer Entertainment Europe, 2001, Playstation 2, DVD-ROM

Because of a huge monster and a corrupt leader the home village of the main character, or player character, has been destroyed and the task is to re-build it again. Pieces of the village are sealed in containers, called "Atlas", located in dungeons. These Atlas later function as bricks. At each level, or dungeon, there is a certain number of Atlas. The higher the level of difficulty of the dungeon the more difficult it is for the player to manage the task.

The more the player has played, the more optimised the player entity becomes, the more difficult the levels of the dungeons are that can be managed. Because of this there is, if the player finds the Atlas in the right order of difficulty, a chronology. But this is not binding. The game does allow the player to avoid taking the Atlas at the easier levels at the beginning, to be fetched later instead.

Between the different levels in the dungeons the player entity at the beginning of the game is in a valley where his home village once was. When the player is above earth s/he can choose to either steer the player entity as a figure and move around in the area, or go into an interface that allows the re-building of the village. The Atlas that the player got in the dungeon are made up of lost objects from the village, for example people, houses, furniture and bridges. Each house that is placed by the player is shown as a unit with departments for the people and things that belong to it. When the player finds an Atla that contains a person he or she can be placed in his or her house. After this the player can change interfaces and instead steer the figure in the valley. The figure can then have a dialogue with the newly placed person. The departments, that in the interface for re-building symbolise objects that belong to the house, do not show the player what things s/he should look for until the player entity has talked to the person living in the house. This person then says what things s/he has lost and wants back. The player can also let the player entity ask how the person wants the village to be re-built. Most NPCs have opinions about where the house ought to be placed. One lady wants the morning sun in her bedroom and another lady does not want to live near a family with two bodybuilding brothers. A third person, a fat man, wants his house to be close to the shop so he does not have to go far for his purchases. In order to satisfy the inhabitants the player has to change to the building interfaces and make the changes that the people have demanded. When the player has found all the things that belong to a house and when the house has been placed in such a way that the inhabitants are happy s/he gets a reward which, in most cases, can be used for optimising the player entity for increased success in the dungeons. Naturally there is great deal of puzzling pieces together in the building interfaces as a better situation for one NPC might mean a worse one for another.

The discourse for this first part of the game becomes the story about how the main character, steered by the player, re-builds his lost home village. We have passed the first point of intrigue, which is the introduction, when we are told the story about the catastrophe. The tasks given to the player have the characteristics of quests, or problems to be solved. There is a sequential order based on grade of difficulty and the levels in the dungeons, but it is not absolute.

The interesting thing about *Dark Cloud* is the use of story-carrying objects through three interfaces, which are often seen as game genres themselves. If one is particular one might see it as three games in one, firstly one of the dungeons and dragon type containing all he typical killing of monsters and rationing ones resources that governs the strength of the player character, secondly a game of building type, which reminds one of *Sim City,* and thirdly an interface where the player can seek information by communicating with NPCs.

Through all these three interfaces the story-carrying objects run like a tread. They are the actual aim of the hunt in the dungeons, it is them that the player puzzles with in the building

interface, and it is with them that the player entity can carry on a dialogue or use in some other way in the communication interface.

7.1.1 A dysfunctional hierarchy of the objects

Unfortunately the game has weaknesses, that is at least how I feel while I play it, that make the game's actual gameplay not work too well. The NPCs give the player various quests, where the tasks are to gather objects, for example a fence and a bicycle, in the dungeons and then via the building interface place them where they should go.

But the NPCs only confirm the actions after all the objects belonging to a bulding have been placed. This has the effect that even if the player entity has found and placed one of the things, for example a bicycle, the NPC still asks for the bicycle if the fence has not been found yet. This of course brings the player out of the illusion that s/he is talking to a real character and lowers the quality of the experience. [133]

This is an example of when the hierarchy between the story-carrying objects is not designed in a way that seems logical to the player. The condition that releases a reaction of satisfaction in the story-carrying objects of character type is not connected to the single object of accessory type that has been placed there. Instead the condition is connected to the status of the object that makes up the house, which shows that the furnishing is complete.

In the part of *Dark Cloud* that has been analysed here, namely the rebuilding of the village, it is very obvious what basic driving-forces the different objects have. The task given to the player is to re-build the village. The things that are seen as dead in the real world, our world, are also seen as dead *Dark Cloud* and have no motive power of their own but work as means of satisfaction for the story-carrying objects who are the characters. Their driving-force is getting their things back and having their houses placed in such a way that they are happy. The village is pieced together the way it probably looked before the catastrophe.

7.2 *Shenmue*

Shenmue and *Shenmue II* are two part of an epic narrative, which begins with the father of the main character, Ryo Hazukis, being murdered. The narrative is about Ryo's hunt for the murderer, the work of a detective to track the murderer as well as finding he reason for the murder. The narrative is pervaded by the ethic values present in the culture around the Asian martial arts. [134]

Shenmue II will here be an example of a story driven game whose points of intrigue are strictly organised in a multi-linear chronology, but which is also a world to be discovered, inhabited by NPCs who are story-carrying objects with integrity. This is a case where this combination in addition to the rest of the game's different parts, according to me has resulted in high quality gameplay.

7.2.1 The objects' integrity

That the object has integrity means that the information that is available in the object only is available through itself, and that the accessing of the information is done on the object's conditions.

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[133] There are various reasons that the gameplay in *Dark* Cloud is not synthesised. One of them is that the movements of the player entity in the cave are not quite synchronised with the camera that shows the player entity and the surroundings closest to it in the view of a third person (low frame rate). This firstly leads to the player feeling seasick and secondly to the risk of the player entity being killed by monsters as the player does not see to control the figure.

[134] I started training Kung Fu around the time that I started playing *Shenmue*, to obtain better feeling for and understanding of the battle scenes and the systems of battle.

An example of this is when the player through the main character finds out about the existence of a special medicine. When the player entity later in a dialogue with an NPC he is given an alternative with a choice to ask about this medicine.

This goes for *all* other characters, not only the one who has the information about the medicine. The player entity does not have a clue about who would know, except that as there is a pharmacy it might be a pharmacist. It is quite correct that it is a pharmacist who can give the wanted information, *but only if he is specifically asked for it.*

However, because of the linear shape of the story, there is no way for the player, through the player character, to ask the chemist about the medicine before the player character has been given the clue that it is important to get information about the medicine. If the player for some or other reason re-starts, the player entity has to be taken to the point where the clue is given, before it is possible to put the question to the pharmacist. The fact that the player has been given the clue becomes a part of the player characters state. It is this state that decides what options of dialogue are made available in the interaction with the other story-carrying objects.

7.2.2 The private discourses and states of the story-carrying objects

The first sign that the player of *Shenmue II* gets which points to the fact that the objects of the game are their own entities is visible already before the game has been started. It is possible for the player to bring over parts, from the previous game, *Shenmue,* of the state of the player entity. What is possible to bring includes possessions and movements that have been learned, which are possible to use in the battle scenes.

7.2.2.1 Transferring knowledge between NPCs

In *Shenmue II* the story-carrying objects who are made up of NPCs private story discourses. This becomes obvious in a case of transference of knowledge between separate story-carrying objects. Ryo tells a member of a youth gang that he is looking for a particular thing. A while later in played time the rest of the members in the same gang know what Ryo is looking for.

7.2.2.2 Memory and relations in NPCs

Another example of the private discourse in the NPCs in *Shenmue ll* is that they remember their relations to the main character. This becomes obvious when the player character is about to leave the area where the first part of the game is played, Hong Kong, to go into the next. He can then say goodbye to the characters that he *has a relation to.*

A great deal of the activity in *Shenmue ll* is the carrying out of daily chores. Ryo actually has to support himself. The player entity is made up in such a way that the main character has to sleep every night, and as long as he is staying in a hotel he has to make money to be able to pay the owner each morning. A large part of the played time is therefore, among other things, spent carrying boxes in a building site and to be in charge of a gambling stall in the street. It is between the player entity and the NPCs that he has spent time with the tearful bidding farewell can take place.

7.2.2.3 Mobile clues and the NPCs' personal routines

In *Shenmue ll* there are also other objects than NPCs who are carriers of the narrative. One of the NPCs, Joy, rides a motorbike. The NPCs have their own fictive lives in the game world, and Joy has like the others her own routines in how she moves through the town and which places she goes to. Joy leaves her motorcycle outside the building she goes in to. When it is interesting for the player to find her it is therefore natural to make the player entity go looking for the motorcycle, which then acts as a clue pointing to the NPC.

7.2.2.4 The NPCs' social spheres

The NPCs in *Shenmue ll* live, just like people in the real world, in different social spheres. For the player this means that, depending on which information that he or she needs, the person who is likely to have it has to be looked for. If one for example is trying to find information about a certain youth gang one is not likely to find that information from an old lady who does not move in the same circles.

7.2.3 The chronotope – open geography with reasonable restrictive conditions

Being a game with such a strictly held chronology in the story the geography in *Shenmue ll* is very open and rich in content. There are restrictive conditions though which hinder the player from moving the player entity to certain geographical areas depending on where the player entity is at on the linear axis of the narrative, but these conditions are put forth in such a way that the restriction seem as relevant to the player.

   The first restrictive condition that the player becomes aware of is the fact that the player character cannot be taken away from the harbour area one has arrived at before retrieving ones backpack that has been stolen. This reason for a restriction is reasonable as the backpack contains the main character's belongings that are necessary for the search of the father's murderer.

7.2.4 A game world similar to reality

The manufacturer of this game markets, in the information folder, a concept or rather a program explanation, for the realism in the game, FREE; Full Reactive Eye Entertainment:

> Go wherever you want to go, see whatever you want to see, investigate whatever you want to investigate.
> In this world, the passage of time is both realistic and true.
> A refreshingly cool morning breaks and transforms into a warm sunny afternoon. The beautiful sunset of early evening fades slowly into a quiet and still night.
> When it rains, it rains. W
> hen it snows, it snows.
> At times it forever continues.
> Here, life is meaningful.
> There are people here who take daily walks in the park, who work hard everyday to make a living, shop owners selling their goods, children playing, housewives gossiping, everyone living their unique, everyday lives.
> Yes, this world is a real world.
> Meet and interact with numerous people.
> Learn and develop through a variety of experiences
> A compelling and majestic production that will engulf your entire existence. [135]

The fact that the geography is relatively open, and that most story-carrying objects in for example the shape of an NPC, carry out the quests, despite their linear organisation, are a challenge for the player. The complexity and the richness in the world maintain the illusion of really being in Hong Kong in the eighties. This makes the quest-oriented pattern of action work dynamically despite, or thanks to, the strict linearity combined with the richness. At one stage the player, through its object, finds a number of tapes. When listening to on of the tapes the player deducts that the speaker has a bird that eats a certain kind of food. Without further clues it is then possible to go off into town to find information about this, which can lead to the speaker.

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[135] The quote is taken from p.18 in the printed information folder that comes with *Shenmue II.*
In the information folder that comes with *Shenmue* there is on p. 17 a similar text, slightly different but expressing the same meaning.

One of the few metaphors existing in this thesis would be, on the one hand, gameworlds made up wilderness of objects where the player gets lost, as the one extreme and as the other the very well kept gardens. Shenmue is in the context a formal, well-cut garden of French style, comparable to the magnificent castle garden in Versaille.

7.3 Asheron's Call

> Something really unusual happened to me today. I have an unsettling feeling my life has changed forever. Ever since I found that clear blue stone by the stream, my curiosity about that magical purple swirl has consumed me. Today, I couldn't take it anymore. I just touched the purple wisps with my hand and everything suddenly changed. I was sucked through some kind of portal and ended up someplace I have never seen before. It's like I'd been sucked to another world. And other things had changed. I had a backpack with some weapons and a note. The note was welcoming me to Dereth. I don't know what this place is or why I am here, but I have to get back home.[136]

The quote above is the opening of the story that is being written by a player about the adventures that the player character named Silromen takes part of in Dereth, the three-dimensional gameworld in *Asheron's Call.*

On the island of Dereth, long ago, the mighty empire of Empyrea flourished. The magician Asheron opened a gateway to another world and by mistake let in hordes of evil insects, the Olthoi. Asheron sent his people to safety using his magic, but stayed there himself to fight the Olthoi. A side effect of the powerful magic was that gateways were opened to other worlds and called those who lived there to Dereth. Among these were the people who were called from the world of Ispar. The Isparians were for many years kept as slaves by the Olthoi, until they were freed by the two heroes, Elysa Strathelar and Thorsten Cragstone. The Isparians were then able to build towns and villages where they could live more or less safely. Old sleeping and new enemies threaten the world though, and when the player, as an Isparian, enters the world through a gateway it is his or her turn to, via the player characters become heroes. It was such a gateway that Silromen found, and is the same way that the other players, via their player characters, enter into Dereth.

7.3.1 Massively Multiplayer Online Role Playing Game

Asheron's Call is a MMORPG, which reads Massively Multiplayer Online Role Playing Game. The game is to a large extent narrative and has a high degree of eregodicity. In this case it is reasonable to see the different quests as lines in a chronological structure, but they do not have to be carried out one after the other as it is possible to have many active quests at the same time. The hierarchy between the quests is sorted into unusually many layers.

The fact that the platform of the game is made up of servers that thousands of players can be connected to at the same time gives the group of developers at Turbine Entertainment Software possibilities of upgrading that do not exist in traditional narrative games that are distributed through non-changeable CD-rom or DVD discs. The system where players group up with other players, and systems for communication between players give similar possibilities as exist in text-based MUDs:

The player meets in the world other characters of three main types:
- other player characters
- NPCs that give lesser or greater quests to one or more player characters
- NPCs that sell and buy different types of items which among other things can be used for optimising the player character

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[136] http://www.geocities.com/the2ndrealm/silromen_leafcull.html

7.3.2 Independent quests

Quests are often given via dialogue with an NPC, but can also be given in other ways, for example through other players and through attention brought to players via parchments. Through my player character I bought a parchment from a writer with the following contents:

> To all who wander the empty beauty of the great A'mun, I send greetings.
>
> The young town of Xarabydun seeks those of the 25th level or below to cleanse the vermin from its lower levels. Those who can bring back trophies from these creatures will be well rewarded from the town's coffers.
>
> Interested parties should travel to the town's entrance portal at 16.2E by 41.9S, in the wastes between the towns of Al-Arqas and Khayyaban.
>
> - Fazyad ibn Raymar, Bey of Xarabydun

Among these quests there are some that are independent from the overall narrative. At the beginning of the game, as a newly arrived player entity, one gets a number of smaller quests that give points of experience when they are carried out. The points can then be used, as the player wishes, to improve the player character's characteristics. These separate quests are specific for the cities and the NPCs that live there. In the town of Al-Arqas I, as a player, or subject, had the following quest:

> Nurbaha bint Dah tells you, "We left behind my mother's collection of knives, among the first she ever forged. They are not worth very much, but I will help you if you get one for me."
>
> Nurbaha bint Dah tells you, "The Unfinished Temple is to the northwest of here. We fled pretty far into the ruins before we realized we had to leave. I think we were at least two levels down when we lost the knives. Last I was there, I found only one knife."

After I had found the temple, killed the monsters that attacked me there, found the knife in a coffin and returned with it to Nurbaha bint Dah I was given 1000 points of experience to be used for optimising my player character. All individual players can solve these quests.
If I, after solving a quest, was to interact with Nurbaha bint Dah again she will still want knives from the temple. But there is no point in running there again as the state of my player character shows that I have already carried out the quest and cannot have the same reward one more time.

7.3.3 Overall narratives that evolve with the game

The towns in Dereth contain more or less the same shops and enterprises, among them a wedding business. In each wedding business there is one of Arcanum's agents. They tell the same story to the player regardless of which town he or she is in. The following text is a typographic text that is shown to the player when the player character has a dialogue with an agent. As we can see the text also describes things that cannot otherwise be experienced, such as facial expression and type of voice, just as in *Planescape Torment*:

> The Agent bows their head low and speaks softly.
>
> Agent of the Arcanum tells you, "It is a sad time my friend. Our leader, Nuhmudira, has left us and wandered into the northern wilds with her new apprentice. I cannot believe the rumors that are circulating about her having sacrificed her closest confidant, and protector...but..."
>
> The agent sighs and looks to meet your eyes.
>
> Agent of the Arcanum tells you, "We want you to help us find her. Please. She headed to the north, somewhere deep into the mountains. We do not know exactly where, but there is a rumor of an ancient library that once belonged to the Gelidites hidden somewhere. If you can please find Nuhmudira."
>
> A tear falls from the Agent's eye. Their voice crackles and breaks.

> Agent of the Arcanum tells you, "We shall be lost without her. Until she is found we shall still accept: any of the four elemental prisms, Regular and Quality Pyreal Ingots, Diamond Powder and Nuhmudira's Token."

The lesser quests that are given by other NPCs and the quest given by the agent in the quote above are of varying importance in carrying the general narrative of the game forward.

You can not be certain that you are the actual hero in the drama. Depending on what time of day it is, the number of players in the world, playing at the same time, varies between a few thousand up to a tenths of thousands.[137] The 16th of May 2002 it was announced that Namudira had been found by a group of players:

> Valiant adventurers have wound their way through a dark labyrinth to find a chamber of suffering and pain. And a choice. Nuhmudira has been found! But she could not be freed, not directly. The pull of a lever determines her fate. Pull the plain lever or the lever with the polished skull? The people run their fingers along the surface of the skull, tracing its contours. . . Perhaps Isparians have become too familiar with the cycle of death and life. Does the smooth surface of the skull beckon them overmuch? Or will mercy compel their hand? Nuhmudira's sobs are incessant, trickling down from the top of the chamber like rain from a roof's eaves. Which lever, which lever, which lever? [138]

7.3.4 Dynamic chronotope

Every month the narratives in Dereth are developed and new environments are built up where the narratives are acted out. The books about Dereth's story can be bought by the player characters in any of Dereth's libraries, or can be found in catacombs. There one can read about other player characters deeds in Dereth.

This monthly development of the game means that the chronotope to a large extent is dynamic. In the games discussed earlier in the thesis the forward motion makes up a wandering between sequentially ordered points of intrigue. It is only that time which is of importance while playing, except perhaps a certain limitation as to how long it is possible to play in *Shenmue ll.*

In *Asheron's Call* there are more aspects to take into concideration. As the gameworld of Dereth is always avaialble for all players time goes by in a similar way in Dereth as it does in the everyday life of the players. If they want to create groups in which they together carry out quests it is necessary to decide on a time and a place to meet. Many groups, which are monarchies and might consist of as many as around a thousand members, have their own web sites with bulletin boards and other means of making easier the communication which is necessary outside of the game to be able to play as successfully as possible *within* the game.

Another aspect of time is the historical aspect. The players who have been active in the world before a certain player steps into the world have, except for the discourses specific of their player entities, and the developers of the game, created the overall narrative which makes up the history of Dereth.

Parallel with these time aspects there is also the typical forward motion of the story driven game along an axis of multi sequentially ordered quests. Through the monthly updates from the game developers this axis is becoming longer and longer which has the effect that as long as the developers continue working on the narrative the game can go on.

The topology, which is developed continually, consists of the island of Dereth and some smaller islands close to Dereth. There are eight worlds, of which seven are identical. On the

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[137] May 2002
[138] Second part in "Hidden Vein", *Official Event article May*,
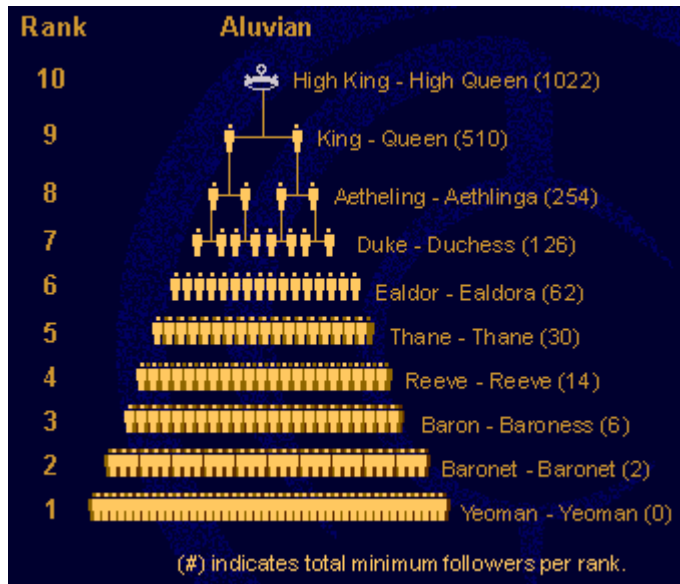URL: http://zone.msn.com/asheronscall/news/ASHEeventrollout.asp, May16, 2002.

eighth the mechanism is slightly different, in that the players can fight one another there. In the other seven monsters are ones main enemies. Each of the worlds consist of a server where one player can have up to five active player characters, though only one can be used at the time.

When one has configured a player entity using the choices offered, one can choose what town one wants to start in. In each such starting place there are a number of simple quests helping the player to become acquainted with Dereth and the mechanisms present in *Asheron's Call*. It is also possible to, via a portal, step into a practice environment where the most basic mechanisms are explained and can be tried.

7.3.5 Co-operation between players

The system for co-operation between players and their player entities is divided into two types of groupings, one being a more long term system, a system of allegiance and the other, a system for more temporary groupings, the fellowship system.

The alliegance system is founded on a hierarchical feudal structure. It is possible to belong to three different groups of people, the **Aluvians, the Gharu'ndimians or the Sho's (Shos?).** The hierarchical foundation of the Aluvians is shown in this figure, from the games own site:[139]

Rank	Aluvian
10	High King - High Queen (1022)
9	King - Queen (510)
8	Aetheling - Aethlinga (254)
7	Duke - Duchess (126)
6	Ealdor - Ealdora (62)
5	Thane - Thane (30)
4	Reeve - Reeve (14)
3	Baron - Baroness (6)
2	Baronet - Baronet (2)
1	Yeoman - Yeoman (0)

(#) indicates total minimum followers per rank.

As a new Aluvian player entity ones initial status is that of yeoman. As yeoman one can swear allegiance to another player who has a more optimised player character and become its vassal. When this player character has gained two more vassals its status then becomes Lord (Baron), the lowest rank of the nobility. This man or woman of the nobility then gets part of the points of experience which his or her vassals gain, and is thereby able to further optimise the player entity. It is therefore in the interest of the Baron (Lord) to help his/her vassals by for example giving them objects that make them stronger, which lets them get their points of experience quicker.

In the figure below it can be seen that the player entity Immovan has sworn allegiance to the player character Crouching Tigress. Immovan then becomes a part of the player character Tetsuo Ikegama's monarchy.

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139 URL: http://zone.msn.com/asheronscall/tips/aluv.asp

As we can see Tetsuo Ikegama has 260 members in his monarchy, and gains points of experience from all these player characters.

Different monarchs have, due to being controlled by different players, varying styles of playing, or varying gestalts. When I sent Immovan out to find a generous patron Crouching Tigress said that the monarch Tetsuo Ikegama was very quest-oriented. This, as well as Crouching Tigress promising to provide Immovan with good armour and weapons made me let Immovan swear his allegiance to her and become her vassal.

When I, as the character of Immovan the next morning stepped into Morningthaw, one of the worlds, or servers, that the world consists of, I was met by a message from the monarch. He was prepared to help all members of the monarchy who had player characters on a level below fifteen to get experience points to be able to optimise themselves.

> "Buff day begins at 10:30 AM. Meet at the lifestone by the Redspire portal. Be prepared to retie to that lifestone."—Kun-chueh Tetsuo Ikegama

I let Immovan run to the pointed out meeting place. Together with the other four player characters Immovan created a fellowship, a temporary union. These temporary unions are created for a certain aim, like going hunting together, carrying out a quest, or exploring a cave system or a temple together.

The temporary union makes possible the communication between player characters wherever they are in the world, as well as letting a player character loot the corpses of the monsters that a character of the same union has killed. When the quest is finished the union is most often split.

This type of co-operation turns the playing into teamwork. The player characters who for example have the capacity to heal wounded co-players do this, and the stronger player characters can save the weaker from monsters that are too strong for them.

7.3.6 The integrity and characterisation of the objects

Object-oriented story construction is, as I wrote in chapter five, letting all the objects in the world have integrity and letting them contain their own stories, functions, possible potential developments and possible reactions against actions from other objects directly aimed at the object.

These principles are present in the player characters and in other story-carrying objects in *Asheron's Call*. Each player character carries its own discourse, and carries out its own characterisation.

The activities that a player most frequently lets his/her object carry out increase their efficiency. The use of a sword instead of a bow and arrow in battle, for example, leads to the

player in time becoming a specialist at sword battles. This defines the player character's role in the groups of other player characters that it co-operates with. The players who use styles of playing that are traditionally related to live role-playing put emphasis on the dramatic characterisation. The player who was quoted at the beginning of this part about *Asheron's Call* describes the player character of Silromens background like this:

> Silromen Romenimir was born to a noble family in his home world. His early life was filled with studies and court intrigue. The sport of the upper class was archery in his land, so that is what he was taught from a very young age. Always more interested in history and poetry, Silromen never really took to archery. He preferred to spend time with the sages and scribes in the palace libraries, never tiring of asking questions and learning new things.[140]139

Due to its extensive possibilities of co-operation and communication between the different players, the system of the game in *Asheron's Call* allows the players to continually characterise their player characters by performing (theatrical) acts, by twisting words in a dialogue as well as through various actions and gestures that the player characters are made to do.

In the communication with other players (especially with those who are role play oriented) it is considered polite to stay within the context of the game-world, "in game", and not refer to such that can shatter the illusion of being in Dereth, a world which is outside our own and where nobody has any knowledge of that which is specific for the player's everyday life. This way of playing in itself makes the players among themselves create a higher degree of transparency in the game and do not wake each other from the dream of the game. It is a paradox though that the characterisations in the shape of background stories that carry forth its meaning via a typographic text, are only available via the Internet, actually outside the game.

These are also more or less these guidelines, the staying within the context of the game, which are followed in the large amount of short stories written by players, retelling their experiences from the virtual landscape. For those who are interested in further investigating this type of story telling I can gladly recommend the page "Player Chronicles", where the developers of *Asheron's Call* have picked out a number of stories related to the game. [141]

When it comes to what information is available about a player character to other player characters it depends both on the regarding object and on the state of the regarded one. The amount of capacity, in the regarding object, when it comes to being able to see the attributes in other player character is controlled by a numeric value; assess person.[142] There is also a numeric value which represents how well a player character can hide its attributes from other players; deception.[143] It is a combination of these values that decides the amount of information I am allowed to take part of, when I for example make the player character Immigran watch and try to read another player character.

7.3.7 Quest sequences whose absolute chronology can be overridden

The underlying linearity present in the, by the game pre-defined, quests are decided partly by the level of difficulty of the quest and partly by the quests being carried out in the right order. Teamwork between the players cancels both forms of linearity. The linearity connected to the level of difficulty is cancelled when a stronger player character helps weaker characters. The

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[140] URL: http://www.geocities.com/the2ndrealm/silromen.html

[141] URL: http://zone.msn.com/asheronscall/PlayerChron.asp

[142] This value in its turn depends on two other values according to the following formula: focus + self / 2

[143] This value in its turn depends on two other values like assess person, but a slightly different calculation formula decreases the value of deception compared to assess person: focus + self

linearity that is governed by the sequence between the quests can be cancelled through information and gifts from players who have already carried out the quests.

I was once in the desert town of Yaraq, via a character that I have named Immigran al-Atos. There I was given a quest by an NPC, Lubziklan al-Luc, a grower of apples, in which I had to find some monsters that had stolen his apples. When I had found the monsters and, via Immigran, killed them I returned to Lubziklan al-Luc and gave him back what he had lost. He then gave me a quest in which I had to find an apple-pie which had been stolen by the same type of monsters. He also gave me a rough description of the way to the ruin where they would be, as well as a key, see figure:[144]

While searching for the Mesa Ruin I met a player character named Sebastian Grandel. Together we went down into a different temple where Sebastian Grandel helped Immigran to find a bottle of cider. I did not know what to do with it, but Sebastian Grandel explained that the cider was the goal of the third quest, which a player character might get from the NPC Lubzikklan al-Luc, the quest given when one has fetched the apple-pie for him.

> Sebastian Grandel gives you Strongbox Key.
> Sebastian Grandel says, "use this "
> You say, "thank you!"
> Sebastian Grandel says, "by portal"
> Sebastian Grandel says, "t"
> You say, "is it here somewhrer?"

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[144] As the text in the picture may not be readable the following is a transcript of the dialogue:
Lubziklan al-Luc tells you, "Perhaps you can help me. One of those filthy pests stole another of my daughter's apple pies from the sill."
Lubziklan al-Luc gives you Encrusted Key.
Lubziklan al-Luc tells you, "Take this key and travel to the Mesa Ruin in the hills west of Yarac's North Outpost. That is where the band of mewling pests reside. Kill them, and bring back that pie!"

> Sabastian Grandel says, "down here"
> Sabastian Grandel says, "get two pies if you find it"

(I let my object use the key for a chest and so find the bottle of cider)

> You say, "cider!"
> Sabastian Grandel says, "the key comes from the orchard owner just south"
> Sabastian Grandel says, "of the town"
> Sabastian Grandel says, "you take him the apple pie first"
> Sabastian Grandel says, "then he gives you the key"
> Sabastian Grandel says, "and you come back for the cider"
> You evaded Drudge Skulker!
> You say, "does he want the cider?"
> Sabastian Grandel says, "yep"
> Sabastian Grandel says, "first the pie though"

Because of the many possible combinations that spring out of the meetings between different player entities, and the information that the different players have regarding the quests, the number of possible story discourses becomes infinite. To still keep the stringency of the narrative there are mechanisms needed to govern the sequence to a certain degree.

But what happens now that I, via Grandel, have got the key and have also fetched the object that is the target of the third quest? Had I not been with Sebastian Grandel I would not have know that Lubziklan al-Luc wanted the cider. The facts that are given about the cider do not disclose that it has belonged to Lubziklan al-Luc, even if I could have deducted it because of his activities. If Grandel had not given me the information I probably would have let Immigran drink the cider to gain strength for the battle with the monsters.

In a game where the story carrying objects do not carry their own conditions, but where instead a sequence of demanded conditions lay outside of the objects in a tree-like logical structure, I would have had to carry out the quests of the three-armed structure in the right order. I would in other words have had to first fetch the pie from the ruin, take the key and then get the cider.

To be honest I have to admit that after I, via my entity, had met Gradel, I took for granted that this would be what the sequence would be like, so lost interest and went to another town. When I later got back to al-Luc I gave him the bottle of cider, and the following figure shows what happened: [145]

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[145] As the text in the picture may not be readable the following is a transcript of the dialogue:
Lubziklan al-Luq tells you, "Wonderful! My friend, you have done me a great favour. You may keep everything else you found in the strongbox as payment."
Lubziklan al-Luq gives you Mara's Healing Pie.
Lubziklan al-Luq tells you, "My daughter Mara baked one of her pies for you. Please, take it. I guarantee you will find it quite nourishing."
Your experience has reduced your Vitae penalty!
Lubziklan al-Luq gives you 200 Pyreals.
You've earned 1000 experience.

Al-Luc thanked Immigran wholeheartedly and let him keep the remainder of the objects that had been in the box where the cider was kept, the box that key fitted into. The NPC also made Immigran a gift of a pie baked by his daughter as well as 200 pyreals, the currency used in Dereth. By the system for the building of character the player character was given 1000 points of experience, which I as a player can use to optimise Immigran.

It is this type of functionality, which is desirable to achieve in the shaping of narrative games where the chronological sequences of intrigue-points and quests are a part of the system of the game. The shaping of this type of functionality can probably be made easier by the use of causal normalisation combined with object-oriented story construction.

A personal thought on my part in this context is that the functionality, which is visible to the player in Asheron's Call shows that the framework of the programme code, which makes up the base of the game world of Dereth, reaches artistic heights. Further I feel that it is a personal loss that I as an outsider do not have access to the programme code, which enables the reading of it as a literary work in itself.

8 Summarising conclusion

A common problem in story driven games with a multi-linear structure consisting of a hypertextual model combined with a vast geographical landscape is the high level of complexity between the casual relations governing the possible chronological sequence of narrative elements. A consequence of this is that the game developers either force the player to false choices that from a player perspective seem illogical or that false casual relations occur.

A way of minimising the amount of false causal relations, without diminishing the quality of the narrative and without in a detailed way directing the player's journey between the intrigue points of the game, would be to use an object-oriented story construction in combination with casual normalisation.

For the analysis of story driven computer games it is necessary to map out the different levels of text and interpretation in the game. It is not possible to disregard the fact that the largest amount of text in a computer game consists of program code.

The purpose of this thesis is partly to do such a mapping, and partly to offer perspectives and methods that can lead to the creation of better games. The material, which is the basis for the ideas that are brought forth in this thesis, consists of works within the area of narratology, hypertext theory, ludology and computer science. An equally important basis for the thoughts is practical experience from having played and programmed story driven computer games.

In the second part of the thesis the concepts of games, computer games and the playing activity are defined. I here suggest a description of the concept of gameplay as being the synthesis that emerges from the different elements of a game when it is being played. I also bring forth the opinion that in a good story driven game the storytelling aspect is synthesised with gameplay. This concept of gestalt refers to the player's individual pattern of interaction.

In the game related research that focuses on game narrative, large parts of the theoretical background material are gathered from hypertext theory. Section 2.6 is a short historical summary of hypertext and hypertext theory, which is completed with references to works within the area of hypertext theory, which might be interesting for the research of games.

The ludology, or game science, should be cross-disciplinary because of the high level of diversification of art forms and broad knowledge that is incorporated in digital games. Currently there is no common base of knowledge; the expertise is broadly spread over different academic disciplines and commercial companies.

One of the areas in which ludology can operate is in the poetics of games, which can study games as games, where not only the player visible signs are studied, but also the underlying structures of rules, and where such occur, also code layers. To be able to classify ludology more concretely than just being cross-disciplinary it is necessary to wait and see what methodological development will emerge in the area.

Currently, research in the more traditional sense of game theory is conducted in mathematical and economical disciplines. Applied research is conducted trough the production of games, and studies of games are made within a wide variety of established academic disciplines, in specific projects and within new, smaller units. Questions of utmost importance to explore include how games can be studied, how games affect culture and society, how existing game forms can be renewed and how production processes can be improved.

In the third section story driven games are discussed. The prevailing genre distinctions are assessed as impractical. Instead I suggest a genre definition based on component and driving force, which focuses on what functions, systems and key features are offered to the player.

The concept of text in relation to story driven computer games is discussed, and the definition used in the thesis is presented; the text is the appearance of the game, or the realisation.

Some other discussions on what can be perceived as text in the context of games are then summarised; Julian Kücklich argues that the program code in a computer game constitutes the actual text. Ragnhild Tronstad discusses how a story in a quest-oriented game is created in retrospective, after the player solves the quest. Her arguments also clarify the importance of making a clear distinction between actions actively performed by the players and retold events when analysing story driven games.

Mikael B. Skov and Peter Bøgh Andersen suggest that the author of a computer game is more like a builder of game worlds than an author in the more traditional sense. The story is instead created by the player's interaction within the game world.

In section 3.3.1, I divide the text of a story driven computer game into three levels, which in their turn contain several layers. The bottom level is the code level, consisting of engines, framework and game programming. The middle level is the story level, consisting of a possible overall story and the individual story-carrying elements and their basic driving forces. The top level of text is the discourse level, which consists of the sequential order created between the parts of the story simultaneously with the players movement through the game, and of the individual objects changeable states.

Some key features within the story driven game, relevant for this study, are identified as: its time, its chronotope, its invisible storyteller and visible player character, its performative quest structure, and how the chronologically ordered sequence of the story emerges one step after the players' actions. Typical in story driven games is that the playing time, and the time that is possibly implemented in the game, does not affect the story of the game. Instead it is usually the fact that the player reaches certain intrigue points in the story that decides if the story continues according to its axis. Typical features in the chronotope of the story driven game is this way of handling time and also that the players movement through the space and the story is controlled by conditions.

The internal sequential order in which the player experiences the parts of the story emerges simultaneously with the player's movement through the game. This order, as it is experienced by the player, is what I call *discourse* in this thesis.

In section 3.5, I look closer at the communication structure in story driven games. The player, the implicit player, the player character (player character), the invisible storyteller, the implicit creator and the real creator are described and set in relation to each other in a general model.

In chapter four, a historical overview of problem solving within software development is given. A stereotypical quest is presented as an example of what type of causal relations can occur within story logic in games. A story logic design methodology is presented, referred to as causal normalisation. This minimises some forms of causal functional dependencies within story logic and thereby eliminates some unintentional forms of causal couplings. This can reduce the type of unexpected dead ends in the playing that lead to the player perceiving it as a badly designed game. As an extension of the principle of causal coupling, an object-oriented approach towards story logic is suggested, and is related to principles for the normalisation and game architecture.

The largest part of the contents of chapter four is from an paper, "Causal Normalisation" that Craig Lindley and I wrote for a conference in Canada; Computers and Games 2002. The text has been worked on and changed to fit into the context of literary studies.

The need for a mapping out of the different levels of interpretation is established in the same chapter. It is as important in this context, as it is in a narratological one, to distinguish code layers, story layers? and discourse layerss. Causal normalisation is a method, which can be used on the story level as a help to make sure that the data which is put into the code level creates a coherent experience of the story in the discourse level. Effective normalisation must therefore be treated as a question of defining a coherent and useful method for the story layer combined with a clear route of transfer to the semantics in the narrative representation in the code layer.

The fifth chapter is about object-oriented storytelling. Object-oriented storytelling means letting all objects in the game world have their own integrity and contain their own stories, functions, conditions, possible developments and possible counter reactions because of actions from other objects, specifically aimed at the object.

That an object has integrity means that the information contained within the object is only accessible through it and that the retrieval of information by other objects is done on the object's conditions. This minimises the risk of false causal relations. Another effect of implementing story telling objects with integrity, originating from the framework that describes the mechanisms of the world and the biotope, is that the time planes and the chronotope function in a better way.

Concerning the planes of time, the effect of the individual story-carrying objects containing their own barrier conditions, as opposed to an overall treelike hierarchy of conditions, can be that it is possible to create narratives with a more dynamic usage flashbacks and flash-forwards and where the user has more control.

Since it is possible, in an object-oriented story construction model, to distinguish between the type of conditions that control the geographical mobility and ones controlling the chronological sequence of the story the game developer does not to the same degree need to find plausible explanations for barrier conditions in the topology. By designing the chronotope of a story driven game in an object-oriented way it is possible to accomplish a more synthetic and less mechanic chronotope than when applying an entire story structure of internal causal relations onto a game world.

In section 5.2 the code layer, the story layer and the discourse layer, that are presented in section 3.3.1, are described. The description assumes a division and contents with an object-oriented story construction structure.

In order for the object-oriented story construction paradigm to work in practice, the framework must be one of the centres of gravity during the production of the game. In that way one can create coherence between the overall design of the game and the actual implementation, the input data used for game programming become adequate for the game as a whole.

The three layers in the code level consist of engine, framework and game programming. The engine can consist of purchased or in-house developed reusable components such as physics systems, rendering systems or dialogue systems. The framework consists of an abstracted model of the game system and the gameworld. It also constitutes the glue between the game programming and the engine(s). The framework can be reusable to a certain degree if a similar game in the same genre is to be produced. The game programming is always specific for the game and is the detailed programming of the individual objects. It is into this layer that all the data from the story layer is put.

To visualise the relations between the different layers on the code level, one could compare the constitution of virtual game worlds to the constitution of our real world.

The engines would then be the equivalent of the physical laws on different planets, or game worlds. On one planet the framework would constitute the base for the biotope on the planet. The individual classes in the framework, or the descriptions of object types, would be equivalent to the genetic codes. In the game programming these genetic codes would be combined with data specific for the individuals, corresponding to individual DNA sequences.

Section 5.3.2, which is about the story level, starts with an outline of a typical, overall treelike hierarchy of causal relation of the hypertextual type. In such a system of story logics all causal relations are as important, which limits the degree of necessity to perform a quest to three levels. It is this type of hierarchy of casual relations that usually controls the player's possible paths between intrigue points in the overall stories. The outline is shown as a contrast to how conditions and quest hierarchies may function in a model of object-oriented story construction and casual normalisation.

In an object-oriented story constructing model the conditions governing the chronology of the overall story would be defined *within the storytelling objects* and their actions instead of being connected to *events* in an external structure. This would mean that the usually so strict division between main story and side story could work in a more dynamic way and not as fixed.

The mere occurrence of causal conditions governing the sequential order of the story depends on a need to be able to control the chronology of the story. If no such story exists the conditions are not necessary for this particular reason. Then the condition governing the state of a specific object, and thereby the possibility of action towards another object (and its state) becomes a far more important tool when designing a game.

The actant model of Greima's can be used for breaking down the parts of a history into the force fields that make it possible for a narrative to emerge. By applying this approach to story-carrying objects we can more clearly distinguish the powers which, using Greimas words, constitutes the "semantical syntax" that constitutes the micro universe as a game world and an overall story is.

When Vladimir Propp studied the Russian folktale in the work *Morphology of the Folktale* he came to the conclusion that it was built around seven character types who could have thirty-one different functions, or types of actions. The sequence of these functions is always the same. Therese Budniakiewicz has in *Fundamentals of Story Logic* compared these functions to the type of actions discussed with greimassian terminology. She shows that the actions do not necessarily need to be bound to the chronological sequence.

In an object-oriented story construction model it is necessary to make a clear difference between the concepts of action, event and state. An action is dependent on the subject performing the activity. An event is a description of the same activity when the description is performed by an actant outside the performed action. In an object-oriented story construction model a state is something held by an actant, or in our terms, a story-carrying object. The state is a result of all actions conducted by the object and actions conducted by other objects, aimed at the first object. This state differs from the initial driving force, or in Budniakiewitz words, antecedent state, which is constituted by its long-term goal, plans or will.

The story level consists of three layers, partly the story elements that the story consists of, partly the conditions governing the story, and partly of the initial driving forces of the objects.

The discourse level consists of two layers, the individual story discourse of the objects, and of the individual states. The discourse is the told, or experienced, sequential order expressed by signifiers, which emerge simultaneously with the player's movement through the story driven game. In an object-oriented story construction model it is not only the player character

that has a discourse, all story-carrying objects have a private discourse. The state of an object is initially decided by its type and by what is implemented in it, but changes in the now of the playing, depending on external events, on actions aimed straight at the object, on its own actions and on the state of the game world.

The section about object-oriented story constructing is concluded with two models. The first model is general and shows the main features in the three text levels. The second model exemplifies, by showing a fictional story-carrying object, what type of text occurs where, and what function and meaning it has in the different text layers.

In the sixth chapter of the thesis a spectrum of different types of discourses are shown, from games whose primary driving force is the handling of resources to games that could be labelled cinematic RPG. On the one extreme there are games like *The Sims*, *Sim City* and *Civilization*. The main components of the playing activity are the handling of resources and the building of a world according to specific rules. In these games the discourse runs along an axis that on an overall plane consists of an accumulating amount of resources. In the cases where these games are played by several players simultaneously they have the same initial driving forces, but develop different gestalts to play as successfully as possible.

Games divided into campaigns and levels combine a number of fixed intrigue points, between different parts of the game, with a discourse which is not controlled by intrigue points within the parts. The driving force which is given to the player of a campaign game is often to win a war, and in the level-based game it is to win a last "boss fight". To do this the player must gather all necessary objects and optimise the player character to enable it to manage the fight.

In story driven games with a high degree of ergodicity one of the strongest driving forces is the unfolding of the story. Another strong element in these games is the building of character, which is in turn often necessary to be able to unravel the story because of the challenges, that the player character meets, becoming more and more difficult. To manage the increased level of difficulty optimised player characters are necessary.

Final Fantasy VII is discussed partly for the reason that, when it was published in 1997; it became a milestone in the development of story driven games. To as high a degree that the story structure is quest driven, it also produces a strong story focused not only on saving the world, but as well as an intricately spun intrigue around the characters controlled by the player. An interesting aspect is that this strong narrative in some respects appear as separate from the playing activity, and that this not is a drawback as it instead allows many types of interaction patterns with the game without the overall story suffering from it.

A comparison of games of different types, on the basis of the text layers existing in them, shows a large variation regarding the discourse layer between genres.

In the seventh chapter object-oriented story construction methodology is studied in three games; *Dark Cloud, Shenmue* and *Asheron's Call.* Because of the unavailability of the code level the possibility to study the games is limited to drawing conclusions via the discourse level about the mechanisms of the games. The study is mainly focused on the story-carrying objects and on the chronotope.

Dark Cloud is an interesting hybrid between game genres tied together by story-carrying objects. The game is played in three different interfaces where the objects constitute the main thread between the interfaces. In the most story-oriented interface a dysfunctional connection between the objects becomes obvious.

Shenmue II is a story driven game whose intrigue points are set in a strict multi-linear chronological order, but which also is a world to be discovered, inhabited by NPCs, which are story-carrying objects with integrity. The integrity of the story-carrying objects becomes

visible in that they have private discourses and states. There exists a transfer of knowledge between the NPCs, they have a memory for relations and they have personal routines and live in their own social spheres. The chronotope in *Shenmue II* is a relatively open geography with reasonable barrier conditions, and containing such a large amount of story-carrying objects makes it resemble reality.

Asheron's Call is a Massively Multiplayer Online Role-Playing Game which to a high degree is story driven. The stories, the environments and the functionality are updated each month by the development team behind the game. Some quests are independent from the overall narrative, while others are parts of larger overall narratives. The monthly development of the narratives and environments makes the chronotope dynamic. The private history discourse of the player characters becomes parts of the history of the game world when they perform quests which are of importance to all the inhabitants of the world. *Asheron's Call* has a system for the players to make groups. Different groups can have different playing styles, which in turn affect the gestalt of the individual player.

The underlying linearity, which exists in the quests, pre-defined by the game, is defined partly by the difficulty of the quests and partly by them being performed in sequence. Co-operation and teamwork among the players can abolish both forms of linearity. Stronger player characters helping weaker ones override the linearity that is defined by the levels of difficulty. Information and gifts from players who have already performed the quests can override the linearity governed by sequence between quests.

The story-carrying objects in *Asheron's Call* hold all the distinguishing features of the object-oriented story construction method that, in my opinion, are suitable for story driven games. The fact that the player characters, apart form carrying their own discourses and states, also through the player perform their own characterisation, adds an extra dimension to the experience of the game. The most sophisticated story-carrying object existing today is probably the one, which combined with a well designed framework, is controlled by a human who shapes and animates the object.

9 Epilogue

During my work with the thesis my focus turned back and forth between different starting-points. One of the first starting-points was to examine the narrative techniques that has developed in the Final Fantasy series. While working on the thesis I spent a lot of the time playing games, and then the problems with the causal relations became very clear. The solving of these problems then seemed to me to be the more important.

The problems were also current on another plane; I had just finished the work with the programming of the framework, the implementation of the dialogues and the making of the game programming for the detective game *Diamantmysteriet i Rosemond Valley (The Diamond Mystery in Rosemond Valley)*, with the other members of the group of game developers at Liquid Media.[146] At the implementation of the narrative logic and the building of the multi-linear narrative structure of the game, we used an overall treelike hierarchy of conditions of hypertextual type. This meant having to struggle to get the causal relations to correspond, regardless of which way the player took along the narrative axis. I then did a lot of thinking around how one instead could shape the narrative combined with the rest of the systems that make up a story driven computer game.

The task of doing this in a context of literary science seemed a bit foreign to me. I then started exploring the theoretic literature written in the structuralistic and semiotic areas, and was struck by the fact that there within this area is research done exploring problems of similar character to the those one meets when designing the narrative logic in story driven computer games.

In a discussion with Craig Lindley, which also later resulted in the article "Causal Normalisation", I realised that it was probably possible to use these problems as the focus of the thesis. I then formed a thesis, "Through object-oriented story construction it is possible to avoid false causal relations and thereby achieve better gameplay."

The background to this thesis is partly the model for narration that I have presented in the thesis, partly the definition I suggest for the concept of gameplay as a synthesis that arises when the elements in a game are synthesised. I do believe though that an object-oriented method for narration also has other positive effects for the story driven game. The chronotope can become more dynamic, and the other objects that the player communicates with can generally appear as something with a life of its own instead of something that is obviously mechanical.

As a passionate player of story driven games I, to manage playing the game, got used to trying to work out how the game developer actually thought around the conditions that control my advancement through the narrative, and I do not believe that I am alone about this. This situation of course has the effect that the game seems more as a mechanical unit, than a world where one goes on an expedition in a drama. But I do not believe that it has to be this way.

While working with the arguments of my thesis I met with some limitations. To be able to discuss the game's mechanisms I had to have a terminology and a system of concepts for this purpose. Story driven games are so far a relatively unexplored area, and I had difficulties finding suitable material. Partly to be able to discuss around causal normalisation in a meaningful way, and partly to be able to describe what I mean when I use the term object-oriented story construction, I divided what appears to me as text in story driven computer games into three levels that in their turn were divided into layers. My purpose with the thesis was then extended to also include this description.

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[146]*Diamantmysteriet i Rosemond Valley*, Liquid Media, Pan Interactive, PC, CD-ROM, 2001

Another limitation in the work with the arguments of my thesis was the fact that the programme code that forms the game's mechanisms is not available to me as a player. To prove my thesis, and thereby in practice show the lack of false causal relations, I had to build a framework, implement some story-carrying objects, and show the results. Unfortunately this is not contained within the frame of the discipline of literary studies. Instead we have to make do with chapter four where the methodology for causal normalisation is presented. When it comes to existing games we have to, from the discourse layer, make conclusions about the underlying mechanisms. I thought about instead showing examples from *Diamantmysteriet I Rosemond Valley,* but because it has a different structure than what I wanted to present I decided not to. I instead took on the pleasurable task of playing a broad variety of game in my search for examples for me to show.

This has enabled me to show how the discourse layer is constituted in games of different types. I have also been able to show certain mechanisms that are manifested in this layer that indicate an object-oriented way of relating to the narration in the code level and in the story layers. But I have not, due to the limited availability of code layers, been able to prove the thesis.

I do believe though, and I hope that the reader of this thesis to some extent after reading these pages also believes, that an object-oriented story construction is suitable in development of story driven computer games, as a way of achieving good gameplay. My hope is also that the model of the three text layers in story driven computer games may be of some use in the analyses of story driven computer games.

The writing of this thesis has been a long and interesting process fringed with many wonderful experiences while playing. It was particularly pleasant to play *Asheron's Call,* absolutely comparable to the sensational feeling I experienced when I discovered the Internet in 1995.

One of my favourite things to think about presently is how a generating framework could be constituted. Perhaps the story-carrying objects in such a system could generate new story-carrying objects and environments that in turn could change the framework they have originated from.

My thanks

References

Aarseth, Espen J. *Cybertext: Perspectives on Ergodic Literature* (Baltimore & London 1997) MIT Press

Arctic*, Final Fantasy 7 FAQ/Walkthrough v.1.3*, 2001 – 2002,
URL: http://db.gamefaqs.com/console/psx/file/final_fantasy_vii_h.txt

Bachtin, Michail, *Det dialogiska ordet*, trans. Johan Öberg, publisher: Anthropos (Uddevalla 1998)

Barthes, Roland "From Work to Text", *Image, Music, Text: Essays*, utg. och övers. av Stephen Heath (London 1984) Flamingo

Bolter, Jay David, *Writing Space: The Computer, Hypertext, and the History of Writing* , (New Jersey 1991)

Booch Grady, *Object-Oriented Analysis And Design With Applications*, 2nd Ed. Benjamin Cummings, 1994

Booth, Wayne C. *The Rethoric of Fiction* (Chicago 1961)

Budniakiewicz, Therese *Fundamentals of Story Logic – Introduction to Greimassian semiotics* (Amsterdam Philadelphia 1992)

Carlquist, Jonas: "Att läsa ett dataspel - Om digitaliserade rollspel som berättelser", *Human IT* nr 2/3 2000
URL: http://www.hb.se/bhs/ith/23-00/jc.htm

Carlquist, Jonas (1999): "Berättelsens framtid eller den framtida berättelsen. En diskussion kring Janet Murrays bok Hamlet on the Holodeck. The Future of Narrative in Cyberspace".
In: *Human IT* 1/1999.
URL: http:/www.hb.se/bhs/ith/1-99/jc.htm

Chatman, Seymour *Story and Discourse* (Ithaka & London, 1989)

Codd E. F. "A Relational Model of Data for Large Shared Data Banks", *Comm. ACM* 13 (6), Juni 1970, s. 377-387.

Codd E. F. "Normalized Data Base Structure: A Brief Tutorial", *ACM SIGFIDET Workshop on Data Description, Access, and Control*, Nov. 11-12, 1971, San Diego, California, E.F. Codd and A.L. Dean (eds.).

Codd E. F. "Further Normalization of the Data Base Relational Model", R. Rustin (ed.), *Data Base Systems (Courant Computer Science Symposia 6)*, Prentice-Hall, 1972. Also IBM Research Report RJ909.

Cooper, Susan *The Dark is Rising*, (Harmondsworth 1976)

Cosigns2001, proceedings, 1st Conferende on Computation Semiotics for Games and New Media, 10 - 12 September 2001 CWI – Amsterdam
URL: http://www.kinonet.com/conferences/cosign2001/

Date C. J. *An Introduction to Database Systems* (third edition), Addison-Wesley, 1981

Debenham J. K., *Knowledge Systems Design*, Prentice Hall Advances in Computer Science Series 1989

Debenham J. K. *Knowledge Engineering: Unifying Knowledge Base and Database Design*, Springer-Verlag 1998

De Marco T., *Structured Analysis and Systems Specifications*, Yourdon Inc. 1978

Eladhari Mirjam, "Interaktiv skönlitteratur på hypertext", *Svensklärarföreningens årsskrift*, (Stockholm 1996)

Eskelinen, Markku *Omission Impossible: the ergodics of time*. DAC 98. 1998
URL: http://cmc.uib.no/dac98/papers/eskelinen.html

Fjellman, Erik och Sjögren, Jan, *Interaktiv underhållning inför framtiden*, TELDOK rapport 133, (Stockholm 2000)

Freeman, Tzvi "Monitoring Devices in Games", *Game Developer*, April-may 1997

Friedman, Ted "Making Sense of Software: Computer Games and Interactive Textuality", 1993
 URL: http://www.duke.edu/~tlove/simcity.htm

Frost R. A. *Introduction to Knowledge Base Systems*, MacMillan 1986

Gane C. and Sarson T. *Structured Systems Analysis*, Prentice-Hall 1979

Genette, Gérard *Narrative Discourse – an Essay in Method,* övers. Jane E. Lewin (New York 1983)

Greimas, Algirdas Julien "Ten years afterwards", *Narrative Semiotics and Cognitive Discourses*, övers. Paul Perron och Frank H. Collins, (London 1990)

Gunder, Anna (1999): "Berättelsens spel. Berättarteknik och ergodicitet i Michael Joyces afternoon, a story". I: *Human IT* 3/1999. URL: http://www.hb.se/bhs/ith/3-99/ag.htm

Halford, Neal med Halford, Jana *Swords & Circuitry: a Designer's Guide to Computer Role Playing Games* (Kalifornien, 2001).

Heed, Sven Åke *En väv av tecken – Teatertexten och dess betydelser*, (Lund 1989)

Huizinga, Johan *Homo Ludens – a study of the play elements in culture* (Boston 1955)

Hypermedia and Literary Studies, red. Paul Delany och George P. Landow (London 1990)

Hyper/Text/Theory, red George P. Landow (London 1994)

Joyce, Michael *Afternoon, A Story* (Cambridge, 1987), Eastgate Press

Juul, Jesper *A Clash between Game and Narrative - A thesis on computer games and interactive fiction*. (Institut for Nordisk Filologi, Københavns Universitet 1999). URL: http://www.jesperjuul.dk/thesis

Kirksæther, Jørgen (1998): *The Structure of Video Game Narration*. DAC 98. URL: http://cmc.uib.no/dac98/papers/kirksæther.html

Kücklich, Julian "Literary Theory and Computer Games", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001)

Koskimaa, Raine (2000): *Digital Literature. From Text to Hypertext and Beyond.* Diss. URL: http://www.jyu.fi/~koskimaa/thesis

Landow, George P, *Hypertext: The Converge of Contemporary Critical Theory and Technology* (Baltimore och London, 1992)

Landow, G.P. (1994): "What's a Critic to DO? Critical Theory in the Age of Hypertext". I: *Hyper/Text/Theory*, ed. G.P. Landow. Baltimore & London: Johns Hopkins University Press, s. 1-50.

Lindley, Craig "The Gameplay Gestalt, Narrative, and Interactive Storytelling", *Computer Games and Digital Cultures Conference*, 2002 Juni 6-8, Tampere, Finland.

Lindley, Craig och Eladhari, Mirjam "Causal Normalisation: A Methodology for Coherent Story Logic Design in Computer Role-Playing Games", *Third International Conference on Computers and Games*, 25-27 Juli 2002, Edmonton, Kanada.

Mount, Patrick *Gameplay: The elements of Interaction,* (Liverpool 2001). The cited part of the thesis was published at the website *Gamasutra* April 3, 2002
URL: http://www.gamasutra.com/education/theses/20020403/mount_01.htm

Murray, Janet *Hamlet on the Holodeck. The Future of Narrative in Cyberspace.* Baltimore & London: MIT Press 1997

Nationalencyklopedin, sixth volume (Höganäs 1991)
Nationalecyklopedin, seventeenth volume (Höganäs 1995)
Nationalecyklopedin, nineteenth volume (Höganäs 1996)

Nelson, Theodor Holm, *Literary Machines* (Swarthmore, utgiven av författaren, Ed. 87.1, 1987)

Nelson, Theodor Holm, "Getting It Out of Our System." *Information Retrieval: A critical Review,* G Schechter, ed., (Washington DC, 1967).

Nielsen, Jakob, *Hypertext & Hypermedia* (San Diego 1990)

Nikolajeva, Maria, *The Magic Code - The use of magical patterns in fantasy for children* (Göteborg 1988, Almqvist & Viksell International)

Vladimir Propp, *Morphology of the Folktale*, the second english edition, where the translation of Laurence Scott has been edited by Louis A Wagner. (Austin 2000 [1968])

Rimmon-Kenan, Shlomith, *Narrative Fiction: Contemporay Poetics* (London och New York 1998 [1993])

Skov, Mikael B. och Andersen, Peter Bøgh "Designing Interaction Narratives", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001)

Svedjedal, Johan *The Literary Web. Literature and Publishing in the Age of Digital Production. A Study in the Sociology of Literature*. (Stockholm 1997, Kungliga biblioteket)

Ragnhild Tronstad, "Semiotic and nonsemiotic MUD Performance", *Proceedings Cosign2001, 1st Conference on Computational Semiotics for Games and New Media* (Holland 2001)

Yourdon E. och Constantine L. L. *Structured Design: Fundamentals of a Discipline of Computer Program and System Design*, Prentice-Hall 1979

Ludography

The games are presented according to the following model:
Title, developer, publisher, platform, form of media storage, year of publishing.

Age of Empires II – the Age of Kings, Ensamble Studios, Microsoft, PC, CD-ROM 1999

Asheron's Call – Dark Majesty, Turbine Entertainment Software, Microsoft Corporation, PC, CD-ROM och Internet, 1996 - 2001

Baldurs Gate: Dark Alliance, Snowblind Studios, Black Isle Studios, Interplay Entertainment, Playstation 2, DVD-ROM, 2001

Civilization III, Firaxis Games, Infogrames Interactive Inc., PC, CD-ROM, 2001

Dark Cloud, Sony Computer Entertainment Inc., Sony Computer Entertainment Europe, Playstation 2, DVD-ROM, 2001

Diamantmysteriet i Rosemond Valley, Liquid Media, Pan Interactive, PC, CD-ROM, 2001

Final Fantasy IV (Final Fantasy Chronicles), Squaresoft, Square Electronic Arts L.L.C., Playstation, NTCS compact disc, 1995, 2001
Final Fantasy VII, Squaresoft, Sony Computer Entertainment Europe, Playstation, CD-ROM, 1997
Final Fantasy VIII, Square Co. Ltd., Square Europe Ltd., Playstation, CD-ROM, 1999
Final Fantasy IX, Square Co. Ltd., Square Europe Ltd., Playstation, CD-ROM, 2000, 2001

Gauntlet – Dark Legacy, Midway, Midway Home Entertainment Inc., Playstation 2 DVD-ROM, 2001

Heroes of Might and Magic III, 3DO, Ubisoft, PC, CD-ROM 1999

IceWind Dale, Black Isle, Interplay Productions, PC, CD-ROM, 2000

Konung – Legends of the North, Infinite Loop, PAN Interactive Publishing, plattform: PC CD-ROM, 2000

Morrowind - Elder Scrolls 3, Bethesda Softworks LLC, UbiSoft, 2002, PC CD-ROM

The Sims, Maxis Software, Electronic Arts Inc., PC CD-ROM, 2000

Sim City 3000, Maxis Software, Electronic Arts Inc., PC CD-ROM, 1999

Planescape Torment, Black Isle, Interplay Productions, 1999, PC CD-ROM

Riven, Cyan, Ubisoft, PC, CD-ROM, 1997

Shenmue, AM2 of CRI, CRI, Sega Corporation, Dreamcast, CD-ROM for PAL E, 1999, 2000
Shenmue II, AM2 of CRI, CRI, Sega Corporation, Dreamcast, CD-ROM for PAL E, 2001

Appendix 1

The picture is from *Fundamentals of Story Logic* by Therese Budniakiewicz (Amsterdam/Philadelpia 1992) p. 220 – 221.

Appendix:
The "Boolean Algebra" of Narrative Events*

BREAK-UP OF THE ORDER AND ALIENATION $\bar{A} + \bar{C}$	Hero designated	QUALIFYING TEST	MAIN TEST	Hero saved	GLORIFYING TEST	REINTEGRATION AND RESTORATION OF ORDER $C + A$
$\bar{A}$ { ℓ_2 = interdiction / ℓ_3 = violation }	A_1 { ℓ_9 = mediation / ℓ_{10} = beginning counter-action }	A_2 { ℓ_{12} = first function of the donor / ℓ_{13} = hero's reaction }	A_1 { ℓ_9 / ℓ_{10} }	. . . . . .	A_3 { ℓ_{25} = difficult task / . . . . . . }	A(non c_3) = marriage
$\bar{c}_1$ { $\bar{c}_1$ = ℓ_4 = reconnaissance / non $\bar{c}_1$ = ℓ_5 = delivery }		Simulated and symbolic struggle where the Sender plays the role of Opponent	ℓ_{16} = struggle ℓ_{17} = the hero is branded = c_1	ℓ_{21} = pursuit of the hero	. . . . . . ℓ_{26} = solution of task	C_2 { c_2 = ℓ_{28} = exposure of false hero / non c_2 = ℓ_{29} = revelation of hero: transfiguration }
$\bar{c}_2$ { $\bar{c}_2$ = ℓ_6 = trickery / non $\bar{c}_2$ = ℓ_7 = complicity }		F_2	ℓ_{18} = victory $F_1 + c_1$	ℓ_{22} = rescue of the hero dF_1	F_3	
$\bar{c}_3$ { $\bar{c}_3$ = ℓ_8 = villainy / non $\bar{c}_3$ = ℓ_{8A} = lack }		ℓ_{14} = receipt of magical agent non c_2	liquidation ℓ_{19} = of lack or misfortune non c_3		ℓ_{27} = recognition non c_1	C_3 { c_3 = ℓ_{30} = punishment of false hero / non c_3 = ℓ_{31} = marriage }
	ℓ_{11} = departure $\bar{P}_1$	transference ℓ_{15} = between two kingdoms d non $\bar{P}_1$	ℓ_{20} = the hero returns non P_1	ℓ_{23} = unrecognized arrival P_1		
				a false hero ℓ_{24} = presents unfounded claims		
ℓ_1 = absenta-tion $\bar{P}$	P					

ℓ = Propp's function
A = contract (injunction vs. acceptance)
$\bar{A}$ = breach of contract
C = communication

F = struggle (confrontation vs. victory)
p = presence
d = rapid displacement

*Expanded and adapted from V. Propp, *Morphology of the Folktale*, and A. J. Greimas, *Sémantique structurale*, p.203. We may also refer to this table as a "functional analysis" of Propp's folktale chain of events or the "structural semantics" of a full narrative.

Appendix 2

This is a list of suggested topics for speakers at the conference Game Developers Conference Europe, 10 May 2002. It is copied from the following URL:
http://www.gdc-europe.com/abstract/2002speakingtopics.htm

VISUAL ARTS

INTERFACE DESIGN (Visual)
Designing User Interfaces in Flash
Graphical Interface Design

MASTER CLASSES
Animating Character Interactions
Boss Models
Character Modeling
Modeling Faces
Modeling Creatures
Modeling Environments
Modeling Organic Objects

MISCELLANEOUS
Hair, Clothes, Fur and Drapery Techniques
Nonphotorealistic Rendering Art Styles

ORGANIZATION
Art Directors Panel
Art Technicians Roundtable
Art Work Flow and Pipelines
Maintaining A Consistent Aesthetic

SPECIAL EFFECTS
Advanced Special Effects
Organic Natural Landscapes
Particle Systems for Artists
Weapons Effects and Explosions

TECHNIQUES (Craft/Classic)
Character Design
Storyboarding and Conceptual Art

TECHNIQUES (Digital/Technical)
Cleaning Up Motion Capture Data
Facial Animation Lipsynching
FMV Cutscenes
In-Engine Game Cutscenes
Non-Photorealistic Rendering Techniques
Polygon Reduction and Level of Detail: Tools and Manual Techniques
Realistic Inverse Kinematics: Set-Up and Techniques
Scripting for Artists
Vertex and Pixel Shaders for Artists
Writing Plug-ins for Art Packages

TEXTURE MAPPING
Advanced Texture Creation
Minimizing Texture Space
Photoshop Actions

PROGRAMMING

ANIMATION
Facial Animation
In-engine Cinematics
Intelligent Free-roaming Cameras in Arbitrary Environments
Lip Synching
Real-Time Inverse Kinematics
State of the Art 3D Facial Capture Techniques
User Perception and Intuitive Controls

ARTIFICIAL INTELLIGENCE
Adaptive Difficulty
AI for Pacing
Artificial Intelligence Case Studies
Autonomous Behavior
Bots AI
Camera Intelligence
Crowds and Extras
Interactive Animations
Level of Detail AI
Movement and Behavior of Agents - Beyond A*
Spatial Reasoning
Team Based AI: Cooperative vs. Competitive
Teaching characters how to move. (Characters learning to move themselves through repeated Motion Capture)

CHARACTER BEHAVIOR
Crowds and Extras
Facial Animation
Lip Synching
Real-Time Inverse Kinematics

COLLISION DETECTION
Character Collision
Intelligent Free-roaming Cameras in Arbitrary Environments
Large Scale Game Collision Detection Case Studies
Survey of Methods for World Partitioning

GEOMETRY
Dense Geometry on Limited Memory
DirectX9 Geometry
Geometry Blending/Morphing
Geometric Compression
PlayStation2 Vector Unit Programming
Real-time Geometry Deformation
Using Subdivision Surfaces
Terrain Rendering

LANGUAGE/VOICE
Voice Recognition

MISCELLANEOUS
Dealing with NTSC, PAL, and DTV Output in Games
Design Usable Controls
Programming Games for Shockwave and Flash
Using and Integrating Middleware
Using Extreme Programming

NETWORKING
Distributed Collisions and Physics
Game Boy Advance Networking
Internet Cheating
Massively Multiplayer Online Games Server Technology
Networking Massively Multiplayer Online Games
Peer to Peer vs. Client/Server Roundtable
Persistent World Databases

OPTIMIZATION
Fast Compiling Code
Game Boy Advance CPU Optimization
PlayStation2 Vector Unit Optizimation
Timestepping Methods

PHYSICS
Cloth
Gas
Fire
Linking Realistic Physics to Gameplay
Physics Level of Detail
Pyrotechnics and Explosions
Racing Physics
Softbodies
Stability: Resolving Contact Problems
Water

STRUCTURES
Multitreading Roundtable
Streaming Large Data Sets

SYSTEMS PROGRAMMING
DMA Utilization
Gamecube Memory Management
Game Boy Advance Memory Management
Scalability
X-Box UMA Considerations

TEXTURE & LIGHTING
Advanced Lighting Models
Bi-Directional Reflectance Distribution Function (BRDF)
Color Correcting
Dealing with Limited Pixel Precision
DirectX9 Pixel Shading
Glass,Translucent Surfaces and Refraction
Multitexturing and Multipass Rendering
Nonphotorealistic Rendering
Optimizing Geometry for Hardware T&L
Overbrightening Techniques
Pixel Effects Using Temporary Buffers
Real-Time Full Screen Anti-Aliasing for PCs and Consoles
Real-Time Radiosity
Rendering Effects for Volumetrics
Rendering Techniques using Textures and Projections
Rendering Techniques for Optical Effects
Shadows
Special Effects Rendering
Texture Compression
Texture Management

Use and Implementation of Procedural Textures or Procedural Geometry
Volumetric Fog Techniques
Water Rendering
Weather: Day, Night, Indoor and Outdoor

TOOLS
Advanced Tool Design / Input Methods for Directing In-game Movies
Building Level Design Tools
Game Editing Tools Roundtable
Scripting Languages for Consoles
Techniques for Writing Plugins
Texture Manipulation Tools and Techniques
Using Shockwave/Flash as a UI Design/Scripting Engine

CASE STUDIES
Issues in Cross-Platform Game Development: PC, Gamecube, Playstation 2 and Xbox
Leasing & using a 3rd Party Engine in a Successful Game
Optimizing PlayStation2 Using Microcode: A Real World Case Study on Performance Increases
Programming Your Game for User Modifications

PRODUCTION

ASSSET MANAGEMENT
Review of Asset Management Tools

CROSS PLATFORM DEVELOPER CASE STUDIES
Pro's & Con's of Making a Truly Cross Platform Game

LEADERSHIP AND MANAGEMENT
Art Directors Case Study
Defining Your Company Culture
Team Leadership

LOCALIZATION
Localizaton and Internationalization

MISCELLANEOUS
DVD Production and Authoring: Limitations, Minefields, and Incompatibilities

ONLINE PRODUCTION ISSUES
Cell Phones/Game Boy Advance
Server Load Issues for Massively Multiplayer Online Games

ON TIME, ON BUDGET
Developer and Publisher: You Either Both Win Or Both Lose
Dynamic Design vs. Feature Creep
Effective Publishers Developer Relationship
Keeping From Promising the Impossible
Maintaining Your Budget by Organizing, Defining Milestones and Staying on Schedule

OUTSOURCING
Finding and Casting Professional Voice Talent
Managing Outsoucing
Planning and Producing Motion Capture

PREPRODUCTION AND PROTOTYPING
50 Things to Do Before Committing to a Deadline
Successful Prototyping

QUALITY ASSURANCE
Managing the QA Process

TOOLS AND MIDDLEWARE
A Review of Available Middleware
Pros and Cons of Middleware Integration

LEVEL DESIGN

A Critical Review of Level Construction: The Five Best and Five Worst
Applying Traditional Architectural Skills in Level Design
Conceptualizing and Sketching in 3D
Cinematic Dramatic Lighting
Image and Model Acquisition
Indoor Level Design
Intelligent Dynamic Camera
Level Designer and Artist Workflow Roundtable
Level Design for Real-Time Strategy Games
Maintaining Tension Throughout a Level
Making More Navigable Levels
Meaningful Object Interaction (Creating a World Without Crates)
Outdoor Level Design
Pathfinding and Spatial Reasoning: Designing Levels to Accommodate Artificial Intelligence
Randomly Generated Levels
Scripting Languages

GAME DESIGN

CHARACTERS
Character Design

DESIGNING FOR CONTRAINED PLATFORMS
Designing Games for the Web
Designing for Highly Constrained Platforms
Exploring the Capabilities of Game Boy Advance for Designers
Learning from Super Nintendo Games in Designing for Game Boy Advance

MISCELLANEOUS
A Critical Analysis of Effective and Ineffective Game Designs
Balancing and Tuning
Data Driven Design
Dynamic Mission Generation
Integrating Physics into Game Design
Interactive Television Design
Techniques for Designing Nonlinear Stories
Useful Game Design Documents

ONLINE PLAY PATTERNS
Online Play Patterns Case Study: What Works?

PSYCHOLOGY & GAME THEORY
Challenge vs. Frustration
Game Tuning Case Study
Operant Conditioning
Psychology of Social and Group Entertainment
What is the Difference Between Fun and Addiction?

STORYTELLING
Character Development
Continuity of Story Through Levels
Dramatic Arc Told in Gameplay
Hollywood Writing Tricks/Techniques to Build a more Compelling Game Story
Writing Skills for Game Developers

BUSINESS & LEGAL

DEVELOPER / PUBLISHER RELATIONS (AND VICE VERSA)
Alternative Publishing Distribution Models
Developers Working to Make the Most of the Marketing and Sales
Maintaining Good Public Relations and Representing Your Company in the Media

HOW TO RUN A GROWING TEAM
Case Study: A Year in the Life of a Start-up
Deficit Financing
Financial Planning and Budgeting with a Walkthrough of a Revised Fiscal Year
Using Consultants and Outsourcing Creatively: Designers, Programmers and Artists

LICENSING
Licensing
Selling vs. Keeping Rights

LEGAL ISSUES
Legal Issues in Planning for a Global Release
Negotiating a Contract
Software Patents
Tax Accounting Policies and Standards

MARKET FOR OPPORTUNITIES
Alternative Business Models
Is Developing Middleware a Viable Business Model?
Models for Self-Publishing on the Web
Online Delivery Methods Roundtable
Selling Your Company's Intellectual Property
State of the Industry: Stats and Trends

PUBLISHING
Choosing a Publisher
Pitching to Publishers
What do Publishers Need from Developers?

AUDIO

Audio Business Issues Roundtable
Audio for Emerging Platforms (handhelds, cell phones etc)
Audio Localization
Audio Programming Roundtable
Business and Contract Issues
Composition Master Class
Cross Platform Development
Development Tools Round Up
Gamecube Audio
Intellectual Property Roundtable
Interactive Composition Roundtable
Internet Audio Design
PlayStation2 Audio

Project Management / Team Dynamics / Job Specialization
Sound Design Master Class
Sound Design Roundtable
Web Audio Roundtable
Xbox Audio